



Green River Community College
Applied Baccalaureate Degree Program

Bachelor of Applied Science in Information Technology:
Network Administration and Security

Program Proposal

Forms C and D



December 3, 2012

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Form C

COVER SHEET NEW DEGREE PROGRAM PROPOSAL

Program Information

Program Name: Bachelor of Applied Science in Information Technology: Network Administration and Security

Institution Name: Green River Community College

Degree: Bachelor of Applied Science in Information Technology

Level: Bachelor

Type: Applied Science

CIP Code: 11.1003

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12-3-2012
Date

NEW DEGREE PROGRAM PROPOSAL

Introduction

Green River Community College is excited about the prospect of offering a Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security (the BAS degree in Information Technology). The BAS degree in Information Technology is designed to prepare students for employment in a variety of IT (information technology) positions, such as network and computer systems administrators, information security analysts, or computer support specialists.

The BAS degree in Information Technology will help meet the demand for skilled IT workers in our region with bachelor's degrees. The current demand greatly exceeds the supply of qualified workers. The Workforce Development Council of Seattle-King County estimates that there will be an annual shortage of 3,631 qualified information technology job candidates in King County during 2014–2019.¹ Demand for this degree was fully demonstrated and explained in Green River Community College's statement of need.

In this new degree program proposal, Green River Community College will describe and explain:

- The curriculum for the BAS degree in Information Technology, including program learning outcomes, program evaluation criteria and process, course preparation needed by students transferring in, general education components, and course work needed at junior and senior levels in the BAS. Details on Green River's ongoing collaboration efforts with Bellevue College on degrees and curricula are also included in this section.
- Green River's plan to provide highly credentialed full-time and adjunct faculty for the BAS degree in Information Technology program.
- Enrollment projections for the BAS degree in Information Technology program; how the degree program will provide place-bound working adults in Green River's service area access to a nearby, affordable, relevant, and high-quality applied baccalaureate degree; and ongoing work with other educational institutions in the area to ensure the best possible articulation and educational opportunities for students.
- The admission process for the program, which is consistent with an open-door institution. Entry requirements for the BAS degree in Information Technology program have been designed to provide access to many and to ensure that prospective applicants are prepared for success once they enter the program.
- The myriad of Green River's student-focused support services that will help students in the BAS degree in Information Technology program achieve success.
- The administrative and staff FTEs allocated to the BAS degree in Information Technology program, including a faculty program director, an exempt BAS program manager, and a half-time lab technician.

¹ Workforce Development Council of Seattle-King County, Talent Pipeline Study for Information Technology, Business Services, Finance and Insurance, Mar 2012, p. ii.

- A comprehensive, realistic financial plan for the first five years of the BAS degree in Information Technology program. Green River Community College is committed to providing funding for this new program until it becomes fully self-supporting, which is anticipated by year three.
- Rationale for not seeking specialized program accreditation for the BAS degree in Information Technology program.
- Extensive, ongoing collaboration with institutions in the area that confer graduate degrees to articulate clear and efficient pathways for BAS graduates who wish to continue their education onto a master's degree program.
- A summary of the two external expert evaluations of the program. Both experts were favorably impressed with the BAS degree in Information Technology program and expressed their support of the program's curricula.

Criteria 1: Curriculum Demonstrates Baccalaureate-Level Rigor

Green River Community College has carefully designed the Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security (the BAS degree in Information Technology) curriculum to include baccalaureate-level academic rigor as well as the high-level technical knowledge and skills demanded by employers.

Program Learning Outcomes

The BAS degree in Information Technology program is designed to prepare students for employment in a variety of information technology (IT) positions, such as network and computer systems administrators, information security analysts, or computer support specialists. Successful graduates of the BAS degree in Information Technology program will be able to:

1. Plan, implement, administer, and support appropriate information technologies and systems to help an organization achieve its goals and objectives. Information technologies and systems may include: servers, client computers, mobile devices, operating systems, network applications, local area networks, wide area networks, wireless networks, network segments, intranets, and so on.
2. Analyze the security vulnerabilities of an organization's information technology resources.
3. Plan and implement security measures and practices for an organization's information technology resources.
4. Function as an advocate for users of information technology resources.

Program Evaluation Criteria and Process

Program evaluation is a continuous process at Green River Community College, beginning during the initial exploration and development of a degree. Numerous resources have been used to evaluate both the need for the BAS degree in Information Technology and appropriate program curriculum, including IT Advisory Committee input, an employer survey, discussions between IT faculty and IT managers in local-area industry, and meetings of IT faculty with area IT educators at post-secondary institutions. External experts with experience in IT and higher education have also assessed the BAS degree in Information Technology program curriculum to ensure rigor, consistency, and quality. GRCC will continue to gather input from IT experts in industry and higher education throughout the curriculum development and implementation phases to ensure rigor of the content, appropriate learning methodologies, and technical currency.

Industry will continually participate in recommendation and review of the BAS degree in Information Technology program curriculum and program elements through the IT Advisory Committee. This advisory committee, which has been instrumental in the success of Green River Community College's Information Technology AAS-T degrees, has expanded its scope to include the BAS degree in Information Technology program. Committee members include IT industry managers and workers in large and small companies and a local government agency.

At Green River Community College, a formal Program Assessment and Improvement review is conducted every five years. This review process entails a thorough assessment of every part of the program including:

- Description of the program
 - Student demographics
 - Enrollment trends
 - Annual course offerings/cancellations
 - Quarterly enrollment
 - Quarterly course completion
 - Employment and wage status
- Personnel summary: courses taught by full-time versus adjunct faculty by quarter
- Program curriculum
 - Course Adoption Revision (CAR) status
 - Program Adoption Revision (PAR) status
- Course prerequisites
- Program support: instructional resources; facilities, equipment, and budget; and miscellaneous support services
- Learning outcomes
 - Campus-wide learning outcomes and program-level learning outcomes
- Advisory committee/industry relations
- Overall assessment of the program

In addition to the recommendations of the IT Advisory Committee and the Program Assessment and Improvement process, Green River Community College will routinely collect and analyze data and feedback from students, program faculty, and the institution to evaluate the BAS degree in Information Technology program's effectiveness. Exhibit 1 outlines various assessment tools that will be used for program assessment.

Exhibit 1: Program Assessment Tools

Assessment Tool	Used to Assess
Student course evaluations	<ul style="list-style-type: none"> • Satisfaction with balance of knowledge, skills, theory, and practice in the course • Student preparedness upon entering individual courses
Student survey	<ul style="list-style-type: none"> • Effectiveness of the program in meeting students' expectations
BAS in IT degree program faculty survey	<ul style="list-style-type: none"> • Preparedness of students upon entering the program • Preparedness of students upon entering individual courses • Effectiveness of institutional and program resources and support • Preparedness to teach the curriculum
Institution program statistics	<ul style="list-style-type: none"> • Student demographics • Student enrollment trends • Student retention • Student success/completion by course • Student progression through the program

Exhibit 1: Program Assessment Tools (continued)

Assessment Tool	Used to Assess
Post-graduation student survey	<ul style="list-style-type: none">• Effect of program completion on career• Effectiveness of the program in meeting job expectations• Effect of the program on wage and career progression
Post-graduation employer survey	<ul style="list-style-type: none">• Effectiveness of the program in meeting employers' expectations• Observed increased skills and performance• Perceived strengths and weaknesses of the program

Course Preparation Needed by Students Transferring In

Green River Community College's Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security (the BAS degree in Information Technology) is designed for individuals who have earned a technical associate's degree in an IT-related field. These students—particularly if they have earned an AAS-T degree—will typically be able to complete the BAS degree in Information Technology in two years of full-time study.

