Application for Bachelor of Applied Science Degree

Healthcare Technology and Management

Bellevue College

Forms C/D Program Proposal

9/12/2011

TABLE OF CONTENTS

FORM C

COVER SHEET
NEW DEGREE PROGRAM PROPOSAL

Program Information

Program Name: Healthcare Information Technology

Institution Name: Bellevue College

Degree: BAS Healthcare Technology and Management Level: Bachelor
(e.g. B.S. Chemistry) *(e.g. Bachelor)*
Type: Healthcare Information Technology CIP Code: 51.070
(e.g. Science)

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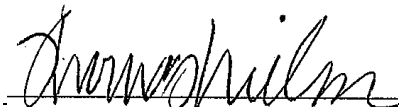


Chief Academic Officer

September 12, 2011
Date

Proposal criteria

Please respond to all 12 areas listed in proposal criteria Form D

INTRODUCTION

Bellevue College proposes to develop a bachelor of applied science degree in Healthcare Technology and Management with a concentration in Healthcare Information Technology to meet the substantial demand for appropriately qualified workers in this field. Graduates will work as providers to, or members of, a healthcare team that manages and performs the customization, implementation, integration and maintenance of healthcare information systems, data and components. The 2+2 degree will articulate with Washington community and technical college information technology-related (IT) and information and records management associate degrees.

The following proposal addresses how the new degree supports the college's mission and goals; addresses the goals of the state's master plan for education; offers detailed information on the new curriculum; provides details on program faculty, administration, space, budget, student recruitment, admission and retention; and offers feedback from outside reviewers. The need and demand for this new degree were documented in the Statement of Need (Appendix 1: Statement of Need), submitted to the State Board for Community and Technical Colleges and the Higher Education Coordinating Board on May 25, 2011.

RELATIONSHIP TO INSTITUTIONAL ROLE, MISSION, AND PROGRAM PRIORITIES

Bellevue College requires that every new program and degree aligns with its mission, which states,

> Bellevue College is a student-centered, comprehensive and innovative college, committed to teaching excellence that advances the life-long educational development of its students while strengthening the economic, social and cultural life of its diverse community. The college promotes student success by providing high-quality, flexible, accessible educational programs and services; advancing pluralism, inclusion and global awareness; and acting as a catalyst and collaborator for a vibrant region. (The BC Mission was approved by the BC Board of Trustees, June 11, 2008.)

The bachelor of applied science degree in healthcare information technology is a high quality educational program that meets the expressed needs of both community college graduates seeking access to a bachelor's degree and the healthcare IT (HIT) workforce community.

The program advances the life-long educational development of its students by offering an educational path that will provide new career and career advancement opportunities to associate degree graduates in IT and health records/health management programs. This degree will offer students an opportunity to accomplish their educational goals and obtain necessary skills for career advancement in a field that is among the fastest growing in the nation.

The BAS is a direct outcome of community need for programs that strengthen the economic life of our community. BC began developing the bachelor of applied science degree in response to a documented substantial demand for employees who can help the region's healthcare organizations and vendors implement the HITECH Act (Health Information Technology for

Economic and Clinical Health Act) to adopt electronic medical records (EMR) in every hospital, clinic and ambulatory practice to advance the use of information systems in healthcare. Employers asked for a bachelor's degree program that would develop graduates who can apply their skills in information technology along with an understanding of the healthcare milieu. The program directly responds to the well documented skills gap and employment gap in healthcare IT, a key growth industry.

The new program also supports the college's mission of providing high-quality, flexible educational programs and services that are academically, geographically, and financially accessible. Most courses will be offered online; the few classroom-based courses will be offered in the evenings with electronic access for distant students, making it accessible to working professionals and students throughout the state, regardless of where they live and work.

BC reaffirms its purpose, defined by WAC 28B.50.020 in conjunction with WAC 28B.50.810, to provide high-quality applied baccalaureate programs that address the needs of its community and the workforce and views the applied bachelor program as a logical extension of serving those defined needs.

The applied baccalaureate degree will strengthen the college's mission by creating a new pathway that better serves the needs identified by the college's constituents. The comprehensiveness of this program will expand service to students and is a significant addition to the healthcare industry and the patients they serve.

The college's Statement of Need demonstrates that the BAS in Healthcare Information Technology is one of the college's highest priorities for academic growth and is a natural extension of the work already underway in the healthcare and IT arenas. BC's reputation for delivering high quality information technology programs and as a Center for Excellence in Information Technology, combined with federal grants from the Office of the National Coordinator for Health Information Technology, National Science Foundation and Department of Labor for the development, implementation and dissemination of healthcare IT curricula makes the program an excellent fit. The bachelor's degree program furthers the curriculum offered by the college in its Health Informatics certificate program to update skills for those who want to enter the HIT field. This new applied bachelor's degree is an appropriate fit for BC that builds on the college's expertise and provides an outstanding educational choice in a rapidly growing, high demand field.

SUPPORT OF THE STATEWIDE STRATEGIC PLANS

The BAS in Healthcare Information Technology supports the goals outlined in the State Board for Community and Technical Colleges (SBCTC) Mission Study and the Higher Education Coordinating Board (HECB) Strategic Master Plan for Higher Education. Both plans identify strategies to increase the number of baccalaureate educated adults as a means to strengthen the economy and serve workforce needs for more highly educated "locally grown" workers that will

- Strengthen state and local economies by meeting the demands for a well-educated and skilled workforce.
- Achieve increased educational attainment for all residents across the state.
- Use technology, collaboration and innovation to meet the demands of the economy and improve student success.

Meet the Demand for a Skilled Workforce

Both the healthcare and information technology sectors are driving economic forces in the state and are in great need of appropriately trained employees to meet their needs. In a March 2012 article in Seattle Business, Steve Reno reported that "the healthcare sector remains the leader in job growth in Washington State, adding about 3,800 jobs in 2010. Technology is a flagship industry for the local economy; computer systems design and related services added 3,100 jobs last year."[1]

The Bureau of Labor Statistics reports that of the 2.8 million job openings projected by 2018 for Healthcare Professional and Technical Occupations, over 60 percent will require a minimum of a bachelor's degree. For computer software applications specialists, database analysts and other similar occupations that fall into the titles of positions included by this degree, at least 56 percent require a bachelor's degree and 86 percent require a master's degree[2].

It is clear that the state needs to produce many more baccalaureate graduates to meet the demand for workers in these categories. As a 2+2 degree linked with professional-technical associate degree programs in Information Technology (IT) and health records, BC's new program increases educational capacity for graduates to fill essential health care IT jobs.

For most students with professional-technical associate degrees who are interested in a bachelor's degree, there are only two university options in this state (the CWU applied bachelor's degree and Western Governor's University) where they may transfer as juniors. This lack of an educational pathway stops most students from continuing on to a bachelor's degree. The new applied bachelor's degree augments the knowledge students have gained through their associate degrees to provide a solid foundation in general education and advanced skills targeted to the specific needs of the healthcare information technology workforce.

The new applied bachelor's degree program will increase the number of overall bachelor's degree holders in the state who fill critical jobs by serving professional and technical associate degree holders who are otherwise limited in pursuing a bachelor's degree as well as provide opportunities to place-bound students. It is an important pathway to help meet the rising demand for appropriately qualified workers in these sectors. With projections to be at full

[1] Hhttp://www.seattlebusinessmag.com/article/jobs-picture-brightensH
[2] Hhttp://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/FullReport.pdf

capacity in four years, the proposed BAS will produce 28 graduates each year to help meet projected high growth and high vacancy rates.

Increase Educational Attainment

The traditions of open access, small classes and the support services BC provides are critical in helping students persist to reach their educational objectives. By helping them gain the skills they need to do well in college, students are better positioned to be successful in their pursuit of a baccalaureate degree. The college's focus on strategies that promote student success has had very positive results for its first two applied bachelor's programs; persistence rates are high, averaging 88 percent, and completion rates are similar.

In addition to small classes and one-on-one attention once students are in the program, the college is working with the community and technical college feeder programs in information technology and information and records management to provide a seamless articulation into the new degree program. By ensuring that students fulfill their general education requirements while in their associate degree programs, they will be ready to enter the new degree program as juniors. In addition, the college is working closely with the University of Washington to ensure that graduates of this new degree who are interested in continuing on to obtain an advanced degree in health informatics and health information management, biomedical and health informatics or health services administration will be well prepared to enter master's degree programs.

Use Technology, Collaboration and Innovation to Improve Student Success

Understanding and serving the needs of place-bound students were important considerations in developing this new degree to help students reach their educational goals. Students who are working, have childcare needs or cannot afford to attend a university far away from their home need an educational option that permits them to attend classes in a way that fits their schedules. Most of the courses in the proposed BAS will be offered online. For those that occur on campus, other distance technology methods will be employed to serve the educational needs of place-bound students. For several years, the college has had excellent results using synchronous, real-time technology to teach students who are unable to come to campus for instruction. Students connect to the classroom via their computers and video camera from their home or office. This permits students to participate in the classroom experience even though they may live too far from campus, have childcare issues, job obligations or other impediments. Students, no matter where they reside, now have access to earn a bachelor's degree in their field at a reasonable cost without having to relocate. Prior learning assessment will also enable entering students with demonstrable workforce skills to receive credit for previous training and experience, thereby shortening the time to graduation.

BC has also had success in recruiting diverse populations into the IT programs that will feed into the bachelor program; students of color enrolled in the BC Information Systems and

Programming IT feeder programs average about 37 percent each year for the past three years, which will help to assure a diverse student body in the bachelor's program.

The college also provides many services that promote diversity and student success. The Disability Resource Center provides advocacy and classroom accommodations, including specialized materials, technology and equipment for over 700 students with disabilities, annually. The Multi-cultural Services (MCS) program provides support services to promote academic success for American students of African, Asian, Hispanic and Native descent. These programs have shown measurable success. Through special MCS recruitment programs and changing Eastside demographics, total enrollment of students of color has gone from 11 percent in 1990 to 32.6 percent in 2009.

MCS also employs many strategies to engage and retain students of color, including a program called the Comprehensive Success Initiative (CSI), which will increase the number of students of color who will be prepared to enter the baccalaureate in Healthcare Information Technology degree program once they have finished their associate's degree. The program focuses on African-American and Latino students who place into developmental English or math. CSI places students in a learning cohort in which they receive educational, social and cultural support; attend developmental courses as a cohort to receive special intervention strategies; learn college survival skills; and begin to set career goals. Although still in its infancy, the program has shown good results and will be continued and expanded. The benefit of such a program for the bachelor's degree is that will introduce the field of healthcare IT to students who otherwise might not have considered it and helps them earn the confidence to know that they can succeed in this demanding arena.

CURRICULUM DEMONSTRATES BACCALAUREATE LEVEL RIGOR

The BAS in Healthcare Information Technology utilizes computer technology to implement and maintain healthcare data systems, as well as to analyze and utilize that data to facilitate efficient and effective healthcare delivery and payer organizations. The curriculum for the Healthcare Information Technology degree has been carefully designed to help students gain the skills and abilities that will make them effective members of the healthcare IT workforce. The essential elements necessary for success in the field were vetted by healthcare IT professionals. Subject matter experts developed courses, progression and content, which was evaluated by nationally recognized faculty who teach in the field. The BC Curriculum Advisory Committee and Vice President of Instruction have approved the program.

The curriculum for the new degree focuses on the unique environment of healthcare, its specific language, laws and systems, in juxtaposition with IT systems infrastructure, analysis, implementation and operations. The following outcomes clearly describe the skills and abilities that the student will gain from the degree. Chart 1 provides examples of job titles that program

graduates will be prepared to fill as well as demonstrating how uniquely qualified graduates will be for these positions compared to others in related professions.