The entry requirements for the BAS degree in Information Technology program have been designed to provide access to many and to ensure that prospective applicants are prepared for success once they enter the program. Students may enter the program if they possess a technical associate's degree in an IT-related field from a regionally accredited institution that includes at least 45 credits of IT courses and at least 20 credits of general education courses. A cumulative GPA of 2.0 from all college courses is required. Students must have earned a minimum grade of 2.5 in all IT courses.

The following IT courses, or their equivalents, are strongly recommended *before* entering the BAS degree in Information Technology program because they contain foundational knowledge upon which the upper-division IT courses build:

- IT 102 Programming I for Information Professionals
- IT 114 PC Repair Technician
- IT 131 Networking Infrastructure Fundamentals
- IT 160 Microsoft Windows (Current Version) Server Implementation
- IT 190 Linux Administration
- IT 210 Managing Cisco Routers and Switches
- IT 240 Manage MS Windows (Current Version) Network Environment

General Education Components

General education is an important component of all applied baccalaureate degrees, providing students with a baseline of knowledge and understanding in communication skills, quantitative and symbolic reasoning skills, humanities, social sciences, and natural sciences. Green River Community College has planned carefully to ensure that the general education courses required for the BAS degree in Information Technology meet—and in the areas of communication skills

and natural sciences, exceed—state guidelines for general education in applied baccalaureate degrees.²

To complete the BAS degree in Information Technology, students must complete 15 credits of communication skills, 5 credits of quantitative and symbolic reasoning skills, 10 credits of humanities, 10 credits of social sciences, 15 credits of natural sciences, and an additional 5 credits of general education courses to total 60 credits. These general education requirements are detailed in Exhibit 2.

Exhibit 2: General Education Requirements for BAS in Information Technology

Area	Credits	Course(s)	Typical Level of Completion
Communication Skills	15	Engl& 101 English Composition I	Associate
		Engl 335 Advanced Technical Writing	BAS
		Cmst& 210 Interpersonal Communication <i>or</i> Cmst& 220 Public Speaking <i>or</i> Cmst& 230 Small Group Communication	Associate
Quantitative/Symbolic Reasoning Skills	5	Any 5-credit Math course numbered 108 or higher; Math 108 or Math 147 recommended	Associate
Humanities	10	Phil 412 Professional Ethics	BAS
		5 credits of upper-division Humanities courses; Cmst 338 Diversity in the Workplace strongly recommended	BAS
Social Sciences	10	Bus 340 Project Management	BAS
		5 credits from the list of Social Science courses approved for the AA-DTA degree	Associate
Natural Sciences	15	CS& 141 Computer Science I Java, <i>or</i> CS& 131 Computer Science I C++, <i>or</i> Any other generally transferable programming course	Associate or BAS
		5 credits lab science from Natural Science List A for the AA-DTA degree	Associate or BAS
		5 credits from Natural Science List A or List B for the AA-DTA degree; CS 145 Java 2 or CS 132 C++ Data Structures strongly recommended	Associate or BAS
Additional General Education	5	5 credits from the lists of Humanities/Fine Arts/English, Social Science, or Natural Science courses approved for the AA-DTA degree	Associate or BAS

See Appendix A, Program Adoption Revision Form. See Appendix B, Course Descriptions.

² Washington State Board for Community and Technical Colleges, Recommendation for Minimum General Education Requirements for Applied Baccalaureate Degrees, http://www.sbctc.edu/college/education/general_ed_requirements_for_applied_ba_degree_may2011.pdf Oct, 2012.

Course Work Needed at Junior and Senior Levels in the BAS Program

In addition to the general education course requirements discussed in the previous section, students will need to complete 50 credits of upper-division core requirements for the BAS degree in Information Technology, as shown in Exhibit 3.

Exhibit 3: Core Requirements for BAS Degree in IT

Core Requirements - 50 Credits	Credits
IT 310 Routing and Switching in the Enterprise	5
IT 335 Network Security Foundations and Policies	5
IT 340 Network Security and Firewalls	5
IT 344 Virtualization and Storage	5
IT 360 Introduction to Forensics and Vulnerability Assessment	5
IT 385 Scripting for Windows and Linux	5
IT 390 Mobile Devices and Wireless Networking in the Enterprise	5
IT 410 Designing and Supporting Computer Networks	5
IT 460 Threat Analysis	5
IT 490 Capstone: Networking and Security	5

These IT courses will provide BAS degree program students with advanced networking and security knowledge and skills that build on the knowledge and skills they acquired from associate's level IT courses. Please see Appendix B for course descriptions.

A student attending full-time, approximately 15 credits per quarter, will be able to complete the BAS degree in Information Technology in 6-8 quarters (two years). A sample full-time student schedule is shown in Exhibit 4.

Exhibit 4: Sample Student Schedule

Fall – Year 1		Winter – Year 1		Spring – Year 1		Summer – Year 1	
Course	Credits	Course	Credits	Course	Credits	Course	Credits
IT 310	5	IT 340	5	IT 360	5	General	
IT 335	5	IT 344	5	Cmst 338	5	education, if	
Bus 340	5	Engl 3xx	5	General ed.	5	needed	
Total Credits	15	Total Credits	15	Total Credits	15	Total Credits	
Fall – Year 2		Winter – Year 2		Spring – Year 2		Summer – Year 2	
Course	Credits	Course	Credits	Course	Credits	Course	Credits
IT 385	5	IT 410	5	IT 490	5	General	
IT 390	5	IT 460	5	General ed.	5	education, if	
Phil 412	5	General ed.	5	General ed.	5	needed	
Total Credits	15	Total Credits	15	Total Credits	15	Total Credits	

The program director and/or program manager will work with each student in the BAS degree in Information Technology program to develop an academic plan, ensuring that students are able to efficiently meet their degree goals.

Collaboration on Degrees and Curricula

Collaboration on Degrees

Since the inception of this degree program, Green River Community College's IT faculty and administrators have been exploring opportunities for collaboration with their counterparts at Bellevue College. Bellevue College is currently developing an Information Systems Technology Bachelor of Applied Science degree program.

During a September, 2012, meeting between several Green River administrators and faculty and a group of administrators and IT faculty at Bellevue College, the participants determined that their college's BAS degrees were different enough and there was enough geographic distance between the two institutions that there would be little or no competition for students.

The Puget Sound area is a large region with several major cities. Bellevue College is located approximately 26 miles north of Green River Community College. This may seem geographically close, but given the long average commute times between the two locations, it is not surprising that the two institutions have different service areas. In addition, graduates from Bellevue and Green River tend to seek employment in different areas. Graduates from Bellevue College, depending on where they reside, tend to seek employment in Bellevue, Kirkland, Redmond, Mercer Island, Issaquah, Sammamish, and Seattle. Graduates from Green River Community College, depending on where they reside, tend to seek employment in Auburn, Kent, Enumclaw, Federal Way, Renton, Tacoma, and Puyallup.

Unmet Employer Demand

Employer demand for skilled IT workers with bachelor's degrees in the greater Puget Sound area is greater than can be met by Green River Community College and Bellevue College combined. As Exhibit 5 shows, the Workforce Development Council estimates that there will be an annual shortage of 3,631 qualified information technology job candidates in King County during 2014–2019.³

Exhibit 5: Projected Annual Shortage of Qualified Information Technology Job Candidates

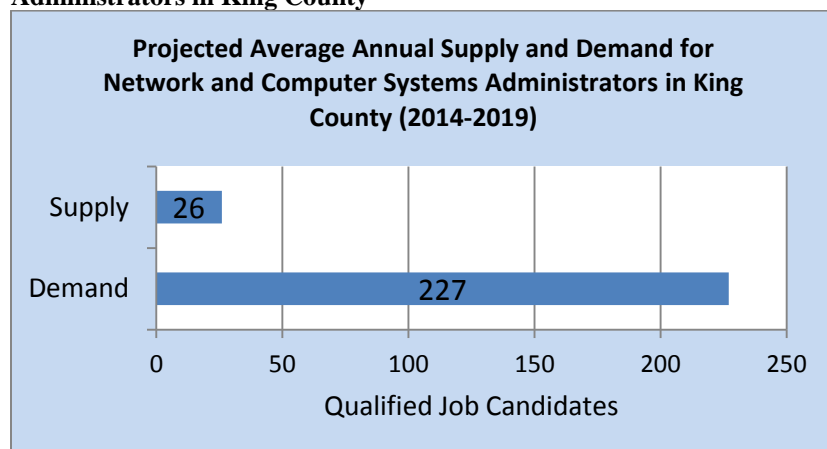
Seattle-King County Talent Pipeline Summary for Information Technology Occupations							
Estimated Total Employment (2014)	Estimated Total Employment (2019)	Avg. Total Openings (2014- 2019)	Compound Avg. Growth Rate (2009- 2019)	Projected Talent Supply			
				Annual Unemployed (Avg. of Apr 2007, Apr 2011)	Annual Newly Trained Candidates (Class of 2010)	Annual Supply (Unemployed + Newly Trained Candidates)	Annual Surplus or (Shortage)
120,873	137,484	5,618	2.6%	469	1,518	1,987	(3,631)

Source: Workforce Development Council of Seattle-King County, Talent Pipeline Study for Information Technology, Business Services, Finance and Insurance

³ Workforce Development Council of Seattle-King County, Talent Pipeline Study for Information Technology, Business Services, Finance and Insurance, Mar 2012, p. ii.

Within the information technology industry, the gap between the projected annual supply and demand of qualified candidates for network and computer systems administrators jobs is even more pronounced. As Exhibit 6 shows, the Workforce Development Council projects an annual supply of only 26 qualified candidates versus an estimated annual demand of 227 network and computer systems administrator jobs in King County during 2014–2019, resulting in a projected annual shortage of 201 qualified candidates.⁴

Exhibit 6: Projected Average Annual Supply and Demand for Network and Computer Systems Administrators in King County



Source: Workforce Development Council of Seattle-King County, Talent Pipeline Study for Information Technology, Business Services, Finance and Insurance

Collaboration on Curricula

Green River Community College is collaborating with Bellevue College on some of the curricula that are similar in their BAS degrees. Green River IT faculty are working with Bellevue College faculty member Thomas Lee, and plan to use the same course numbers and course names for two courses in their BAS programs that have similar content.

⁴ Workforce Development Council of Seattle-King County, Talent Pipeline Study for Information Technology, Business Services, Finance and Insurance, Mar 2012, p. 14.

Criteria 2: Qualified Faculty

Green River Community College projects 16 FTE enrollment the first year the Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security (the BAS degree in Information Technology) program is offered. It projects full enrollment of 48 FTEs by the fourth year. To support this degree program, one full-time equivalent faculty will be dedicated to the program during the first year and a second full-time equivalent faculty will be added to the program during the second year.

Green River Community College faculty teaching junior- and senior-level general education courses in the BAS degree in Information Technology program will teach these courses as part of their normal load, so no additional faculty will be required in departments outside of Information Technology.

During the first year, total full-time equivalent IT faculty assigned to the program will be 1.0, and during the second year total full-time equivalent IT faculty assigned to the program will be 2.0. To ensure continuity and consistency across its curricula, Green River Community College's full-time IT faculty will teach in both the baccalaureate and associate degree programs.

Faculty Credentials

IT faculty teaching in the BAS degree in Information Technology program will typically be required to hold a minimum of a master's degree. Exceptions may be made for highly technical IT courses. In these instances, a combination of baccalaureate degree, industry experience, and industry certifications may be considered adequate, because a master's degree is not typically attained by network and computer systems administrators.

Exhibit 7 shows the faculty profiles of Green River Community full-time and adjunct faculty who will teach in the BAS degree in Information Technology degree program.

Exhibit 7: Faculty Profiles

Faculty Name	Education Credentials	Full-time or Adjunct	Upper-Division Course(s) To Be Taught
Alan Carter	MS in Information Technology: Network Architecture and Design	Full-time IT Faculty, BAS Program Director	BAS degree in IT core requirements courses
Krish Mahadevan	MS in Electrical Engineering	Full-time IT Faculty	BAS degree in IT core requirements courses
Ken Hang	MS in Software Engineering	Full-time IT/Computer Science Faculty	BAS degree in IT core requirements courses
Tim Mason	DBA in Management of Information Systems	Adjunct IT Faculty	BAS degree in IT core requirements courses
Jeff Perlot	MBA	Full-time Business Management Faculty	General education: Project Management
Ty Barnes	MA in Philosophy	Full-time Philosophy Faculty	General education: Professional Ethics
William Scott	MA in Cultural Studies/Rhetoric	Full-time Communication Studies Faculty, Humanities Division Chair	General education: Diversity in the Workplace
Amanda Schaefer	MA in English	Full-time English Faculty	General education: Technical Writing

Professional/Technical Certification

All faculty and administrators who are responsible for the core requirements technical courses in the BAS in Information Technology degree program meet the certification requirements for professional and technical instructors and administrators as stated in the Washington Administrative Code, WAC 131-16-091.

Criteria 3: Student Enrollment

Enrollment Projections

The research conducted by Green River Community College indicates strong demand for this program, which was detailed in the Statement of Need. The projected enrollments in the BAS degree in Information Technology program for the first five years are as shown in Exhibit 8.

Exhibit 8: Projected Enrollments

	Year 1 2013-14	Year 2 2014-15	Year 3 2015-16	Year 4 2016-17	Year 5 2017-18
Headcount	15	40	50	56	60
FTEs	12	32	40	45	48

Service to Place-Bound Working Adults

The BAS degree in Information Technology program will provide place-bound students in the Green River Community College service area access to a nearby, affordable, relevant, and high-quality applied baccalaureate degree.

There are a substantial number of place-bound students in the Green River Community College service area. In the GRCC IT Student Survey, 37% of GRCC student respondents indicated that one of their top three reasons for wanting to earn a bachelor's degree at Green River is that they have a job and/or family here and would like to stay local.⁵

Green River Community College's BAS degree in Information Technology is a superior option for place-bound students in its service area because it offers:

- High-quality technical and academic education, including training using state-of-the-art equipment
- Ease of transferability of previously earned technical associate's degrees, resulting in the shortest possible time to bachelor's degree completion
- Lowest tuition costs
- Convenient location and accessibility by public transportation

In addition, Green River Community College recognizes the many challenges faced by place-bound students. GRCC goes to great lengths to help students succeed and provides numerous resources, including a child care facility; extensive financial aid; links to public transportation; and TRiO Student Support Services for students who are first-generation to college, economically disadvantaged, and/or have a disability. (Please see Criteria 5 for a more complete list of student services.) GRCC also offers classes at convenient times for working students.

⁵ Green River Community College, 2012 GRCC IT Student Survey, Sep 2012.

Articulation and Transition

Green River Community College is committed to working with other educational institutions in the area to ensure the best possible articulation and educational opportunities for students.

Green River Community College IT faculty and administrators have conducted several preliminary meetings with representatives at area technical and community colleges, including Renton Technical College, Highline Community College, and Tacoma Community College, to explore articulation possibilities. The representatives at these two-year institutions seemed genuinely excited to have a pathway for their students graduating in IT and related programs to continue on to earn an applied baccalaureate degree.