CHART 1: HEALTHCARE IT JOB TITLES AND ESSENTIAL SKILLS

Sample Job Titles	Professionals coming from other related fields would need additional skills in order to perform these jobs successfully:
▪ Healthcare Systems Analyst ▪ Healthcare Integration Analyst ▪ Healthcare Interface Integration Analyst ▪ Healthcare Systems Manager ▪ Healthcare Systems Administrator ▪ Healthcare Systems Implementer ▪ Healthcare Systems Implementation Manager ▪ Healthcare Application Support Specialist ▪ Healthcare Information Process Analyst ▪ Clinician/Practitioner HealthIT Consultant ▪ Healthcare Implementation Support Specialist ▪ Practice Workflow and Information Management Redesign Specialist	▪ IT professionals would need to gain a deep context of the healthcare environment and systems. ▪ Clinician professionals would need a thorough understanding of IT systems analysis, implementation and administration. ▪ Health information management specialists would need additional knowledge and skills in information infrastructure and architecture, and computer information systems.

DEGREE OUTCOMES

Students graduating with a BAS in Healthcare Technology and Management will possess the following skills and abilities:

- Effectively communicate, employ critical thinking skills, and work collaboratively with all constituents in healthcare environments.
- Comply with all healthcare laws and regulations relating to information security, privacy and protected health information (PHI) as regulated by HIPAA, and meet institutional accreditation and certification requirements.
- Apply effective project management processes and tools in the context of complex IT projects and teams, and in the midst of changing and conflicting demands.
- Serve as an effective team member in the implementation and maintenance of enterprise healthcare systems which support the ability of physicians, nurses, other healthcare professionals, health insurance organizations or the professional health community to comply with the Health Information Technology for Economic and Clinical Health (HITECH) Act, Patient Protection and Affordable Care Act (PPACA) and emerging acts.
- Gather, identify and document requirements for technology solutions, working closely with clinical and non-clinical stakeholders and considering privacy, regulatory, efficiency and security issues.
- Evaluate potential information technology products and systems, and contribute to the selection of solutions based upon organizational requirements, systems functionality, lifecycle cost, ease of use and maintenance, information security, privacy, regulatory requirements and vendor support.

- Contribute to process improvement through the redesign of healthcare workflow and information management practices to better leverage the capabilities of new information technology systems.
- Contribute to systems integration, perform information technology systems customization to meet the needs of the healthcare organization, and create and maintain appropriate documentation.
- Design, coordinate, implement and document testing activities for information technology solutions.
- Serve as a liaison between technical and clinical functions to support users, including training and documenting the use of new technologies.
- Apply knowledge of current and emerging data standards and principles of interoperability.
- Manage, analyze and present healthcare data for effective decision-making in support of a wide array of healthcare activities such as meaningful use initiatives, patient safety studies, and revenue cycle management.
- Effectively assess the applicability and benefits of new and emerging technologies to the healthcare environment, such as telemedicine/telehealth, social media, wireless networks and security, mobile devices and cloud computing.

COURSE PREPARATION

Students may enter the bachelor's degree program with an associate degree from either of two pathways – IT-related fields (programming, database, networking, etc.) or health records/health management programs. Because general education preparation varies from college to college, the courses required for entry into the degree are listed as part of the prerequisites (chart 2). The college will create articulations with feeder colleges to ensure that students can meet the threshold as they complete their associate degrees.

CHART 2: ENTRANCE PREREQUISITES

NOTE: Students must have basic computer skills including basic PC file management, Internet navigation and use of office products (including word processing, spreadsheet and presentation software tools).	
Prerequisites	**Credits**
Associate degree in IT-related or health records/health management field	**65**
Science: must include one lab course and at least one life sciences course	**10**
English Composition I	**5**
College Level Math: Statistics	**5**
Technical Writing/Research Writing	**5**
Social Science	**5**
Humanities (either humanities or social science course must be a communications course)	**5**
Total	**90**

To be successful in the field of Healthcare IT one must understand the fields of both healthcare and information technology. Graduates from healthcare associate degrees enter the BAS program with a strong healthcare background but will need to acquire some IT skills and knowledge before starting on the core coursework. Similarly, graduates from IT associate degrees come into the BAS with a strong IT background but will need to acquire the prerequisite healthcare knowledge before starting on the core courses. In order to accommodate the disparity in students' backgrounds, entering BAS students are divided into two sections for the first 13-15 credits that will teach students either IT fundamentals or essential elements of the healthcare industry (chart 3). Course descriptions are shown in Appendix 2.

CHART 3: HEALTHCARE OR INFORMATION TECHNOLOGY FUNDAMENTALS

Pathway for Students with Healthcare-Related Backgrounds		
Course No.	**Course Title**	**Credits**
IT 103	Networking Basics	**5**
PROG 110	Introduction to Programming	**5**
BTS 168	Business Data Management Tools	**5**
TOTAL		**15**
Pathway for Students with IT Backgrounds (IT grads must have 5 credits each in networking, programming and database equivalent to above courses)		
Course No.	**Course Title**	**Credits**
HPRO 120	Medical Terminology	**3**
HCMT 301	US Healthcare Policies and Delivery Systems	**5**
HCMT 302	Healthcare Safety, Quality and Legal Environment	**5**
TOTAL		**13**

The core curriculum (chart 4) includes courses in general education within the context of the healthcare environment (Economics of Healthcare, Organizational Behavior for Healthcare) and specific skills that graduates will need to be successful in the workplace (Systems Integration and Interoperability for Healthcare, and Health IT Analytics and Quality). The curriculum was developed based on input from several sources: essential healthcare IT skills identified by working professionals in the field; curriculum from other health IT university programs; subject matter experts and recommendations from nationally recognized healthcare IT experts.

CHART 4: CORE PROGRAM

CORE – all students		
Course No.	**Course Title**	**Credits**
BUS 230 or BTS 280	Project Management	5
HCMT 310	Intro to Health IT Environment	5
ECON 315	Economics of Healthcare (Social Science General Education [Gened])	5
HCMT 320	Health IT Data Standards	5
RAIM 325	Organizational Theory and Behavior in Healthcare (Social Science Gened)	5
HCMT 335	Healthcare Finance	5
PHIL/HCMT 340	Ethical Issues in Health IT (Humanities Gened)	5
HCMT 410	Healthcare Systems Analysis and Process Optimization	5
HCMT 420	HIT Systems Integration and Interoperability	5
HCMT 430	HIT Systems Implementation	5
HCMT 440	HIT Systems Operation, Administration and Reporting	5
HCMT 450	Healthcare Analytics and Quality (Quantitative Gened)	5
HCMT 460	Healthcare and Information Technology Change Management	5
HCMT 475	Field Studies	5
HCMT 485	Capstone (Gened)	5
HCMT 495,496,497	HIT Special Topics (Public Health; Public Policies; Telemedicine; Mobile Devices in Healthcare, or others)	5
Core Program TOTAL		**80**
Total credits for degree (prerequisites, pathway preparation, core program)		**183-185**

GENERAL EDUCATION

The degree contains 60 credits of general education, 35 credits of which are satisfied at the associate-degree level as confirmed by entrance prerequisites (see Chart 2). These credits encompass ten credits of written communication skills, including English 101; five credits of quantitative skills; five credits of humanities; five credits of social science, including a communications course; and ten credits of natural science, with a requirement for at least one course in the life sciences and one lab course. The remaining 25 credits are satisfied at the upper-division level by applied courses in economics, organizational theory, ethics, analytics, and the capstone course which enables the student to apply the critical thinking, problem solving, communications and analytical skills learned throughout the program.

Certificate in Healthcare Informatics

The college currently offers a lower division, eighteen-credit certificate in healthcare informatics, which will become part of the bachelor's degree program. The certificate will provide an alternative for those who already have a bachelor's degree and substantive IT experience but need an introduction to the healthcare IT milieu in order to be hired by a healthcare provider. The four courses in the certificate are HPRO 120, HCMT 310, HCMT 320, and HCMT 460; the three 300-level courses are currently offered as lower division courses which will be modified in content and rigor to meet requirements for upper-division courses.

Program Assessment

Assessment for the proposed BAS program will build upon the comprehensive student achievement and program assessment processes already in place at BC. Program review occurs every five years and provides an exhaustive assessment of every aspect of the program. It includes strategic planning; student headcount, full-time equivalent student (FTES) and schedule trend analysis; student faculty ratios, analysis of full-time and part-time faculty ratios and other staffing indicators; student performance evaluation, including course, certificate and degree completions; an evaluation of curriculum coherency and currency, including an evaluation by the workforce advisory committee; program viability, including employment placement data and market analysis; and analysis of student demographics, program costs and revenues, retention and advising, articulation agreements, course delivery methods, and other pertinent data.

Until the first five-year program review occurs, to evaluate the program's effectiveness staff will collect and analyze data annually on student satisfaction, preparedness, and retention; faculty assessment of student preparedness; and effectiveness of courses to meet the program outcomes. Chart 5 summarizes the assessment mechanisms that will be measured to make appropriate changes to the degree program.

Industry will engage in recommendation and review of the curriculum and program elements through the advisory committee. The committee will include healthcare IT managers and staff from Puget Sound hospitals, clinics, and healthcare IT software vendors; a healthcare human resources representative; a nurse or medical clinician; a member from the regional chapter of the Healthcare Information Management Systems Society; and a representative from one of the community or technical college feeder programs. Their role will be to advise the program as to recommended curriculum improvements; help keep the program abreast of changes in the field; assist in student recruitment and placement; and make recommendations for other changes that will keep the program current.

Experts from industry and higher education will be engaged in the curriculum development and implementation phase to ensure rigor of the content and learning methodologies. External experts with great experience both in the field and in higher education for healthcare IT have assessed the overall curriculum and the courses to ensure rigor, consistency and quality.

CHART 5: PROGRAM ASSESSMENT

Effectiveness of curriculum/ program — continuously refines the curriculum and program design, keeping the program current, including discipline-based, general education and electives using the same rubric format that BC uses to measure general education outcomes in the associate degree program	
Course evaluations by students	• Effectiveness of the curriculum and teaching methods for each course • Effectiveness of the program in skills and knowledge progression
Field studies evaluation by students and by employers	• Adequate balance of knowledge and skills, theory and practice • Effectiveness of program in meeting students' expectations • Effectiveness of program in meeting employers' expectations
Student survey and/or focus group mid-point through the program and at graduation	• Effectiveness of the program in skills and knowledge progression • Adequate balance of knowledge and skills, theory and practice • Effectiveness of program in meeting students' expectations • Effectiveness of institutional and program resources and support • Preparedness of faculty • Preparedness of students upon entering individual courses
Program statistics	• Student retention • Student course success • Student progression through program • Correlation of student success and training/ job experience prior to entry into the program
Survey of BAS program faculty	• Preparedness of students upon entering individual courses • Preparedness of students upon entering the program
Graduate follow-up and industry feedback — assesses effectiveness of program in meeting career goals and employer expectations and use findings to refine curriculum and teaching methodologies	
Survey of program graduates nine months after graduation	• Effect of program completion on career • Effectiveness of program in meeting job expectations • Wage and career progression
Survey of employers of program graduates nine months after graduation	• Effectiveness of program in meeting job expectations • Observed increased skills and performance • Perceived strengths and weaknesses of current program
Oversight by a BAS Industry Advisory Committee – provides ongoing support and review of the program	
BAS Program Advisory Committee	• Completeness and relevance of the curriculum to industry needs • Trends in industry, technologies, practices and job markets
Survey of faculty satisfaction — assesses adequacy of program support and faculty training	
Survey of BAS program faculty	• Effectiveness of institutional and program resources and support • Preparedness to teach the curriculum
Impact on two-year programs — assesses impact of BAS program on existing degrees	
Survey and/or focus group of students enrolled in two-year degree programs	• Impact of BAS program on the quality of the 2-year degrees • Impact on faculty availability and support • Impact on overall institution and program resources and support • Impact on culture
Survey of faculty teaching the two-year associate degree programs	• Impact of BAS program on the quality of the 2-year degree • Impact on faculty availability and support • Impact on overall institution and program resources and support • Impact on culture

QUALIFIED FACULTY

The fulltime equivalent student (FTES) enrollment for year one is projected to be 30 FTES and will reach capacity by 2016 at 61 FTES. To support this number of students, the program will need one fulltime equivalent faculty (FTEF) in year one, increasing to two FTEF in year two, and to three FTEF beginning in year three and beyond.

Faculty teaching in the degree program will be required to hold a minimum of a master's degree, possess college level teaching experience, and for those teaching the HCMT courses, have work experience in health Informatics, healthcare information technology or healthcare administration. Faculty will be expected to teach courses in their area of expertise; assess student learning outcomes; maintain current knowledge and skills in their area of assignment; demonstrate a strong commitment to student success and foster a positive, caring learning environment where diversity and pluralism are valued.

BC faculty member Blaine Reeder, will serve as program chair and teach in the new degree. He holds a PhD in health informatics from the UW School of Medicine and has extensive experience working in the field of clinical informatics. He is currently doing curriculum development and instruction for the college through a grant from the Office of the National Coordinator for Health IT (U.S. Dept. of Health and Human Services). Chart 6 provides a profile of the anticipated faculty identified to support the program.

CHART 6: FACULTY PROFILE

Faculty Name	Credentials	Status	Course
Blaine Reeder	PhD, Health Informatics	FT	HCMT
TBA	MA or MS in Health Administration, Health Information Technology or related field	PT	HCMT
Jason Benchimol	ABD, Philosophy	PT	PHIL/HCMT 340
Jim Sapienza	MBA, MHA	PT	RAIM 460
Miranda Kato	MA, Development and Leadership; Doctoral studies in Organizational Development	PT	RAIM 325
Erin Vernon	PHD, Economics	PT	ECON315
Glenna Kelso	MS, Public Health Nutrition	PT	HPRO 120
Debbie Griggs	MBA	FT	BTS 168
Michael Littlefield	MSME	FT	IT 103

STUDENT ENROLLMENT

Based on the enrollment patterns of BC's two existing applied baccalaureate programs, it is expected that about a third of the students will attend full-time in order to get quickly into the workforce. Of those attending part-time, half will carry ten credits per quarter and finish in three years. Students seeking the certificate in Healthcare Informatics will attend part-time and will not pursue a degree, as most will already possess a bachelor's degree. The program will experience moderate growth in headcount.

CHART 7: ENROLLMENT PROJECTIONS

Year	1	2	3	4	5
Headcount	47	71	80	90	90
FTES	30	51	59	61	61
BAS Graduates	0	13	25	28	28

The program has been designed specifically to serve place-bound, working adults and will be taught primarily online. As previously mentioned, synchronous connection through a computer and video camera will be available in the campus-based courses for those who cannot commute to the college. An online curriculum specialist will assist students who have difficulty with the online milieu or with synchronous technology.

The college has been working with community and technical college IT programs in the Puget Sound region and the state's three health records management programs to ensure that their graduates will be ready to enter the bachelor's degree program once they have received their associate's degrees. The feeder associate degree curricula that were reviewed meet most of the general education requirements for entry into the bachelor's degree program. Some colleges have indicated that they plan to modify their associate degree curriculum to include more general education to make articulation with the new degree easier. Through wide distribution of the entrance prerequisites to all feeder programs in the state, students will have ample opportunity to take prerequisite courses that are not required as part of their associate degree. BC staff plan to meet this fall with the feeder colleges to develop individualized articulation agreements. The college is also working with Eastern Washington University on a plan to allow cross-listing of courses or shared course development between their new Health Information Technology and Management bachelor's degree and this new degree program. This would permit more flexibility for students enrolled in either degree program.

Students are already aware of the new degree program as a result of a student survey conducted at community and technical colleges in Puget Sound in March 2011and have been contacting the college to find out when they can enroll. Recruitment will be conducted at the community and technical colleges, through the college's website, and at hospitals, clinics and other healthcare providers. Healthcare Information and Management Systems Society (HIMSS) members have

expressed a desire for rapid deployment of the program so that they can fill vacant positions in their organizations.

SELECTIVE ADMISSIONS PROCESS CONSISTENT WITH AN OPEN DOOR INSTITUTION

Although the new degree will employ a selective admissions process, it will be consonant with the college's open door philosophy. Applicants who meet the entrance prerequisites (see Chart 2) and can demonstrate a minimum overall grade point average of 2.0 will be admitted to the degree program on a space available, first come, first served basis.

Bellevue College's IT programs that will be feeders for the new degree program already serve a diverse population; students of color account for an average of 37 percent of participants. The program will also focus on encouraging students of color participating in the Comprehensive Success Initiative to consider a career path in Healthcare IT.

The bachelor's program will employ many of the practices implemented by the college's Office of Equity and Pluralism to attract a diverse student population to the college. These include:

- Recruit people of color who are BC program graduates and professionals to serve as role models, serve on the advisory committee and make presentations to currently enrolled associate degree students to encourage them to pursue the bachelor's degree;
- Engage in targeted marketing and through mailed marketing materials to encourage persons of color and from underserved population to apply to the program;
- Coordinate program diversity efforts with the institution's office of Multicultural Student Services;
- Apply best practices for identifying potential hires from underrepresented groups;
- Work with industry and professional organizations to develop additional strategies to attract a diverse student body from workers in their employment ranks who do not have a bachelor's degree; and,
- Regularly assess recruitment/retention efforts with regard to underrepresented populations, and continually monitor and strive to improve the program's culture of appreciation and respect towards diversity.

Once the degree is approved, the Bellevue College Foundation will begin discussions with regional hospitals and healthcare organizations to create healthcare IT program scholarships to assist those that could otherwise not attend. Students will also be able to apply for existing BC scholarships that serve financially disadvantaged students and students of color.

APPROPRIATE STUDENT SERVICES PLAN

As a community college, one of BC's strengths is the variety of student-focused support services that help students achieve success in accomplishing their goals. Students in the BAS program

will be supported by the same high-quality student services that all students receive. The following services will be those most frequently used by baccalaureate students.

Student Advising, Retention and Success: The model that has worked well for the college's baccalaureate programs and will be used for the new degree is an imbedded program manager who works one-on-one with students to facilitate their success. The manager assists students with their educational planning and progress towards degree completion while supporting the program chair and faculty who conduct academic advising. Each student will have an individualized schedule and advising plan. Students can use internet advising services and degree planning worksheets to access their information. The online degree planning tool helps faculty advisors and students evaluate, monitor and track the student's progress toward completion of a degree.

Student retention and student success are the college's top priorities. As mentioned the two existing bachelor's degrees have an average retention rate of 88 percent. Students appreciate and respond to having a specific person they can go to for assistance. Program faculty will work with students who need additional assistance to develop personalized student success strategies.

Academic Success Center (ASC): The ASC assists students in successfully completing their college courses through one-on-one and group tutoring, workshops, classes and open labs in reading, writing and math.

Computer Labs: BC provides a wide variety of specialized computer and learning labs to enhance learning and student success as well as a 200-computer open lab.

Credentials Evaluation: Full-time credentials evaluators have extensive experience evaluating transcripts from accredited institutions. They will evaluate incoming students for compliance with admission requirements and student records for all degree requirements when students near graduation. Program faculty will evaluate all transfer or prior learning requests for core courses.

Disability Resource Center (DRC): The DRC provides assessment and accommodations for students with documented disabilities. They provide special course materials; coordinate testing for disabled students and assist faculty to provide appropriate accommodation.

Financial Aid: The financial aid office prepares and disburses federal, state, and institutional aid for all BC students. Students can monitor the process of their application online.

Job Placement: Providing help with career advancement and job placement will be priorities for the new BAS. An effective advisory board comprised of regional healthcare employers will help to identify jobs. Through the required field studies course, students will develop potential job contacts. When the program chair networks with hospitals and clinics to market the new degree program, it will create awareness of the program and opportunities for information on new employment. The Center for Career Connections has been successful in helping students find jobs by providing career planning and job placement assistance and conducting career fairs.

Multicultural Student Services (MCS): MCS offers advising and mentoring, tutoring, emergency financial assistance, and support for the college's multicultural student population.

Online Services: All students have online access to the book store, records and grades, registration, advising, faculty communication, and library services. The distance education office provides extensive technology assistance and student services for all online students.

TRiO: Students who are first-generation college, low-income, or have a documented disability receive academic and personal support. Services include tutoring, study skills, advocacy, and laptop computer lending. The Department of Education has approved extension of this program to all bachelor's degree students who fit eligibility criteria.

Veteran's Administration Programs: The Veterans Affairs Office assists all eligible veterans, reservists, dependents, and VA chapter 31 students.

APPROPRIATE STAFF AND ADMINISTRATION

At Bellevue College, program chair responsibilities are filled by full-time faculty members (see Chart 8). In addition to managing the program, baccalaureate program chairs also teach one course per quarter, providing valuable insight into many aspects of the program. Administrative responsibilities for the program chair will include curriculum development, revision, and implementation; advising of students; marketing the program to new students; conducting articulation with both two-year and graduate programs; initiating employer outreach; participating in college governance; and engaging in ongoing program assessment to maintain the program's currency.

The advising section in the student services plan states that academic advising will be handled locally from within the program by the administrative assistant/student services coordinator. That position will also give one-on-one assistance to students by providing information about the program to prospective applicants; monitoring student progress; guiding them on other available student services to aid in their success; and assisting students with advising or course issues. The position will also provide administrative support for the program, its chair and the faculty.

The half-time online curriculum specialist will assist both faculty and students with any issues pertaining to educational technology as well as providing assistance to faculty who are not familiar with the online instructional milieu.

CHART 8: ADMINISTRATION AND STAFF

Name	Title	Responsibilities	Program Effort %
Blaine Reeder	Program Chair	Manage program, conduct program assessment, hire faculty, oversee budget, market program, oversee admissions, implement recommendations of advisory committee (66% administration; 33% instruction)	66%
To be hired	Administrative Assistant/ Student Services Coordinator	Provides administrative support to chair, faculty and students Provides student services assistance to applicants and students to promote student success	100%
To be hired	Online Curriculum Specialist	Assists faculty with putting courses online; assists faculty and students with synchronous distance technology; fixes online problems; maintains website	50%
		Total Staff FTE	**2.16**

COMMITMENT TO BUILD AND SUSTAIN A HIGH QUALITY PROGRAM

The BAS in Healthcare Information Technology will be funded as a self-support program. The tuition will be set at the same level as other state-funded applied bachelor's degree programs.

Most of the courses will be taught online, so no new facilities or classrooms will be required for the program. The only specialized instructional resources will be for library subscriptions to health and technology-related periodicals and healthcare IT software licenses. Funding has been included in the budget to cover the annual expenses associated with the subscriptions.

Bellevue College is fully committed to the long-term success of the new degree and will set aside funds to launch the program to fund it until it collects tuition and is self-sufficient. The new degree is a logical outgrowth of the college's programs in healthcare and IT and is an excellent fit with the college's Center for Excellence in Information Technology and federal grants from the Office of the National Coordinator for Health Information Technology, National Science Foundation and Department of Labor for implementation of healthcare IT curricula development and dissemination.