A large-scale meeting is planned for April, 2013, to develop specific articulation agreements with technical and community colleges in the area. The goal is to make the students' transition from other technical and community colleges to the BAS degree in Information Technology at Green River as seamless and efficient as possible, resulting in the shortest possible time to bachelor's degree completion.

Criteria 4: Admissions Process Consistent With an Open-Door Institution

Admission to Green River Community College's Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security program will be consistent with an open door institution.

Selection and Admission Process

All persons who meet the entry requirements for the BAS degree in Information Technology program will be admitted into the program. The admissions process will be unselective and non-competitive. The entry requirements for the BAS degree in Information Technology program are detailed in Exhibit 9.

Exhibit 9: Entry Requirements for BAS Degree in Information Technology Program

Entry Requirements	Notes	Credits
Technical associate's degree in IT-related field that includes at least 45 credits of IT courses and at least 20 credits of general education courses	Degree must have been earned at a regionally accredited institution	90
Cumulative GPA of 2.0 from all college courses		
Minimum grade of 2.5 in all IT courses		

Entry requirements for the BAS degree in Information Technology program have been designed to provide access to many and to ensure that prospective applicants are prepared for success once they enter the program.

Efforts to Assure Service to Our Diverse Population

One of Green River Community College's institutional goals is: "Members of our diverse communities will have reasonable access to affordable educational programs and services that meet their needs"⁶ Diversity is a core value that is integral to every program offered at GRCC, including its existing associate's-level IT programs and its future BAS degree in Information Technology program.

While it is anticipated that several students in GRCC's BAS degree in Information Technology program will have earned their AAS-T in IT at Green River Community College, GRCC IT faculty and administrators have been meeting with—and will continue to reach out to—other technical and community colleges in the area, including Renton Technical College, Highline Community College, and Tacoma Community College, to ensure a path for their graduates toward an applied baccalaureate degree.

GRCC IT faculty, working with the IT Advisory Committee and the BAS program manager, will also promote the BAS degree in Information Technology to local businesses to reach currently employed IT workers who need to upgrade their education and skills. Delivery modes and course schedules will take into account the needs of employed students.

⁶ Green River Community College, About GRCC, <http://www.greenriver.edu/about-grcc/welcome-from-president.htm> Oct, 2012.

Criteria 5: Appropriate Student Services Plan

Green River Community College is committed to providing a variety of student-focused support services that will help students in the Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security program achieve success.

Student Services Plan

Green River Community College places the highest priority on the needs and success of all of its students. The college is committed to providing students with open access to comprehensive programs and services in a nurturing environment, empowering students to take initiative and responsibility for their educational and professional development.

Students in the BAS degree in Information Technology program will be supported by the same high-quality student services that all Green River Community College students receive. Many student services will be provided by the BAS program manager. In addition, it is anticipated that the following services will be those most frequently used by students in the BAS degree program:

Bookstore: The Paper Tree bookstore offers students one-stop convenience for textbook and general school supplies needs. Students may purchase textbooks online as well as on campus.

Career and Advising Center: The Career and Advising Center offers comprehensive career and education planning resources for current and prospective students, alumni, and community members.

Child Care Center: The center enables parents to pursue their educations and careers by providing a safe, nurturing environment for their children. Fees are based on a sliding scale depending on the age of the child, gross monthly or annual income, and family size. JOBS, Employment Child Care, and Transitional Child Care funding sources are welcome.

Counseling and Health Services (CHS): CHS seeks to promote physical and psychological health of GRCC students and the campus community to support student success. CHS provides short-term mental health counseling and self-care/wellness education to GRCC students. Workshops and consultation services are offered for staff, faculty, and student organizations. Services are free and confidential.

Disability Support Services (DSS): DSS assists students with physical, learning, sensory, cognitive and/or psychological disabilities by identifying and coordinating reasonable accommodations for equal access to academic programs and activities.

Diversity and Multicultural Affairs: The Office of Diversity and Multicultural Affairs works to promote intellectual discourse, leadership and social justice among students, staff, faculty and our surrounding communities. One example of the services provided is Spanish services to students, including translation, peer navigation of the campus and peer mentoring, and academic and personal advising quarterly support workshops.

Enrollment Services: Enrollment Services provides a variety of support to prospective students, current students, and the campus. It interprets and applies GRCC's policy and procedures for admissions, registration, records and graduation. The BAS program manager will provide many enrollment-related services for students enrolled in the BAS in IT degree program.

Financial Aid: Please see the *Financial Aid Services* section on the next page.

HireWorks Center: HireWorks provides GRCC students, alumni and community members with a wealth of online resources to help them create winning résumés, write effective cover letters, prepare and practice for interviews, and implement successful job search strategies. GRCC students can search CollegeStudents4Hire.com, an online system where employers post jobs and internship/cooperative education opportunities.

Library and Open Computer Labs: The Holman Library serves the students, faculty, and staff of Green River Community College by providing the resources and services necessary to ensure access to information and development of information literacy skills. The library houses approximately 59,000 items. It has a collection of more than 25,000 eBooks. The library provides online access to approximately 15,000 periodicals through subscription databases. The library also subscribes to 200 periodicals in print format. Students have access to more than 150 networked computers in the Information Commons open computer lab of the Holman Library. Students also have access to more than 100 networked computer workstations in an open computer lab in the college's Technology Center.

Online Services: Online services enable students to apply for admissions, plan their schedules, register and pay for classes, run a Degree Audit to view graduation requirements for their program and courses needed to complete the program, and view their unofficial transcript. Students can also access their student e-mail account, eLearning content and resources, and library services.

TRiO: TRiO Student Support Services provides academic support to students who are first-generation to college, economically disadvantaged, and/or have a disability. TRiO does this by actively providing comprehensive academic support services and encouragement to participants. The Department of Education has approved extension of this program to bachelor's degree students who meet the eligibility criteria.

Tutoring and Resource Center: Students have access to free tutoring services. In addition to tutoring, several other student resource centers are available on campus, including the Writing Center, the Public Speaking Center, and the Math Learning Center.

Veterans Services: The Veterans Service office assists veterans in activating and maintaining their educational benefits. GRCC actively reaches out to veterans through its Veterans Coordinating Council, which engages in marketing and outreach to veterans about resources available on campus, honors veterans with symbolic events, and seeks to help veterans with the transition from college to career or workforce.

Women's Programs: Women's Programs provides a wide variety of services and resources. It offers assistance or referrals in many areas, including: starting college or returning to school after time away; child care; financial aid; scholarships; sexual harassment and discrimination; dating and domestic violence; rape and sexual assault; legal issues; public assistance; and academic matters.

Financial Aid Services

The Financial Aid office prepares and disburses federal, state, and institutional aid for all Green River Community College students. To streamline the disbursement process, GRCC, working with HigherOne, provides students with Gator Choice Debit Cards. These cards allow students to choose how to receive their financial aid disbursement.

GRCC recognizes that paying for college is a challenge for most students. Financial aid is available in three forms: gift aid—grants and scholarships; employment—jobs on or off campus; and loans—low interest with deferred repayment. In 2011-2012, the Green River Community College Foundation offered more than 200 scholarships to students at Green River Community College. Once the proposed BAS degree is approved, the GRCC Foundation will reach out to local companies to create BAS program-specific scholarships.

The G.I. Bill, veteran's assistance and other military education benefits can all be applied to the cost of attending Green River Community College.

GRCC offers students a tuition payment plan, called STEP, which enables students to pay their tuition and fees in three manageable payments. STEP is also an option for students who are waiting for their Financial Aid file to be reviewed.

Academic Advising Services

New and continuing BAS program students will receive comprehensive academic advising services from the BAS program manager and, as appropriate, from the faculty program director.