CHART 9: PROGRAM EXPENSES

Program Expenses	Year 1	Year 2	Year 3	Year 4 (full enrollment)	Year 5
Administrative Salaries (1 FTE)[1]	53,227	54,823	56,469	58,163	59,907
Full-time Faculty Salaries (1 FTE)[2]	58,524	60,418	62,310	64,204	64,204
Part-time Faculty Salaries[3]	29,008	58,016	87,024	87,024	87,024
Curriculum Develop. Stipends [4]	24,000	24,000	2,000	2,000	2,000
On-line Specialist (.5 FTE)[5]	20,000	20,600	21,218	21,854	22,510
Benefits	67,646	78,205	84,374	85,092	85,480
Goods and Services[6]	5,000	5,000	15,000	15,000	15,000
Travel[7]	6,000	6,000	6,000	6,000	6,000
Equipment[8]	10,000	10000	10000	10000	10000
Library Acquisitions[9]	5,000	5,000	5,000	5,000	5,000
Other[10]	5,000	5,000	8,000	8,000	8,000
Professional Development[11]	2,000	3,000	4,000	4,000	4,000
Indirect (8%)[12]	25,114	42,693	49,390	51,064	51,064
Total Costs	285,405	372,755	410,785	417,401	420,189

1. Administrative Salary: 50 percent program coordination; 50 percent student services (3% COLA)
2. FT faculty Salary: Assumes annual increment. Teaching load is 1/3; program chair is 2/3
3. Part-time faculty aligns with planned curriculum and student enrollments. Year 1 - 1 FTEF; Year 2 - 2 FTEF; Year 3 and beyond - 3 FTEF
4. Other Salaries: curriculum development stipends
5. Other salaries: 50 percent classified online specialist to assist faculty (3% COLA)
6. Goods and Services: printing of marketing materials, program admissions information, student handbook, and course materials
7. Travel: Attend annual HIMSS meeting
8. Equipment: computers for program faculty/staff; hardware and software for classes and distance learning; patient health IT software simulator purchase in year 4
9. Library: annual subscriptions to online resources
10. Other: software licenses, stipends for prior learning assessment
11. Professional development for faculty
12. Self support programs charged eight percent of revenue to fund other support services

CHART 10: PROGRAM REVENUE

Program Revenue	Year 1 30 FTE	Year 2 51 FTE	Year 3 59 FTE	Year 4 61 FTE	Full enrollment 610 FTE
Self Support Tuition and Fees[13]	313,920	533,664	617,376	638,304	638,304

13. The program will be self support. Tuition will be the same as state support tuition and assumes a 6% increase from current tuition for year one only.

PROGRAM SPECIFIC ACCREDITATION

Currently, no accreditation programs exist that are an appropriate fit for the BAS in healthcare IT. As an emerging field spanning both healthcare and information systems, existing accreditation programs do not address the essential degree requirements that are necessary for a graduate to be successful. Therefore, the college will not seek program specific accreditation.

The American Health Information Management Association (AHIMA) is for professionals who work in healthcare management, records coding, electronic health records and clinical data. The Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) is the accrediting body for health informatics and information management educational programs. They accredit AHIMA-focused programs, and their standards for baccalaureate programs are based on the use of health records and health information rather than the information systems that manage those health records and healthcare data in general. The preponderance of the BAS courses will be in systems integration, operation, implementation and analytics – topics that are not part of the CAHIIM accreditation standards.

Management Information Systems (MIS) accreditation programs, such as the Association to Advance Collegiate Schools of Business (AACSB) and the Accreditation Board for Engineering and Technology (ABET) provide standards having to do with management, engineering and information technology. Their standards do not consider the unique focus that the healthcare environment adds to the IT courses, which is an essential component of the degree.

The Healthcare Information and Management Systems Society (HIMSS) is dedicated to the "optimal use of information technology (IT) and management systems for the betterment of healthcare". Their focus is on the framework used to manage health information and the exchange of health information in a digital format. Graduates of the new applied baccalaureate program will work in the HIMSS arena but this organization does not offer program accreditation. Bellevue College is currently collaborating with HIMSS under funding from the National Science Foundation to create an entry-level health IT certification, and the preparatory curriculum, for implementation in colleges. The Certified Specialist in Health Information Management and Systems credential will be administered by HIMSS. HIMSS will encourage colleges to embed this certification in their degree programs. At BC, we have committed to pilot the curriculum within the new degree program.

PATHWAY OPTIONS BEYOND THE BACCALAUREATE DEGREE

Graduates who are interested in obtaining a graduate degree will be prepared for several different master's degree options. BC is working with the University of Washington master's programs in health informatics and health information management, biomedical and health informatics and health services administration. All three programs have expressed interest in collaborating with the college to articulate the new degree and create direct pathways for program graduates. In addition, nurses who complete the degree may want to pursue a master's in nursing informatics;

people who have an affinity for the business end of healthcare would be ready for an MSIS (Master of Science in Information Systems) or an MBA-IS (Master of Business Administration in Information Systems). For those most interested in technology, a master's in computer science, engineering, or information systems might also be options. At this stage, however, the college has only contacted the three degree programs most closely aligned with the bachelor's degree requirements.

EXTERNAL EXPERT EVALUATION OF PROGRAM

Bellevue College has selected two experts for the external review, Elliot Sloane, Ph.D., who is a professor of Health Systems Engineering at Drexel University School of Biomedical Engineering and Health Systems and Executive Director and Founder of the Center for Healthcare Information Research and Policy; and Margaret Schulte, DBA, FACHE, CPHIMS, who is an educator, author, and consultant in health policy and administration. They each have significant knowledge and educational experience in the field of healthcare IT. Their biographies are contained in Appendix 3. Their complete comments follow along with the modifications made to the proposal to address their comments.

School of Biomedical Engingeering,
Science & Health Systems

September 9, 2011

Elise Erickson
Special Assistant to the President
Bellevue College
3000 Landerholm Circle SE, Room B-205
Bellevue WA 98007-6484

Dear Ms. Erickson,

I am writing to document the feedback that I gave you last week regarding my review your August 18, 2011 draft of the proposed Bachelor in Applied Science in Health Technology and Management degree (BASHTM). Before I get into the details, let me commend you and your team at Bellevue for creating this important new degree program. We are desperately short of properly educated undergraduate students for the health technology field, and your program should help us begin to remedy that problem. I know that your Appendix 1 documents the education and work environment that we are dealing with, and I can only say that in my opinion, the problem is even more challenging than your analysis. Healthcare is shifting to the "information age" nearly two decades after most other major industries. We not only have to obtain the efficiency and quality benefits that other industries have achieved from technology, but we have to protect patients safety at the same time as public and private expectations – and needs – are rising. Each graduate of your program will join this exciting field during a decade of re-invention and renewal, and believe me, we will be grateful to have them join us!

Early in your document (page 7 in my draft) you present a long list of Degree Outcomes. I would recommend that you add outcomes that reflect the requirements that emerged from the 2009 American Recovery and Reinvestment Act. A huge part of that Act is called the Healthcare Information Technology for Economic and Clinical Health (HITECH). The HITECH sections mandate national adoption of EHR and PHR technologies by physicians, hospitals, and insurers between 2009 and 2016, it mandates national sharing of personal health data to improve healthcare quality, cost, and safety by 2017, and it mandates the ability for citizens to access their own complete PHR information as these systems come online. The HITECH act acknowledges tremendous current and future employee and education shortfalls to meet these goals, an outcome of Bellevue's proposed BASHTM is providing employee candidates prepared for the challenges HITECH mandates.

In the Degree Outcomes, I recommended that you also note that graduates of your proposed BASHTM program will have the education needed to help physicians, hospitals, and insurers comply with the 2010 Patient Protection and Affordable Care Act (PPACA). Regardless of how far the intended "health reform" elements of PPACA progress, nobody expects any alternate national or state funding methods can undo the probability that procedure-based healthcare reimbursement is coming to an end. In its place, Accountable Care Organizations (ACOs), Independent Living and Home programs, and other technology-dependent solutions that are mandated in PPACA will need to become the new norm, especially for the huge number of US citizens with chronic diseases. It appears to me that our BASHTM graduates should be very well prepared to support these important new methods of healthcare delivery and funding.

As I reviewed all of the BASHTM Degree Outcomes, it became clear to me that the BASHTM graduates will be able to fill important career roles that are not covered in existing degree programs. For example, those educated in "Health Records Management" degree programs focus either on accurate and efficient coding of clinical services or the eventual analysis of clinical data and records. Such graduates rarely have much understanding of the underlying technologies themselves, nor are they aware of – or have access to – the many important operational processes, data, and records that accompany all healthcare services. Similarly, those educated in various clinical disciplines learn – at best – how to be a better-informed user of technology, but there is simply no time in their degree programs for them to learn how the technology itself works, how it is used, or how to manage healthcare technology projects. I recommend that a brief table be prepared to illustrate how this BASHTM degree fills so many important gaps in computer, information systems, clinical, health records management, and other programs.

I looked carefully at the required courses for the two categories of incoming students for this program. When I considered the clinically-oriented students who may have little substantial information technology background, it seemed important to ensure they were trained in the basics of programming and algorithms, which are fundamental to all information system applications. Although computer telecommunications and networks are also ubiquitous in healthcare applications, I think that a programming and algorithms course is more important. If a graduate does not understand the fundamental logic, notations, and approaches for getting computers to perform properly and efficiently, truly understanding how networking systems function, and understanding how to configure or troubleshoot network systems will be very difficult or impossible.

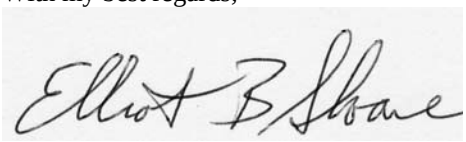
Another opportunity for improvement in the proposed BASHTM draft that I noticed was the title/description for the HCMT 460 course should really include a reference to information technology (e.g., "Healthcare Change Management" should be changed to "Healthcare and Information Technology Change Management.") The students should not only learn about the importance of the human, leadership, and management aspects of business process change management in healthcare, but they also need to learn how to ensure that information system changes are accomplished on-time and on-budget. As explained in most undergraduate System Development Life Cycle presentations, it is not uncommon to cover how 80% of information system projects fail. They are too often late, incomplete, inadequate to the business needs, and/or grossly over budget. Students need to understand the serious human, management, and technical risks that come with technology changes in healthcare settings, and they need to have awareness, education, and tools to help them succeed. I think these concepts are covered in the course description, but the title seems incomplete unless IT added.
My final comments related to academic accreditation alternatives. I already commented briefly on health records management degrees, but this BASHTM degree has aspects that might look familiar to other disciplines. I have many other experiences to draw from because my degrees have been earned in the Engineering and Information Systems areas, and most of my academic career has been spent in Business schools. Each of the disciplines has well-honed accreditation programs, and each has specializations related to the information technology and management topics in this proposed BASHTM program. In my experience, existing accreditation programs do not come close to fitting this new BASHTM degree, because they are all much more narrowly focused. e.g., accreditation for Computer Engineering degrees typically emphasize algorithms, the business schools' Management Information Systems programs often stay much closer to Accounting Information System roots, and the Information Sciences and Systems courses tend to emphasize the organization, management, and analysis of data, records, and information. In addition, in the past decade I have also spent a substantial amount of time with nursing school leaders. They have made it clear that as much as they wish they could add more information technology courses for their students, their accreditation baseline leaves very little space for such enhancements.

I hope that the above observations are useful to completing your BASHTM proposal. I truly believe that you have developed a unique and valuable educational framework and degree that fills an important niche for 21st Century healthcare. As far as I can tell, you have assembled an excellent team to develop and deliver this program, and I cannot see any missing or inadequate resource gaps in your plan or budgets.

Overall, I think the strengths of the proposal are clearly that a novel and thorough academic program has been developed for students with differing core backgrounds. Clinically-oriented students are provided a pathway to help them succeed by filling in important technology gaps. Students coming from an industry or military background who are well-provisioned with technology skills will get the essential introduction to the unique clinical and healthcare delivery field they need in order to understand the world they will be working in. Both groups of students will then receive a richly orchestrated mixture of classes to prepare them for new careers in a healthcare and healthcare technology field that is undergoing so much critical change.

Thank you for offering me this opportunity to review your new degree program. I wish you – and your student graduates – the very best of luck in this new academic program. Please feel free to call on me to provide additional support, insight, information, or experience as necessary.

With my best regards,



Elliot B. Sloane, PhD, CCE, FHIMSS
Director of Health Systems Engineering

ELLIOT SLOANE EVALUATION OF PROPOSAL

In response to Dr. Sloane's evaluation of the proposal, the following changes were made.

- An outcome was revised to include support for compliance mechanisms to assist healthcare providers and other healthcare professionals in fulfilling requirements for the Health Information Technology for Economic and Clinical Health (HITECH) Act, Patient Protection and Affordable Care Act (PPACA) and other emerging acts.
- A chart was added near the beginning of the curriculum section to more clearly articulate how the education that healthcare IT students receive differs in content from other related positions.
- The curriculum originally required a basic programming course for health records and management track students in addition to the networking and database courses. After an early consultation with the curriculum consultants, the programming course was deleted so that an essential course could be added to the core and still keep the curriculum within 180 credits. The programming course has been reinstated as an important element in providing essential building blocks to success in the program. The total number of credits for graduation is now between 183-185 depending on which track the student is in.
- Although the course description for HCMT 460 included a focus on healthcare IT change management, the words information technology were added to the title to strengthen make the intent of the course more clear.
- The section on program specific accreditation was rewritten to clearly state that there are no existing accreditation programs fit this field.
- The section identifying post baccalaureate educational pathways was rewritten to include other master's degree options that program graduates will be qualified for.

MARGARET SCHULTE EVALUATION OF PROPOSAL

August 31, 2011

To: Elise Erickson
Special Assistant to the President
Bellevue College

From: Margaret Schulte, DBA, FACHE, CPHIMS
External Reviewer

RE: Bachelor of Applied Science in Healthcare Information Technology and Management

First of all, thank you for the opportunity to review your proposal for your new Bachelor of Applied Science in Healthcare Information Technology and Management program. It's an honor to be a part of your work!

Your proposal looks excellent! It is comprehensive and reflects thoughtful and thorough work in the development of this new program. Below each of your questions is addressed, and a couple of minor suggestions are offered.

1. Has the college thought through and addressed all of the appropriate issues that will allow us to launch and maintain the new degree?

The college has done a particularly excellent job in thinking through and addressing all the appropriate issues in preparation for launching and maintaining the new degree. The way in which the college has identified and described its market is detailed and comprehensive. The plans that the college has for recruiting students into the program are impressive.

Given the substantive and growing demand for graduates who are prepared to work in one of the many areas of health information technology, the outlook for this program is very good. Given all the resources that the proposal describes as available to the program, it will be sustainable and make a major contribution to the healthcare field for years to come.

2. Are there things we haven't addressed that should be considered

   I believe you have comprehensively addressed the project in your proposal.

3. Do we demonstrate overall preparedness to launch the degree, i.e. faculty, student services, budget, curriculum, etc.?

   Yes, all key elements appear to be in place. Internal resources as described should be adequate, and the proposal describes a strategy of using an external Advisory Committee to regularly assess the program and to ensure that it remains current in all aspects in this quickly growing and evolving health IT field. Since health IT is such a dynamic field, and if any of those who review this proposal are new to health IT, it might be of value to add a paragraph in the proposal to describe further the planned composition and role of the Advisory Committee.

4. Does the curriculum design adequately prepare graduates to work in the field?

   The curriculum design is quite good. It addresses each of the health IT competencies which the students will need to succeed. The course descriptions offer detail of the content of each course. The only content area that might be more specific is change management. HCMT 460 notes that change management is included in the content, and offers some of the key tools that impact and address change management – workflow and process change, human factors, usability and so on. However, the curriculum might also address the barriers to adoption that arise with phenomenon such as clinician resistance. This is an element that graduates will need to understand as they work in the health IT environment.

5. Are there curriculum elements we haven't addressed that should be included, or some that are in the curriculum that are unnecessary?

   There are no curriculum elements that are unnecessary to this program and its graduates. The proposal describes a learning environment in which the students will be enveloped in a support system that will help them through any difficulties they may experience with online learning.

6. Provide an overall evaluation of the strengths and weaknesses of the proposal.

   Overall, the program has the opportunity to be a strong contributor to the demanding growth in the health IT field. The program leadership is committed and enthusiastic; the well-balanced combination of academic and practitioner preparation and experience will be a strength of the program, and the resources that are available for the program will meet the varying needs of students. The program leadership is reaching out to community colleges to develop program-specific affiliations and awareness-building, and this will create the "partnerships" that will strengthen the program in all its aspects.

Again, thank you for allowing me to participate in this important initiative!

In response to Ms. Shulte's comments, the proposal was changed in the following ways:

- In the program assessment section, the paragraph identifying the role of the advisory committee was expanded to include its composition and general responsibilities.
- The course content and outcomes for HCMT 460 will include the barriers for adoption and how to overcome clinician resistance.

APPENDICES

APPENDIX 1: STATEMENT OF NEED FOR BACHELOR OF APPLIED SCIENCE DEGREE IN HEALTHCARE TECHNOLOGY AND MANAGEMENT

TABLE OF CONTENTS

FORM A

STATEMENT OF NEED

Program Information

Program Name: Healthcare Information Technology

Institution Name: Bellevue College

Degree: BAS, Healthcare Technology and Management Level: Bachelor
(e.g. B.S. Chemistry) *(e.g. Bachelor)*

Type: Healthcare Information Technology CIP Code: 51.0706
(e.g. Science)

Proposed Start Date: Fall Quarter 2012

Projected Enrollment (FTE) in Year One: 25 FTE At Full Enrollment by Year: 60 FTE by 2016
(# FTE) *(# FTE)*

Funding Source: State FTE _____ Self Support ____X_____ Other

Mode of Delivery

Single Campus Delivery Bellevue College
(*enter locations)*

Off-site _____
(enter locations)

Distance Learning Online courses
(enter formats)

Statement of Need

- *Employer demand*
- *Student demand*
- *Options for place-bound students*

Please see criteria and standard sheet FORM B

Contact Information (Academic Department Representative)
Name: Tom Nielsen
Title: Vice President of Instruction
Address: Bellevue College
3000 Landerholm Circle SE, Room A202
Bellevue WA 98007-6484
Telephone: (425) 564-2442
Fax: (425) 564-6163
Email: tom.nielsen@bellevuecollege.edu

Chief Academic Officer Date: Mar 25, 2011

DEGREE DESCRIPTION

Bellevue College requests authority to proceed with the development of a new bachelor of applied science degree in Healthcare Technology and Management with a concentration in Healthcare Information Technology. The degree would prepare graduates to be effective members of a team that manages and performs the customization, implementation, integration and maintenance of healthcare information systems, data and components.

The college proposes to articulate the new 2+2 degree with Washington community and technical college associate degrees in information technology-related programs (IT) and information and records management programs. Depending on which associate degree students possess, the curriculum will begin with two entry pathways to prepare students for the core courses – one providing essential background in healthcare and the other, the fundamentals of IT. Students will then coalesce in the core program to take general education courses focused on healthcare issues, and applied technology courses in workflow process, project management, information systems analysis, data security, and so forth. Students will work in teams through the online medium to solve real world problems while strengthening their particular area of interest and gaining advanced expertise.

Although one other college in Washington has recently developed an undergraduate degree in healthcare information, this degree program will be distinctly different in its focus. As an applied baccalaureate degree, students will be able to enter the program with a professional/technical degree; most four-year healthcare-related or IT/CS-related programs require a transfer degree which effectively shuts the door on professional-technical college graduates. Because the degree will be offered online as well as in the classroom, students from any part of the state will be able to enroll, expanding opportunities for place bound students. Most of the new degree programs emphasize healthcare information management, which focuses on the collection and organization of medical records and coding. The Bellevue College degree will be in healthcare information technology, which utilizes computer technology to implement and maintain healthcare data systems, as well as to analyze and utilize that data to facilitate efficient and effective healthcare delivery and payer organizations.

Bellevue College has a reputation for delivering high quality programs in information technology and has been recognized nationally for its work through the National Workforce Center for Emerging Technologies and at the state level as a Center for Excellence in Information Technology. In addition the college is rapidly becoming a leader in the field of healthcare IT (HIT) education, having received federal grants from the Office of the National Coordinator for Health Information Technology, National Science Foundation and Department of Labor totaling $8.5M for implementation of healthcare IT curricula development and dissemination. BC has also been designated by the Washington State Healthcare Authority as the lead healthcare organization for WA state workforce development and technical training in Healthcare IT.

BC aspires to develop a bachelor's degree program that furthers the work being done in healthcare IT and creates a career pathway for students interested in this field. BC has already made progress in the HIT arena by offering curriculum via its Health Informatics certificate program to update skills for those who want to move into the field of HIT. Current enrollment is typically between 25-27 students per quarter. This new applied bachelor's degree is an appropriate fit for BC that builds on the college's expertise and provides an outstanding educational choice in a rapidly growing, high demand field.

EMPLOYER NEED

Because the field of healthcare information technology is still in an emerging phase, to get a complete picture one must look at the emerging trends and reasons for possible growth in this field. Through the American Recovery and Reinvestment Act of 2009 (ARRA) and the Health Information Technology for Economic and Clinical Health Act (HITECH), the federal government has invested over $19.2 billion in stimulus funding to support adoption of electronic medical records (EMR) in every hospital, clinic and ambulatory practice to advance the use of information systems in healthcare. With its new applied bachelor's degree, Bellevue College proposes to prepare the workers who will be needed in Washington State to implement these new information systems.

In an article published in the May 23, 2011 edition of Information Week, Nicole Lewis affirms the need to prepare people for this emerging field. Quoting a study conducted by the University of California San Diego extension, she states that "a career in health information technology is the hottest vocation for college graduates in this challenging economy."[3]

The article goes on to say,

> As healthcare delivery organizations embark on transferring patient records from paper-based systems to digitized medical records, the shift has fueled a demand for health information technicians who can oversee the growth of a comprehensive database of medical records during the next decade.
>
> . . . . To support this shift, the healthcare industry will need technicians for emerging jobs such as healthcare integration engineer, healthcare systems analyst, clinical IT consultant, and technology support specialist, the report said.
>
> "Several factors--a growing industry with vast employment needs, a societal concern with federal backing for broad reform, and a solution incorporating advanced knowledge and skills among workers--combine to form a strong base for workforce development and employment opportunity for the coming decade," Mark Cafferty, San Diego Workforce Partnership president and CEO, said in a statement.