Criteria 6: Appropriate Student Services Plan

Green River Community College is committed to dedicating appropriate administration and staff to the Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security program.

Appropriate Administration and Staff

The BAS degree in Information Technology program will be overseen by a faculty program director. In addition to managing the program, the program director will also teach one class per quarter. Administrative responsibilities of the faculty program director will include:

- Curriculum development, revision, and implementation
- Developing and promoting articulation with both two-year institutions and graduate programs
- Initiating employer outreach
- Marketing the program to new students
- Advising students
- Engaging in ongoing program assessment to maintain the program's currency

The anticipated program effort to be contributed by the program director is two-thirds time for three quarters per year, which is 67%.

In addition to the faculty program director, a full-time exempt BAS program manager will also provide essential program and student services for the BAS degree in Information Technology program. Responsibilities of the program manager will include:

- Providing information about the BAS program to prospective students
- Advising, guiding, enrolling, and registering new BAS program students
- Guiding BAS program students to other available student services to aid in their success
- Advising current BAS program students and registering them in their classes
- Marketing and promoting the BAS program
- Attending IT Department Advisory Committee Meetings
- Building and strengthening relationships with IT managers at local businesses, government agencies, and nonprofit organizations
- Assisting BAS program students with improving job seeking skills
- Linking BAS program students with local employers for internship and job opportunities

A .5 FTE instructional lab tech will also be assigned to the program to maintain hardware that is used in lab classes and to help instructors prepare for complex labs.

Exhibit 10 summarizes the anticipated program effort to be contributed by the faculty program director, the program manager, and the instructional lab tech.

Exhibit 10: Program Administration and Staff FTEs

Name	Title	Overall Program Effort %		
		Year 1	Year 2	Years 3-5
Alan Carter	Program Director	67%	67%	67%
To be determined	Program Manager	100%	100%	100%
To be determined	Instructional Lab Tech	50%	50%	50%
Total Staff FTEs:		2.17	2.17	2.17

Green River Community College does not anticipate any other additional administration or staff needs for the BAS degree in Information Technology program.

Criteria 7: Commitment to Build and Sustain a High-Quality Program

Green River Community College is committed to developing and sustaining the Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security program.

Financial Plan

Green River Community College proposes the following comprehensive financial plan for its BAS degree in Information Technology program.

Funds Used to Support the Program

The BAS degree in Information Technology program will be funded as a self-support program.

Projected enrollments in the BAS degree in Information Technology program for the first five years are shown in Exhibit 11.

Exhibit 11: Projected Enrollments

	Year 1 2013-14	Year 2 2014-15	Year 3 2015-16	Year 4 2016-17	Year 5 2017-18
Headcount	15	40	50	56	60
FTEs	12	32	40	45	48

The projected FTEs have been used to compute the estimated program income, which is shown in Exhibit 12. The fees to be charged to students are set forth in the Washington State Community College FY2012-13 Tuition Schedule for Upper Division Courses in Applied Baccalaureate Degree Programs.⁷ Estimated program income is based on the number of projected FTEs taking 15 credits per quarter at the 2012-13 Resident Applied Baccalaureate Operating Fee of \$224.29 per credit; plus \$124.45 CTC Building Fee per FTE per quarter; plus \$136.55 CTC S&A Fee per FTE per quarter. It is assumed that students will attend three quarters per year. Students will also be charged a \$150 per upper-division IT course coop fee times five classes per year for classroom supplies, equipment, library, and software updates. IT coop fees will be capped at \$300 per student per quarter.

Exhibit 12: Estimated Program Income

	Year 1 2013-14	Year 2 2014-15	Year 3 2015-16	Year 4 2016-17	Year 5 2017-18
Self-Support Fees	\$ 139,513	\$ 372,034	\$ 465,042	\$ 523,172	\$ 558,050

Projected Program Expenses

In order for the BAS degree in Information Technology program to succeed, a substantial financial investment in the program will be required. Green River Community College is committed to making this investment of institutional resources.

⁷ Washington State Board for Community and Technical Colleges, Washington State Community Colleges FY2012-13 Tuition Schedule for Upper Division Courses in Applied Baccalaureate Degree Programs, <http://www.sbctc.edu/college/finance/2012-13UpperDivisionTuitionandFees.pdf> Oct, 2012.

GRCC anticipates program expenses for the first five years of the BAS degree in Information Technology program as detailed in Exhibit 13.

Exhibit 13: Estimated Program Expenses

	Year 1 2013-14	Year 2 2014-15	Year 3 2015-16	Year 4 2016-17	Year 5 2017-18
Full-time Faculty Salaries	\$ 58,785	\$ 117,954	\$ 117,954	\$ 117,954	\$ 117,954
Part-time Faculty Salaries	23,060	23,060	23,060	23,060	23,060
BAS Program Manager Salary	65,000	65,000	65,000	65,000	65,000
Instructional Lab Tech Salary	16,065	16,065	16,065	16,065	16,065
Benefits	58,409	78,931	78,931	78,931	78,931
Curriculum Development Stipends	8,000	6,000	-	-	-
Equipment	20,000	5,000	5,000	5,000	5,000
Goods and Services	5,000	5,000	5,000	5,000	5,000
Library	15,000	10,000	10,000	10,000	10,000
Prof. Development/Conferences/Travel	5,000	5,000	5,000	5,000	5,000
Indirect	33,198	45,152	45,152	45,152	45,152
Total Estimated Program Expenses	\$ 307,517	\$ 377,162	\$ 371,162	\$ 371,162	\$ 371,162

During the first year, one full-time faculty member, who will serve as an instructor and a program director, will be dedicated to the BAS degree in Information Technology program. Thereafter, two full-time faculty members will be dedicated to the program.

The BAS program manager will be 1 FTE. A .5 FTE instructional lab tech will also be assigned to the program.

Sustaining the BAS Over Time

Green River Community College is committed to providing funding for the new BAS degree in Information Technology program until it becomes fully self-supporting, which is anticipated by year three, as shown in Exhibit 14.

Exhibit 14: Estimated Net Program Excess (Deficiency)

	Year 1 2013-14	Year 2 2014-15	Year 3 2015-16	Year 4 2016-17	Year 5 2017-18
Estimated program income (Self-Support Fees from Exhibit 12)	\$ 139,513	\$ 372,034	\$ 465,042	\$ 523,172	\$ 558,050
Estimated total program expenses (from Exhibit 13)	307,517	377,162	371,162	371,162	371,162
Estimated net program excess (deficiency)	\$(168,004)	\$ (5,128)	\$ 93,880	\$ 152,010	\$ 186,888

Facilities, Equipment, and Technology

Green River Community College has developed a Facilities Master Plan to improve its facilities and service to students and the communities it serves. Over the past 10 years, GRCC has constructed three new buildings on its main Auburn campus: the Technology Center, the Marv Nelson Science Learning Center, and most recently, Salish Hall. In the state-of-the-art Technology Center, there are classrooms devoted to IT classes and an additional dedicated server room to support the IT program.

Green River Community College maintains a high level of modern equipment and technology to deliver its existing associate's-level IT programs. For example, the college recently purchased a state-of-the-art server computer with enormous capacity that supports virtualization and storage area networking. This server computer is being used to support a variety of IT classes and is able to simultaneously serve many students from multiple classes.

Green River Community College plans to use its existing facilities, equipment, and technology for the BAS degree in Information Technology program. The college will also purchase new equipment, such as Cisco firewalls, to support the BAS degree in Information Technology program's upper-division networking and security classes. It will also purchase mobile devices such as Android, Apple, and Windows Slate-based tablet computers for the upper-division Mobile Devices in the Enterprise course. Costs for these equipment purchases have been included in the estimated program expenses.