[3] Hhttp://www.informationweek.com/news/healthcare/EMR/229625377H

> He also said skilled knowledge workers will not only meet the immediate needs in healthcare, but also will serve as a catalyst for new and emerging types of jobs in the coming years as the impact of healthcare IT takes hold.
>
> The Bureau of Labor Statistics estimates that medical records and health information technicians held about 172,500 jobs in 2008 (about 39% of jobs were in hospitals). Jobs are expected to grow by 20%, or about 35,100 new jobs, for the decade 2008-2018.[4]

The most recent studies conducted for the Office of the National Coordinator for Health Information Technology (ONC) estimate that 80% of physician offices and 89% of hospitals have not yet begun to use electronic healthcare records (EHR) at a basic level of function. The anticipated growth in the use of EHR systems is expected to create a demand for HIT workers who are prepared to provide installation services, workflow redesign, and the support of activities such as quality reporting and other key aspects comprising the meaningful use of EHRs. Thus, the limited supply of qualified healthcare information professionals is a factor that can limit the rate at which certified EHR technology can be adopted, and may be one of the greatest barriers to comprehensive adoption and meaningful use of healthcare information technology (HIT). As physicians and hospitals increasingly adopt EHRs, the demand for qualified healthcare IT professionals is certain to grow, and to exceed the capacity of existing training programs.[5]

Further driving home this point, an August 2010 article appearing in *The Rheumatologist* stated,

> HITECH's reach extends well beyond EHR adoption to include the development of a strong framework and infrastructure to support health information technology (HIT) adoption and implementation, health information exchange infrastructure, HIT workforce training, and health information and communication systems research and development.
>
> Under the provisions of HITECH, CMS [Centers for Medicare and Medicaid Services] estimates that between $14.1 and $27.5 billion in funding will be distributed through the EHR Meaningful Use incentive program. This program is meant not only to lend support for the acquisition of EHR systems, but also to ensure that systems purchased are capable of meeting the minimum requirements for secondary utilization and exchange of health information.[6]

George Lauer, a journalist for *iHealthbeat.*com, stated in a March 2009 article, "Many predict it will take a small army to achieve the goal of computerizing the nation's medical records within five years. Don Detmer, president of the American Medical Informatics Association, estimates it will take as many as 130,000 information technicians and 70,000 informatics specialists." He went on to say, "While IT opportunities in other industries are stagnating, healthcare IT offers many new opportunities and probably will attract skilled IT workers from other walks of life, such as from the financial, auto and engineering industries."[7]

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[4] ibid
[5] U.S. Department of Health and Human Services
[6] Hhttp://www.the-rheumatologist.org/details/article/863255/What_Does_Meaningful_Use_Really_Mean.html
[7] George Lauer, "Where Will the 'Mini-Army' of Health IT Workers Come From?", iHealthbeat.com, 3/13/09.

Many skilled IT workers laid off from industries hurt by the economic downturn have the technical skills for these jobs, but they will need more than just IT skills. In February 2010, the American Society of Health Informatics Managers (ASHIM) published the results of a survey on jobs in healthcare information technology.[8] Of the 135 HIT professionals who responded to the survey, ninety percent believe that HIT employees need to have both IT and healthcare experience. Ninety-six percent believe that there will be 50,000 - 200,000+ new jobs in HIT between now and 2015. More than 50% of the respondents believe IT professionals will seek additional skills to work in HIT.

HIMSS (Healthcare Information and Management Systems Society) conducts a monthly survey of healthcare IT professionals on current industry trends and publishes the results in a newsletter named *Vantage Point*. Their most recent survey published in February 2011 noted,

> According to the United States Bureau of Labor Statistics, in December, 2010 employment in the healthcare sector continued to expand, with a gain of 36,000 jobs, with the highest growth in ambulatory services. Because the Bureau's report is not specific to healthcare information technology (IT) positions, this edition of the HIMSS Vantage Point took the opportunity to survey our audience. Nearly three-quarters of respondents, who represent provider, vendor, consulting and other work sites, indicated that they hired IT FTEs over the course of 2010. Another two-thirds have the budget to hire additional IT FTEs in 2011. Clinical informatics professionals and implementation experts are the two areas for which respondents anticipated that their organization would need to hire staff as the industry transitions from traditional, paper-based records to electronic technology. These were also the areas in which respondents report a perceived staffing shortage that would impact their organization's ability to handle future work. Finally, 60 percent of respondents indicated that IT projects would be slowed down either because appropriate staff couldn't be hired at their organizations or because non-provider organizations could not hire the staff needed to assist clients."[9]

An article published in 2010 by *iHealthBeat* reported that "state and local spending on healthcare IT-related initiatives is expected to increase by 19% across the next five years, propelled by the economic stimulus package and other emerging healthcare trends, according to a report issued from market research firm Input, Federal Computer Week reports. The report found that the total addressable health IT market is estimated to reach $9.9 billion in 2015, up from $8.3 billion in 2010."[10]

A challenge to providing federal and state data on employer demand in healthcare IT is that it is an emerging field and is not currently tracked by the Bureau of Labor Statistics (BLS), so one must look to somewhat related fields for data. In the field of medical records and healthcare information, technicians assemble patients' healthcare records and are responsible for the

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[8] Hhttp://docs.google.com/viewer?a=v&q=cache:SO5c5k_53wcJ:ashim.org/wp-content/uploads/2010/02/HIT-Jobs-Survey.pdf+HIT+jobs+survey&hl=en&gl=us&pid=bl&srcid=ADGEESiWzDQgX9FV0XzRCIJ07iOPh3XhB-BI96zanwFEWujNdgZIGS51YMhEmUe_A-EShQLa2V5WsFV9D1MLHiUbB_CTqnDlZiftDGhwA7UCzshcJlu6InVogPurfeKFS42i-kMUiNfl&sig=AHIEtbRSeYn4Q3thSvXM4C1j4jpuY7JvbgH

[9] Hhttp://www.himss.org/content/files/vantagepoint/pdf/vantagepoint_feb11.pdfH

[10] Hhttp://www.ihealthbeat.org/articles/2010/8/25/local-state-health-it-spending-to-hit-10b-by-2015-report-finds.aspxH

electronic coding of records into the new electronic healthcare systems. This job typically requires an associate's degree and would be one of the feeder programs for BC's new degree program. The BLS reports that employment is expected to increase by 20 percent, or about 35,100 new jobs, in this field, much faster than the average for all occupations through 2018. The BLS reports that job prospects will be very good with openings coming from growth, retirements, those who leave the occupation permanently and a particularly high demand for technicians that demonstrate a strong understanding of technology and computer software.

In the area of medical and health service managers (including health information managers), the BLS reports that job opportunities will be good, especially for applicants with work experience in healthcare and strong business and management skills. They report that this segment is expected to grow 16 percent from 2008 to 2018 (from 238,500 to 328,800), faster than the average for all occupations.

Regional Demand

In searching Washington State job trends data, Workforce Explorer offers no reportable data for the emerging field of healthcare IT. Again, although not a perfect match, we can look at data for medical records and health information technicians or computer and information systems managers, which are the nearest fields to show state and local trends in healthcare IT. In WA, growth between 2008 and 2018 shows a 22.3 percent ten-year growth rate and 200 average annual openings for medical records professions. For the same period, computer information systems jobs in WA are projected to grow a total of 12.5 percent with 275 annual openings.

In the Seattle King County Workforce Development Area jobs for computer and information systems managers for the same period are projected to grow 12.9 percent over ten years with average annual openings of 189. Medical records technicians in Seattle King County mirror the state averages – 22.2 percent growth over ten years with 70 average annual openings.

By looking at the current job postings in health IT, one can get a more complete perspective on demand in the specific field of Health IT. A job search conducted in March 2011 with the terms health informatics, healthcare informatics, health IT, healthcare IT or clinical informatics in the job description on indeed.com, a web crawler for jobs, produced 8,742 national job postings and 283 job postings in WA State (233 within a 25-mile radius of Bellevue), with most of these jobs in the Puget Sound area.

A survey conducted by Bellevue College in March 2011 of healthcare IT professionals shows that 58% of survey respondents hire exclusively or significantly more health information technology (HIT) employees with a baccalaureate degree while only 9% hire equal numbers of baccalaureate and associate degree holders; only 2% hire mainly associate degree holders. The predilection for hiring employees who hold a baccalaureate degree was confirmed by this industry search of web-posted jobs.

As these job titles are still fairly new in the industry, one can also look at jobs based on more traditional IT job titles. If the terms healthcare and application support, business analyst, business analysis, systems analyst, systems integration, or business intelligence are searched in the job description, then the search produces 10,831 job postings nationally, 298 in Washington and 245 in a 25-mile radius from Bellevue. As a side note, "healthcare IT" is the most used term in job postings, while "health IT" shows the highest growth of jobs including the term, followed by "clinical informatics" and "healthcare IT". Again, the majority require a bachelor's degree. The trends for these job titles show a steady growth.

On a local level, Bellevue College surveyed 826 members of the Washington chapter of Healthcare Information and Management Systems Society (HIMSS) in March 2010. Although only 45 people responded to the survey, the data mirrored national trends. Eighty-seven percent responded that the need for professionals trained in Healthcare IT is growing; while 93 percent responded that there is a critical to moderate shortage in finding healthcare IT professionals to fill their employment needs.

Fifty-eight percent of the respondents indicated that when they hire information technology workers they would hire either bachelor's degree and above exclusively or significantly more bachelor degree than associate degree graduates. Another 31 percent said that industry experience was the quality they sought most. Comments about why they prefer bachelor's degree candidates fell into two main categories: one had to do with demonstrating the commitment and advanced thinking skills conferred by a bachelor's degree. Other comments concerned the ability of the person to apply the technical skills that are critical to bridging the gap between information technology and healthcare. Comments include, "Completing a four year degree demonstrates perseverance and commitment. A four year degree provides a more well-rounded candidate." "Bachelor's degree graduates typically bring a higher level of analytical, organizational and interpersonal skills."

When asked to select which workplace skills were the most important, survey respondents identified those that require a combination of IT-focused critical thinking and problem solving skills and the ability to manage workflow and project oriented work within the healthcare environment. These will form the essential elements of the curriculum in the new healthcare IT degree program at BC.

Chart 1: Employer Rankings of Importance of Workplace Skills

	Very Important	Important	Very Important + Important
Information System Analysis & Design	54.55%	36.36%	90.91%
Healthcare Workflow Process Analysis & Design	70.45%	15.91%	86.36%
Project Management	50%	36.36%	86.36%
Healthcare Information Systems	59.09%	27.27%	86.36%

Systems Integration	54.55%	29.55%	84.10%
Database	29.55%	40.91%	70.46%
Networking	15.56%	46.67%	62.23%
Mobile & Portable Devices	24.44%	37.78%	62.22%
Healthcare Legal & Regulatory Environment	22.22%	40%	62.22%
Programming	13.33%	44.44%	57.77%

Based on the amount of funding being invested in the convergence, in all of its manifest forms, of healthcare and information technology; the desire by those in the industry to hire baccalaureate-level workers whose expertise combines both fields; and the shortage of appropriately skilled workers, it is clear that there is great demand for new bachelor-degree programs to fill this gap.

BELLEVUE COLLEGE FEEDER PROGRAMS

The new BAS in Healthcare IT will offer a baccalaureate pathway for associate degree graduates coming from information technology programs, information and records management programs and allied health programs. The two IT professional/technical associate degree programs at Bellevue College that will comprise the foundation of the new degree are Information Systems (IS) and Network Services and Computing Systems (NSCS). Information Systems focuses on software development, databases and analytics while Network Services & Computing Systems focuses on systems infrastructure and operating systems. Both degrees provide a valuable basis for the new degree.

From its inception, the goal of the BC IT degrees has been to educate students in the latest software and hardware techniques and technologies so that they are well prepared for the growing number of careers in IT. The healthcare IT degree is the next step to achieve this goal.

The Information Systems program began in the late 1970s and continues to evolve to meet the needs of information systems employers. The program began with a degree in Programming and broadened to include a degree in Database Administration in 2003. In 2005 a program in Business Intelligence (BI) was added, which addresses the growing needs of organizations to make sense of all the data they had been collecting. In the 21st century IT organizations have been shifting their dollars from operational systems to systems that facilitate data analysis and performance management. With that shift came the need for qualified people to develop and apply new software. The BC BI program addresses that need.

The Network Services & Computing Systems program began in 2000 with a degree in Technical Support to educate students to support the proliferation of PCs. In about 2001, the Network Support degree was created, with a track in Operating System Technical Support added in 2004. At that time, the Network Support degree name was changed to Network Services and Computing Systems to reflect the broad nature of the curriculum. Beginning in fall 2010, the

Technical Support and Network Services and Computing Systems degrees were combined into a single Network Services & Computing Systems degree with three distinct tracks.

Chart 2 shows the several tracks of the two Bellevue IT degrees along with their FTES and total graduations. The chart reveals a substantial difference between the number of students enrolled in the programs and the number of actual students who graduate. This is due to the fact that, except for the networking degree which articulates with Eastern Washington University, graduates have no opportunity for entry into a four-year degree program, so there is little benefit to obtaining the associate degree. Instead, most students obtain specialty certificates which help them either find jobs or gain career advancement. This trend was exhibited in the data from every community and technical college that provided information for this proposal (see Chart 3). The new healthcare IT degree should help to turn around the low number of associate degree graduates, since students will have a clear educational pathway to a bachelor's degree.

Chart 2: Bellevue College IT Associate Degree Programs FTES and Graduates

	2005-06		2006-07		2007-08		2008-09		2009-10	
	Act FTES	Grads	Act FTES	Grads	Act FTES	Grads	Act FTES	Grads	Act FTES	Grads
Information Systems	52	17	62	19	68	7	106	4	170	11
Networking Services	32	22	15	17	33	12	43	15	56	17
Totals	84	39	77	36	101	19	149	19	226	28

STUDENT DEMAND

From March – May 2011, the college conducted a survey to gauge how many students enrolled in Puget Sound community and technical college IT programs or the healthcare records and coding programs might be interested in a bachelor's degree in healthcare IT. Although this is an emerging field that is just beginning to reach people's awareness, the results were encouraging. Of the 264 students who responded to the survey, 68 percent said they would be interested in an applied bachelor's degree in healthcare IT; and 88 percent said they would be interested in taking advanced courses in Healthcare IT. Most students' comments centered on a bachelor's degree giving them a better competitive advantage and more confidence when applying for a job, as well as greater flexibility in the choice of jobs. Many stressed increased opportunities for career advancement and jobs with broader responsibilities, as well as increased job security. Several students reflected that it is increasingly difficult to get a job in any IT-related field without a baccalaureate degree. Students also commented that this baccalaureate degree would offer them more flexibility than a traditional university degree and would allow them to keep their job while completing the degree. A few students saw the baccalaureate degree as a gateway to post-graduate study. Several students appreciated the wider breadth of knowledge and the more in-depth and higher-level skills that a baccalaureate degree would afford them.

The proposed bachelor's degree will offer an option that is completely online for those students who are unable to come to campus, which will draw students from throughout the state. However, for the purposes of this proposal the college collected data from seven Puget Sound community and technical college IT programs and the three Healthcare Information programs to evaluate their annualized FTES and associate degree completions for the years 2005-06 through 2009-10. In academic year 2009-10, the eight colleges shown in Chart 3 produced 1,153 annualized FTES and 179 degree completing students.

If one assumes that only 25 percent of the graduates would enroll in the new degree, rather than the 68 percent indicated in the survey, that would provide 45 students from these programs alone. If one takes into account the other community and technical IT program graduates not included in this analysis, there is excellent potential for very strong enrollments.

Another source for students in this new degree program will come from incumbent healthcare workers who need IT education to improve their career pathway and from laid-off IT workers who are no longer finding work in more traditional IT fields. Although it is impossible to quantify the number of people who will be included in this demographic, the literature on the subject indicates it is likely to be a substantial number.

In an article titled, "Where Will the 'Mini-Army' of Health IT Workers Come From?" Bill Hersh, chair of the Department of Medical Informatics and Clinical Epidemiology at Oregon Health and Science University's School of Medicine, predicts many members of the new mini-army will be health professionals looking to move into the growing IT field. He says there also will be IT professionals from other industries looking for work in the newly expanding health IT arena.[11] The same article quotes JoAnn Klinedinst, vice president of education for the Healthcare Information and Management Systems Society. She says, "HIMSS believes that sources of [healthcare IT] workers, both implementers and end users of healthcare information technology, will include the displaced worker; our veterans; those currently working in healthcare who desire a role centered on healthcare information technology; sources from other industries that provide similar core competencies on topics like quality assurance, management engineering, process improvement, project management; and our high schools and vocational schools".[12]

Chart 3: Annualized FTES and Completers for Potential Feeder Programs

	2005-06		2006-07		2007-08		2008-09		2009-10	
	Act FTES	Grads	Act FTES	Grads	Act FTES	Grads	Act FTES	Grads	Act FTES	Grads
Bellevue College										
IS	52	17	62	19	68	7	106	4	170	11

[11] George Lauer, "Where Will the 'Mini-Army' of Health IT Workers Come From?", iHealthbeat.com, 3/13/09.Hhttp://www.ihealthbeat.org/Features/2009/Where-Will-MiniArmy-of-Health-IT-Workers-Come-From.aspx
[12] Ibid.

Networking Svc	32	22	15	17	33	12	43	15	56	17
Tacoma CC										
HIT	25	10	30	15	29	15	25	14	41	11
Networking	27	10	34	8	42	6	68	11	98	18
Bates TC										
Database	16	4	13	0	15	0	16	3	15	1
ITS	34	6	25	2	61	1	37	2	39	8
Software	47	0	44	2	37	1	46	2	45	3
Web	26	0	34	0	48	1	36	2	42	5
Seattle Central CC										
Network Design	34	6	21	8	24	5	44	3	59	5
Programming	27	4	34	3	41	4	53	3	66	1
Spokane CC										
Health Info Tech	38	18	32	20	24	12	32	10	40	22
Edmonds CC										
CIS	54	11	45	5	49	5	64	9	86	15
Database IT	7	4	7	2	7	3	7	0	13	2
Info Security	2	0	7	1	10	1	16	1	27	9
Network Tech	28	11	29	12	25	10	40	23	70	10
Web App	3	2	11	1	10	3	14	0	28	2
Bus IT/Med IT	5	5	19	8	21	8	32	4	54	8
Green River CC										
Information Tech	35	8	48	9	62	6	80	12	120	7
Cascadia CC										
Network Tech/Web App	23	12	15	7	14	5	10	9	9	5
Shoreline CC										
Health Informatics	42	42	39	25	49	15	67	16	75	11
Total All Programs	**557**	**192**	**564**	**164**	**669**	**120**	**836**	**143**	**1153**	**171**

MAXIMIZING STATE RESOURCES AND SERVING PLACE-BOUND STUDENTS

Only three records and coding associate-level programs in Washington community and technical colleges and a smattering of other healthcare information programs at private colleges as well as a Med IT certificate program at Bellevue College offer education in healthcare records and technology. Except for Bellevue's Med IT certificate, these programs do not provide sufficient in-depth information technology and data analysis courses that workers need to obtain advanced healthcare IT jobs. Between the availability of new funding and educational efforts encouraged by the federal government and HIMSS, new programs are beginning to emerge. Bellevue College just received a grant from the National Science Foundation to create a national Health IT

Specialist (HIS) certification in healthcare information technology and develop curriculum modules beginning at the high school level and completing in community college.

Chart 4 shows Washington programs in health information management or technology. The University of Washington bachelor's degree in Health Informatics and Health Information Management, prepares people to work in the management of health records rather than in systems that serve the delivery of data. Western Governors University offers an online BS in Health Informatics which is similar in scope to the UW degree. Eastern Washington University offers a BS in Health Services Administration focused on healthcare information technology, but does not accept students with professional/technical degrees. A problem for professional-technical graduates is that they are unable to transfer into these baccalaureate programs to continue their studies. Except for general education courses, they would need to begin their studies again to be accepted into these programs. The new BAS in Healthcare IT at Bellevue will provide a direct pathway for students holding professional-technical associate degrees.

Chart 4: Related Degrees at the Associate or Bachelor's Degree-Level

Degree Title	Institution	Degree
Health Informatics and Information Management	Shoreline Community College	AAS
Health Information Management	Tacoma Community College	AAS
Health Information Technology	Spokane Community College	AAS
Information Technology for Healthcare	North Seattle Community College	AAS-T (no longer being offered)
Health Information Technology	Devry University	AAS
Health Informatics	Bellevue College	Certificate
Health Services Administration	Eastern Washington University	BA
Health Informatics and Health Information Management	University of Washington	BS and post baccalaureate certificate
Health Information Administration	University of Washington	Post baccalaureate certificate
Health Administration	University of Phoenix	BSHA
Computer Information Systems, Health Information Systems emphasis	Devry University	BS
Health Informatics	Western Governors University	BS

The BAS in Healthcare IT will offer both classroom-based and online degree options, making it attractive for students throughout the state. With its focus on the application of healthcare technology, the degree will ensure that graduates have specific skills to fill the overwhelming workforce demand that has been created by the HITECH Act.

Once the college completes the new degree prerequisites and curriculum, it will work with each feeder college to develop associate degree pathways that minimize additional coursework graduates would need to enter the degree program. BC has already begun talks with all of the colleges shown in Chart 5. Every college has expressed interest in having a bachelor's option for

their students and has agreed to work with Bellevue to create educational pathways. In the fall, BC will hold a meeting with college program chairs and faculty to begin articulation agreements.

Chart 5: Puget Sound Community and Technical College Feeder Programs

College	Program list
Bates TC	Database Technologies (AT and AAS) Information Technology Specialist (AT) Software Development (AT and AAS) Web Development (AT and AAS)
Cascadia CC	Network Technology (AAS) WEB APPLICATION PROGRAMMING TECHNOLOGY (AAS)
Edmonds CC	Computer Information Systems (ATA) CIS: Database Information Technologies; Information Security and Digital Forensics; Web Application Developer (ATA) Network Technology (ATA)
Green River CC	IT Information Assurance (AAS-T) IT Networking; Networking Infrastructure (AAS-T) IT Security (AAS-T) IT Systems (AAS-T) IT Computing and Software Systems (A-PP)
Highline CC	Data Recovery & Forensics (AAS) Information Systems Project Coordinator (AAS) Network Specialist (AAS) Web Database Developer (AAS)
Lake Washington TC	Computer Security & Network Technician (AAS)
Seattle Central CC	Network Design & Administration (AAS-T) Computer Programming (AAS-T) Web Development (AAS-T)
Shoreline CC	Business Technology or Computer Information Systems (AAS-T) Health Informatics and Information Management (AAS)
South Seattle CC	Network Administration (AAS & AAS-T) Computing and Software Systems (AA)
Spokane CC	Health Information Technology (AAS)
Tacoma CC	Networking and Convergence Technologies (AAS) Health Information Management (AAS)

The college has also met with Eastern Washington University to discuss how we can best coordinate with their new Healthcare IT degree. Although Eastern's degree is already being offered, they do not have funds to develop online courses and would like to work with BC as we develop our courses to collaborate on course content.

CONCLUSION

As a state leader in information technology programs and a national leader in developing new curricula to address the rapid advances in the field of healthcare information technology,

Bellevue College is well situated to develop a bachelor of applied science degree in healthcare information technology. There is urgent need for a program that will prepare graduates to effectively manage and perform the design, implementation, integration and administration of healthcare information systems and components. Professional-technical community and technical college graduates are desperate for programs that will allow them to earn a bachelor's degree without having to begin their education at square one; this program will permit them to start on that pathway immediately. Because it will be offered online, the new program will be accessible to any student regardless of where he or she lives. It will fill a critical workforce education gap and provide high wage jobs for graduates throughout the state.

APPENDIX 2: COURSE DESCRIPTIONS

BACHELOR OF APPLIED SCIENCE IN HEALTHCARE INFORMATION TECHNOLOGY

Pathway for Students with Healthcare-Related Backgrounds

IT 103 Networking Basics • 5 CR
Provides an understanding of the basics of networking to students not majoring in Network Support. Topics include: network topologies, media, protocols, hardware and software. This class also covers content listed for the COMPTIA Network+ exam. Course includes practical experience and business case studies. Prerequisite: Placement by assessment into ENGL 089. Completion of ENGL 092 or 093. Recommended: BTS 161 or equivalent work experience.