Other anticipated technology resources that have also been included in the estimated program expenses include library subscriptions to periodicals and software licenses.

Criteria 8: Program Specific Accreditation

Green River Community College does not plan to seek specialized program accreditation for the Bachelor of Applied Science (BAS) degree in Information Technology: Network Administration and Security program at this time.

Baccalaureate programs in information technology may be accredited by ABET, a nonprofit, non-governmental organization, through its Computing Accreditation Commission (CAC).⁸ However, currently only 22 bachelor's level information technology programs in the United States are accredited by ABET's CAC.⁹ All of these programs are traditional Bachelor of Science degree programs—none are Bachelor of Applied Science degree programs. In addition, all 22 programs are housed at large universities, none of which are located in Washington State.

⁸ ABET, Accreditation Commissions, <http://www.abet.org/accreditation-commissions/>, Oct 10, 2012.

⁹ ABET, Find Accredited Programs, <http://main.abet.org/aps/Accreditedprogramsearch.aspx>, Oct 10, 2012.

Criteria 9: Pathway Options Beyond Baccalaureate Degree

Green River Community College is committed to identifying and developing pathway options for students that extend beyond earning their Bachelor of Applied Science degree in Information Technology: Network Administration and Security.

Articulation to Graduate Degree Programs

Green River Community College IT faculty members are working with institutions that confer graduate degrees to articulate clear and efficient pathways for BAS graduates who wish to continue their education onto a master's degree program.

In October, 2012, Green River Community College IT faculty conferred with Dr. Robert Friedman, Associate Professor and Director of the University of Washington Tacoma's Institute of Technology, to discuss the possibility of GRCC's BAS graduates entering University of Washington Tacoma's new master's degree, Master in Cybersecurity and Leadership. Dr. Friedman stated that the requirements for admission to this master's degree program are successful completion of a baccalaureate degree from an accredited institution, with at least a 3.0 cumulative GPA.¹⁰ Dr. Friedman stated that he believed Green River's BAS degree in Information Technology would meet those admission requirements, and that he would welcome applications from GRCC BAS degree program graduates.

In November, 2012, Green River Community College IT faculty spoke with Dr. Erik Fretheim, Program Director at the City University of Seattle School of Management, to discuss articulation of the BAS degree in Information Technology to master's programs at City University of Seattle. City University of Seattle offers a Master of Science degree in Computer Systems and a Master of Science degree in Information Security. To gain admission to either of these master's degree programs requires a four-year or approved three-year bachelor's degree or equivalent from an accredited or otherwise recognized institution.¹¹ In addition, the Master of Science degree in Computer Systems and the Malware Reverse Engineering track within the Master of Science degree in Information Security requires students to have taken two programming classes.¹² Students pursuing the BAS degree in Information Technology at Green River have the opportunity to complete these required courses as part of their bachelor's degree coursework. Once the BAS degree in Information Technology is approved, Green River IT faculty plan to pursue a full articulation agreement with City University of Seattle.

Green River Community College IT faculty plan to discuss articulation pathways for graduates of the BAS in Information Technology degree program into the numerous online Master of Science degrees in Information Technology at Western Governors University. GRCC faculty plan to confer with Dr. Leo Irakliotis, the Dean of the College of Information Technology at Western Governors University. Because the primary admission requirement for the Western Governors University online master's degrees in IT is a bachelor's degree from a regionally or Distance Education and Training Council (DETC)-accredited institution, GRCC is confident that it will be able to successfully articulate a pathway for students from the BAS in Information

¹⁰ University of Washington Tacoma. Master in Cybersecurity and Leadership, p. 5.

¹¹ City University of Seattle, 2011-2012 Catalog, http://www.cityu.edu/pdf/CityU_CourseCatalog.pdf, Oct, 2012.

¹² Fretheim, Erik, telephone conversation, Nov 5, 2012.

Technology degree program to enter one or more of the master's degree programs in IT offered by Western Governors University.¹³

¹³ Western Governors University, MS in IT Network Management Degree Details, http://www.wgu.edu/online_it_degrees/network_management_master_degree_details#admission Oct, 2012.

Criteria 10: External Expert Evaluation of Program

Green River Community College selected two experts to review the Bachelor of Applied Science degree in Information Technology: Network Administration and Security program. William Sanderson, Ph.D., is a full-time computer network technology instructor at Renton Technical College. Dwight Hughes is a professor at Clark College and the director of the Clark College Cisco Instructor Training Center. Both experts are technically current in the IT field and both work in higher education in Washington State. This combination of attributes enabled these reviewers to provide high-quality evaluations of the BAS degree program. Summaries of the external reviewer's comments and subsequent modifications to the proposal based on their comments follow.

Dr. Sanderson commented that the core requirements of the program provide a solid foundation for those who will administer networks. He stated that the core courses provide students with the knowledge and skills necessary to enable them build solid network infrastructure and provide the requisite services needed in today's networked environments. Dr. Sanderson felt there was no critical IT content missing from the Core Requirements, and no extraneous content that should be removed. Dr. Sanderson commented that the information technology electives and general electives were good choices for the curriculum and augmented the core requirements well. He did not recommend any changes to the proposed BAS degree.

Dwight Hughes commented that Math 108, Contemporary Math for Information Technology, seems appropriate for the degree, and recommended requiring this course instead of recommending it. Green River IT faculty and the IT advisory committee considered requiring Math 108, but eventually decided to require any Math class numbered 108 or higher, with Math 108 or Math 147, Finite Mathematics: Business and Social Science, recommended. The rationale for this decision is that while math skills are needed by network administrators, and Math 108 is an ideal course, because Math 108 is offered only at Green River Community College and is offered only once a year, it should not be the only acceptable general education math class for the BAS degree. When students transfer into the BAS degree program who have not yet taken a college-level math course, they will be advised to take Math 108 if possible.

Mr. Hughes stated that it seemed likely that students would be well-prepared for network and system administrator jobs after completing the core coursework for this degree, and that all core coursework seemed important to the degree. Regarding content in the core requirements, Mr. Hughes noted that content on creating and maintaining effective IT policies for acceptable use, privacy, and security should be included in this coursework if it is not already. The IT faculty at Green River Community College agree with this recommendation. Course IT 335, Network Security Foundations and Policies, originally contained some of the content recommended by Mr. Hughes. IT 335 has been subsequently modified to include all of the recommended content. Mr. Hughes felt there was no extraneous content that should be removed. Mr. Hughes concluded that the BAS degree is a well thought out degree with a comprehensive base of knowledge that will serve graduates in a wide range of employment.

Please see Appendix C for complete external evaluators' reports.

Conclusion

Green River Community College stands ready to help meet the Puget Sound region's great demand for IT workers with bachelor's degrees by offering a Bachelor of Applied Science degree in Information Technology: Network Administration and Security.

In this new degree program proposal, Green River Community College has discussed and explained:

- The curriculum for the BAS degree in Information Technology, including program learning outcomes, program evaluation criteria and process, course preparation needed by students transferring in, general education components, and course work needed at junior and senior levels in the BAS. Worthy of note is Green River's ongoing collaboration efforts with Bellevue College on degrees and curricula.
- Green River's plan to provide highly credentialed full-time and adjunct faculty for the BAS degree in Information Technology program.
- Enrollment projections for the BAS degree in Information Technology program; how the degree program will provide place-bound working adults in Green River's service area access to a nearby, affordable, relevant, and high-quality applied baccalaureate degree; and ongoing work with several other educational institutions in the area to ensure the best possible articulation and educational opportunities for students.
- The admission process for the program, which is consistent with an open-door institution. Entry requirements for the BAS degree in Information Technology program have been designed to provide access to many and to ensure that prospective applicants are prepared for success once they enter the program.
- The myriad of Green River's student-focused support services that will help students in the BAS degree in Information Technology program achieve success.
- The administrative and staff FTEs allocated to the BAS degree in Information Technology program, including a faculty program director, an exempt BAS program manager, and a half-time lab tech.
- A comprehensive, realistic financial plan for the first five years of the BAS degree in Information Technology program. Green River Community College is committed to providing funding for this new program until it becomes fully self-supporting, which is anticipated by year three.
- Rationale for not seeking specialized program accreditation for the BAS degree in Information Technology program.
- Extensive, ongoing collaboration with institutions in the area that confer graduate degrees to articulate clear and efficient pathways for BAS graduates who wish to continue their education onto a master's degree program.
- A summary of the two external expert evaluations of the program. Both experts were favorably impressed with the BAS degree in Information Technology program and expressed their support of the program's content.

Appendix A: Program Adoption Revision Form

Information Technology: Network Administration and Security Bachelor of Applied Science (BAS) Degree 180 Credits

This Bachelor of Applied Science degree program is designed to prepare students for employment in a variety of information technology (IT) positions, such as network and computer systems administrators, information security analysts, or computer support specialists.

This degree provides students with the opportunity to acquire a deep technical foundation and competency in network administration and security. Students will learn how to plan, implement, administer, and support appropriate information technologies and systems to help an organization achieve its goals and objectives. Information technologies and systems may include: servers, client computers, mobile devices, operating systems, network applications, local area networks, wide area networks, wireless networks, network segments, intranets, and so on. Students will learn how to analyze the security vulnerabilities of an organization's IT resources, and how to plan and implement security measures and practices for those resources.

Students must attain a cumulative GPA of at least 2.0 on all college-level courses.

Entry Requirements: To enter this program, students must have a technical associate's degree in an IT-related field from a regionally accredited institution that includes at least 45 credits of IT courses and at least 20 credits of general education courses. A cumulative GPA of 2.0 from all college courses is required. Students must have earned a minimum grade of 2.5 in all IT courses.

The following IT courses, or their equivalents, are strongly recommended before entering this program because they contain foundational knowledge upon which the upper-division IT courses build:

- IT 102 Programming I for Information Professionals
- IT 114 PC Repair Technician
- IT 131 Networking Infrastructure Fundamentals
- IT 160 Microsoft Windows (Current Version) Server Implementation
- IT 190 Linux Administration
- IT 210 Managing Cisco Routers and Switches
- IT 240 Manage MS Windows (Current Version) Network Environment

For more information about this degree please contact:

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Ken Hang, ext. 4310
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General Education Requirements - 60 Credits	Credits
Communication Skills (15 credits)	
Engl& 101 English Composition I	5
Engl 335 Advanced Technical Writing	5
Cmst& 210 Interpersonal Communication or Cmst& 220 Public Speaking or Cmst& 230 Small Group Communication	5
Quantitative/Symbolic Reasoning Skills (5 credits)	
Any 5-credit Math course numbered 108 or higher; Math 108 or Math 147 recommended	5
Humanities (10 credits)	
Phil 412 Professional Ethics	5
5 credits of upper-division Humanities courses; Cmst 338 Diversity in the Workplace strongly recommended	5
Social Sciences (10 Credits)	
Bus 340 Project Management	5
5 credits from the list of Social Sciences courses approved for the AA-DTA degree	5
Natural Sciences (15 credits)	
CS& 141 Computer Science I Java, or CS& 131 Computer Science I C++ or Any other generally transferable programming course	5
5 credits lab science from Natural Science List A for the AA-DTA degree	5
5 credits from Natural Science List A or List B for the AA-DTA degree. CS 145 Java 2 or CS 132 C++ Data Structures strongly recommended	5
Additional General Education (5 credits)	
5 credits from the lists of Humanities/Fine Arts/English, Social Science, or Natural Science courses approved for the AA-DTA degree	5
Core Requirements - 50 Credits	
IT 310 Routing and Switching in the Enterprise	5
IT 335 Network Security Foundations and Policies	5
IT 340 Network Security and Firewalls	5
IT 344 Virtualization and Storage	5
IT 360 Introduction to Forensics and Vulnerability Assessment	5
IT 385 Scripting for Windows and Linux	5
IT 390 Mobile Devices and Wireless Networking in the Enterprise	5
IT 410 Designing and Supporting Computer Networks	5
IT 460 Threat Analysis	5
IT 490 Capstone: Networking and Security	5
Information Technology Electives (45 credits)	
Information Technology or Computer Science courses numbered 100 or higher	45
Electives (25 credits)	
25 credits from any courses numbered 100 or higher	25
Total	180

Appendix B: Upper-Division Course Descriptions

Upper-Division IT Courses

IT 310 Routing and Switching in the Enterprise — 5 credits

Familiarizes students with the equipment applications and protocols installed in enterprise networks, with a focus on switched networks, IP telephony requirements, and security. It also introduces advanced routing protocols such as Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF) Protocol. Hands-on exercises include configuration, installation, and troubleshooting. *Prerequisite: Admission into the BAS in IT program and instructor's permission. Recommended: IT 210 or equivalent.*

IT 335 Network Security Foundations and Policies — 5 credits

Introduces information and business security, security laws, and IT policies. Covers a variety of security topics that are integral to today's information security professionals, including access control, cryptography, and security architecture and design. Students will learn how to write privacy, acceptable use, and security policies. *Prerequisite: Admission into the BAS in IT program and instructor's permission.*

IT 340 Network Security and Firewalls — 5 credits

Equips students with the knowledge and skills needed to prepare for entry-level network security specialist careers. Various types of hands-on assignments provide practical experience. Includes procedural and troubleshooting labs, skills integration challenges, and model building. *Prerequisite: Admission into the BAS in IT program, and IT 310, and instructor's permission.*

IT 344 Virtualization and Storage — 5 credits

Introduces and applies the concepts of server, desktop, and application virtualization, cloud computing, and storage area networks (SANs). *Prerequisite: Admission into the BAS in IT program and instructor's permission. Recommended: IT 160 or equivalent.*

IT 360 Introduction to Forensics and Vulnerability Assessment — 5 credits

In this introductory course, students learn how to set up a forensics lab, how to acquire the necessary tools, how to conduct the investigation, and prepare for the subsequent digital analysis. In addition, students learn the basic skills of identifying network vulnerabilities, and some of the tools that are used to perform vulnerability analysis. *Prerequisite: Admission into the BAS in IT program and instructor's permission.*

IT 385 Scripting for Windows and Linux — 5 credits

Introduces both the PowerShell scripting language for Windows and the BASH shell used as an interface to the Linux operating system kernel. This course builds on the student's existing programming skills, providing students with opportunities to write, test, and execute complex administrative scripts for the Windows and Linux operating systems. *Prerequisite: Admission into the BAS in IT program and instructor's permission. Recommended: IT 102, IT 160, and IT 190 or equivalents.*

IT 390 Mobile Devices and Wireless Networking in the Enterprise — 5 credits

Introduces the use of wireless networking and mobile devices in an enterprise environment, including connectivity, management, configuration, and security of both corporate and personal devices. *Prerequisite: Admission into the BAS in IT program and instructor's permission.*

IT 410 Designing and Supporting Computer Networks — 5 credits

Using a variety of case studies and role-playing exercises, students gain experience gathering customer requirements designing basic networks, establishing proof-of-concept, performing project management tasks, and planning for equipment lifecycle services. *Prerequisite: Admission into the BAS in IT program, and IT 310, and instructor's permission.*

IT 460 Threat Analysis — 5 credits

Provides the student with the ethical hacking know-how to conduct a threat assessment, secure a network across popular platforms and operating systems, understand various types of threats, implement intrusion detection systems, and establish auditing and monitoring systems for vulnerabilities and threats without affecting performance. *Prerequisite: Admission into the BAS in IT program, and IT 360, and IT 385, and instructor's permission.*

IT 490 Capstone: Networking and Security — 5 credits

Students work in teams to plan, implement, secure, and document a complete network solution for a real or fictitious company. Students will implement a proof-of-concept network and present their design and outcomes to an audience. *Prerequisite: Admission into the BAS in IT program, and Bus 340, and Engl 335, and completion of at least 40 credits of upper-division IT courses, and instructor's permission.*

Upper-Division General Education Courses

BUS 340 Project Management — 5 credits

Examines the theories and best practices for completing projects on time, on budget, and to specification. Students will learn to apply knowledge and skills to effectively initiate, plan, execute, and complete projects. Software-based project management tools will also be discussed. Course aligns with current PMBOK Guide. *Prerequisite: Admission into a bachelor's program and instructor's permission.*

CMST 338 Diversity in the Workplace — 5 credits

This course will explore and analyze the issues, challenges and opportunities related to changing demographics and increasing diversity in the workplace. Through intercultural communication theories, concepts, and principles, the course will examine ways in which challenges of effective communication in a diverse workplace can be identified and work to develop tools and skills to improve communication competency in these situations. *Prerequisite: Admission into a bachelor's program, and ENGL& 101, and instructor's permission.*

ENGL 335 Advanced Technical Writing — 5 credits

Building on the skills developed in ENGL& 101, this course will prepare students to communicate effectively in a professional environment. Students will become familiar with the processes, forms, and styles of technical writing as they create business correspondence, instructions, proposals, and client-based research projects. Emphasis will be placed on purpose and audience, as well as clarity, concision, and document design. *Prerequisite: Admission into a bachelor's program, and ENGL& 101, and instructor's permission.*

PHIL 412 Professional Ethics — 5 credits

This course provides an advanced approach to ethical issues across the professions, concentrating on issues in information technology. Topics covered include intellectual property rights and piracy, truth-telling vs. well-meaning deception; privacy and confidentiality; conflicts of interest and loyalty; self-regulation; and whistle-blowing. *Prerequisite: Admission into a bachelor's program, and ENGL& 101, and instructor's permission.*

Appendix C: External Expert Program Evaluations

External Evaluator: William Sanderson, Ph.D.

Evaluator Biography

William Sanderson has worked as a computer network technology instructor at Renton Technical College since 2000. He holds a Ph.D. in Business Information Systems and Education from Utah State University; an MS in Business Information Systems from Utah State University; and a BS in Business Administration from Oregon State University. Dr. Sanderson's relevant industry experience includes the following positions: IT Manager at Oregon State University; Systems Administrator at National Intramural and Recreational Sports Association (NIRSA); and Technology Supervisor at the Corvallis School District.

Evaluator's Report (Reviewer's Comments Are in Italics)

The Quantitative/Symbolic Reasoning Skills requirement for this degree is: Any 5-credit Math course for which Math 097 or higher is a prerequisite; Math 108 Contemporary Math for Information Technology strongly recommended. Does this requirement seem appropriate to you, or would you favor a different math requirement?

These mathematics requirements are adequate for the focus of the core of the curriculum.

Please examine the 10 Core Requirements courses for this degree and their course descriptions. Do you think that successful completion of these courses, after completing an associate's degree in an IT-related field, will adequately prepare students to work as network and computer systems administrators or information security analysts? Please explain.

Review of the Core Requirements reveals a very solid foundation for those who will be required to administer networks. The core course provide the essential knowledge and skill base on which to build solid network infrastructure and requisites services needed in today's networked environments. Courses are written at level that begins with basics and fundamentals of networking and progresses to more advanced levels of knowledge and skills necessary to be an effective network administrator.

Do you feel there is any critical IT content missing from the Core Requirements? If so, what specific IT content should be added, and what less important Core Requirements content could be replaced? Please explain.

There are no critical Core Requirements missing.

Is there any Core Requirements content that you think is unimportant and/or should be removed? Please explain.

No, the Core requirements are appropriate for the designed purpose of the degree.

Please provide any other comments about the strengths or weaknesses of this degree, or any suggestions for improving this degree:

The ITE and Electives are good choices for the curriculum and will augment the technical nature of the Core Requirements. Students will have the latitude to pursue studies outside the IT realm such as additional business-oriented courses where they may acquire better understanding of issues and challenges the organizations face.

External Evaluator: Dwight Hughes

Evaluator Biography

Dwight Hughes has been a professor at Clark College in Vancouver, Washington since 2003. He is the department head of Network Technology at Clark College, and the director of the Clark College Cisco Instructor Training Center. Mr. Hughes holds a BS in Information Management Systems, an MS in Adult Education and eLearning, and numerous industry certifications, including: Microsoft Certified Professional, CompTIA A+, CompTIA Network+, CompTIA Security+, CompTIA Server+, Cisco CCNA, Cisco CCNP, Cisco CCNA Security, Cisco Firewall Specialist, and Cisco VPN Specialist. In addition to working in higher education, Mr. Hughes has worked as a content management expert technical consultant for Cisco Systems, a network architect for Studio 9, and a director of corporate sales for Northlink LLC.

Evaluator's Report (Reviewer's Comments Are in Italics)

The Quantitative/Symbolic Reasoning Skills requirement for this degree is: Any 5-credit Math course for which Math 097 or higher is a prerequisite; Math 108 Contemporary Math for Information Technology strongly recommended. Does this requirement seem appropriate to you, or would you favor a different math requirement?

MATH108 seems appropriate. Why is it merely recommended and not required? It seems to me that if it is "strongly recommended" it should just as easily be required. Logic and reasoning skills and specific computational skills are necessary for graduates, controlling the computational coursework would better insure those outcomes are met. I recommend making MATH108 a degree requirement.

Please examine the 10 Core Requirements courses for this degree and their course descriptions. Do you think that successful completion of these courses, after completing an associate's degree in an IT-related field, will adequately prepare students to work as network and computer systems administrators or information security analysts? Please explain.

Yes. It seems likely that students would be well prepared for network and system administrator career jobs (and other associated job titles) after completing the core coursework for this proposed BAS degree.

Do you feel there is any critical IT content missing from the Core Requirements? If so, what specific IT content should be added, and what less important Core Requirements content could be replaced? Please explain.

Many of these topics may be included within the core coursework? From the limited information I have to work with I can't tell, so am listing this in case it is not addressed already:

Managing IT Policy and Industry/Government Regulation. Creating and maintaining effective IT policies for acceptable use, privacy and security. Understanding and meeting industry regulations for data integrity (HIPPA, FERPA). Understanding legal process around: chain of evidence, due process, legal notice to users. Risk management, disaster response planning.

Is there any Core Requirements content that you think is unimportant and/or should be removed? Please explain.

All core coursework seems important to the degree.

Please provide any other comments about the strengths or weaknesses of this degree, or any suggestions for improving this degree:

Strengths: A well thought out degree with a comprehensive base of knowledge that will serve graduates in a wide range of employment. I really like how this degree plays well to the already existing AAST at Green River allowing students a good pathway to continuing their education. The focus of this degree is squarely where it needs to be. Network Administration and Management are considered a strong growth profession through 2020. Network security is already permeating all aspects of IT and its prominent inclusion and focus in the proposed BAS is great to see.

Weaknesses: None cited.

Summary: Overall a solid degree that will have both student interest (especially with the current AAST as a feeder) and marketability. The capstone course is an excellent idea.