PROG 110 Introduction to Programming • 5 CR
Students learn object oriented programming techniques using the current software development tools and a .NET programming language. Students design procedures and write computer instructions to solve business problems, learn procedural programming, develop graphical user interfaces in Windows and work with events and objects. Fulfills the quantitative or symbolic reasoning course requirements for non-business majors at BC. Prerequisite: Placement by assessment into MATH& 141 OR MATH 099 with a C- or better or the equivalent course from another college. Placement by assessment into ENGL& 101 or completion of ENGL 092 or 093 with a C- or better and college level reading.

BTS 168 Business Data Management Tools • 5 CR
Introduces key concepts of data management and the use and creation of relational databases as a business tool. Topics include: views, simple and advanced queries, create and modify forms and sub-forms, reports, primary and foreign keys, importing data, formulas, controls and conditional formatting. Projects apply skills to multiple hands-on databases of increasing complexity. Recommended: BTS 161 or equivalent experience.

Pathway for students with IT backgrounds

HPRO 120 Medical Terminology • 3 CR
Provides a comprehensive foundation of basic medical terminology for use in healthcare careers. Includes prefixes, suffixes, word roots, combining forms, special endings, plural forms, abbreviations and symbols. Emphasis is on body structures, anatomical systems, pathologies, medical procedures, medical specialties, and common terms and abbreviations used in healthcare.

HCMT 301 US Healthcare Policies and Delivery Systems • 5 CR
Introduction to the many types of healthcare delivery systems in the United States. Students will identify laws, regulations, standards, initiatives, and payment systems; policies and procedures applicable to the various healthcare organizations. Students will gain an appreciation of the roles and disciplines of the providers throughout the continuum of healthcare in the US.

HCMT 302 Healthcare Safety, Quality and Legal Environment• 5 CR

Covers general safety and quality processes in the healthcare system, including the business, clinical, and delivery processes, the legislative, regulatory, and accreditation process, laws, regulations, and policies and procedures pertaining to patient safety, healthcare quality, data confidentiality, privacy, release of information, and professional and practice-related ethical issues. (e.g., HIPAA, HITECH, Stark, Joint Commission, and related aspects will be covered, in addition to others.)

CORE – All Students

Project Management • 5 CR

BUS 230 Project Management • 5 CR

Examines the theory and practice of project management from a managerial perspective. Students define projects, determine resources requirements, write requests for proposals, outline contract requirements, define and sequence tasks, and create project schedules. Recommended: Concurrent enrollment in BTS 280.

OR

BTS 280 Project Planning Tracking & Reporting • 5 CR

Introduces skills to gather information about responsibilities and resources required to accomplish tasks and calculate the overall cost to plan a project. Studies the software needed to create and modify a project plan. Projects combine software skills with project management principles to plan a project and keep it moving on track in the implementation phase. Prerequisite: BTS 161 or equivalent experience recommended.

HCMT 310 Intro to Health IT Environment • 5 CR

Examines the architecture, components and applications of healthcare information systems, ranging from patient care management to epidemiology to billing to research data analysis. Topics include: electronic medical record and systems (EMR/EHR); health information exchange (HIE); medical patient diagnostic, and monitoring and therapeutic devices and systems; personal health records (PHR); lab and pharmacy systems; computerized provider order entry (CPOE); and Decision Support Systems (DSS). Also looks at trends in HIT technologies and applications, and healthcare enterprise.

RAIM/ECON 315 Economics of Healthcare • 5 CR

Covers the principles of micro and macroeconomics as applied to the healthcare industry. Examines how healthcare demand differs from that of other goods. Major topic areas include identifying and measuring the cost and benefit of marketing and government solutions to various healthcare issues, the role risk plays in the demand for and supply of health insurance, the incorporation of general healthcare, medical care, government policies and health insurance in determining impacts on private profit and social economic well-being. Prerequisite: Acceptance into the program or permission of the instructor.

HCMT 320 Health IT Data Standards • 5 CR

Covers the fundamentals of healthcare standards as they relate to patient records, coding and classification systems, privacy and security, technical infrastructure and medical device integration. Topics include the basics of decision support and data mining, with application to typical business and clinical scenarios and emerging bioinformatics challenges, and the

opportunities and challenges of converged clinical and information technologies. Also covers the National Health Information Exchange, the federal Standards and Infrastructure Framework (including DIRECT), HIEs and RHIOs, and Meaningful Use.

RAIM 325 Organizational Theory & Behavior in Healthcare • 5 CR
Presents theory and practice of how organizational design affects group and interpersonal interactions as it applies to healthcare. Includes organizational structures, culture, and change management. Topics include the various roles and responsibilities of physicians, nurses, specialists, generalists, allied health professionals, and administration; and the basics of errors, safety, waste, efficiency and efficacy in the context of healthcare systems.

HCMT 335 Healthcare Finance • 5 CR
Introduction to the healthcare finance, reimbursement, and business drivers and cycles and how they shape the role and design of healthcare data and IT systems. Topics include: interdepartmental charge, finance, and USA third-party reimbursement structures and how they apply to the various healthcare organizations, modern medical centers as well as alternate care sites; the emerging Accountable Care Organizations (ACOs); the Patient-Centered Medical Home (PCMH).

PHIL/HCMT 340 Ethical Issues in Health IT • 5 CR
Covers legal, ethical, and patient privacy and safety issues in healthcare as they relate to information systems design, development, use, and management, information security, and the Health Insurance Portability and Accountability Act (HIPAA). Topics include: safety and security of sensitive medical documentation as it is transitioned into an electronic format; patient safety, health outcomes and national quality initiatives; and HITECH/NIST compliance details such as encryption and electronic destruction of data.

HCMT 410 Healthcare Systems Analysis and Process Optimization • 5
Covers current strategies and tools for systems analysis and the development of user and systems requirements. Emphasis is placed on capturing and evaluating the needs of the various stakeholders including physicians, nurses, patients, and caregivers, as well as meeting HIT general practices and regulations. Includes techniques and tools to analyze, model and simulate healthcare processes; how to select, acquire and evaluate new medical technology and HIT systems; elements of cost analysis and justification, capital purchase vs. leasing strategies, purchase agreements and contracts, readiness assessment and regulations governing acquisition of IT systems.

HCMT 420 HIT Systems Integration and Interoperability • 5 CR
Covers the details of healthcare technology standards and interoperability, as well as the processes to develop an integration plan, including systems customization, test plans, unit integration and system testing, and identification of roles and responsibilities of internal and external professionals during the integration phase. The course will review health information models and look at the IHE Initiative, role of ANSI, HL7, DICOM, CCOW, CorbaMED and other medical standards, and cover the role of non-medical standards in medical informatics (HTTP, XML, etc.).

HCMT 430 HIT Systems Implementation • 5 CR
Covers the implementation of information systems within healthcare organizations, as well as documentation and reporting. Includes development of an implementation plan, systems customization, configuration and testing, user training, key issues confronting organization and management of healthcare systems, and best practices. Emphasis is placed on the relationships between systems implementation and administration to quality of data and care and adherence to healthcare standards and regulations.

HCMT 440 HIT Systems Operation, Administration and Reporting • 5 CR
Covers the basic functions and tools to perform systems operation, administration and reporting with an emphasis on systems and data integrity and security. Topics include performance monitoring, systems testing and troubleshooting, maintenance, upgrades, security enhancements and process changes, management of contingency and emergency recovery plans, systems backup and restore, report generation, systems governance; and HIT best practices and regulatory constraints.

HCMT 450 Healthcare Analytics and Quality • 5 CR
Explores the scope and role of data and data analytics in healthcare in the context of national quality policy, as articulated in Meaningful Use Stages 1 and 2, and the National Quality Forum metrics that have been selected for Accountable Care Organization assessment and rewards. Discusses approaches to assessing patient safety issues and implementing quality management and reporting through electronic systems and the use of Clinical and Operational Decision Support Systems as well as forensics investigations.

HCMT 460 Healthcare and Information Technology Change Management • 5 CR
Covers best practices in healthcare process analysis and change management in the context of health IT project management and systems implementation. Covers fundamentals of health workflow process analysis and redesign as a necessary component of information systems implementation; includes topics of process identification and validation, user interfaces and system usability, user training, human factors, quality management strategies, and failure process analysis.

HCMT 475 Field Studies in Healthcare • 5 CR
Provide students with the opportunity to gain a deeper understanding of the healthcare environment through industry internship, practicum or series of field trips.

HCMT 485 Capstone• 5 CR
The capstone project course is the culmination of the HIT BAS program and demonstrates to faculty a student's mastery of the curriculum and core competencies in the healthcare informatics field. Students, working in small groups, complete a comprehensive project provided by instructor at beginning of course.

HCMT 294/295/296/297 HIT Special Topics (Public Health; Public Policies; Telemedicine; Mobile Devices in Healthcare…) • 5 CR
Allows study of advanced or specialized topics in the field of Health Information Technology.

APPENDIX 3: EXTERNAL REVIEWERS' BIOGRAPHIES

ELLIOT SLOANE BIO

Dr. Elliot Sloane has spent over 35 years in a dual career spanning IT and medical technologies that improve healthcare. He is also an advisor and consultant to several US federal agencies and the World Health Organization. His first 15 years were at ECRI Institute, and, as vice president of laboratory operations he was responsible for medical device evaluations, accident investigations and ECRI's IT design and development. After leaving ECRI, he was vice president for MEDIQ/PRN for 10 years, where he was responsible for the service, support, regulatory compliance, and quality assurance programs of their nationwide medical device and pharmaceuticals distribution, rental, sales, service and manufacturing programs.

In 2000, Dr. Sloane began an academic career that has included research, teaching, and hundreds of publication on topics like Health Systems Engineering, Biomedical Engineering, Medical Informatics, Health Information Technologies, Wireless Medical Device Networks, Database Management, eCommerce, eHealth, Service Oriented Architectures, System of Systems Engineering, Verification and Validation of Complex Systems, Telecommunications, Patient Data Privacy and Security, and Business Ethics.

Today, Dr. Sloane is the director of Drexel University's Health Systems Engineering Program in Philadelphia, and is developing courses and research programs in Healthcare Informatics, Medical Device Interoperability, Patient Data and Security, Mobile Healthcare, RFID in Healthcare, and related fields. He also leads a non-profit Center for Healthcare Information Research and Policy (CHIRP), to assure the next-generation of health IT products and services are truly patient-centric, safe, efficient, and effective.

Dr. Sloane is a HIMSS Fellow, an IEEE Senior Member, and a Certified Clinical Engineer. He has served on numerous non-profit boards and committees for organizations including AAMI, ACCE, HIMSS, HITSP, IEEE, IHE, and the RFID in Healthcare Consortium.

MARGARET SCHULTE BIO

Margaret Schulte is an educator, author, and consultant in health policy and administration. She holds a DBA from Nova Southeastern University, an MBA from Xavier University, a B.S. from Thomas More College, a Certificate in Financial Management and Strategy in Health from Harvard University, and is a Certified Professional in Healthcare Information and Management Systems. She is a fellow of ACHE, author of "Healthcare Delivery in the U.S." and editor of "EHR Guide: Award Winning Implementations."

She currently teaches at Northwestern University, in the MS program in Medical Informatics; is editor of Frontiers of Health Services Management, published by Health Administration Press and the American College of Healthcare Executives (ACHE); serves as chair of the Information Systems Faculty Network at the American Association of University Programs in Health

Administration (AUPHA); and is a consultant to the Healthcare Information and Management Systems Society (HIMSS) on education-related projects.

Previously, she was vice president of education at the Healthcare Information and Management Systems Society; a vice president of the American Hospital Association; director of education at the Healthcare Financial Management Association; director of development at Southern Health Services in Atlanta; and director of the Certificate of Need Program in the Office of the Governor and the West Virginia Department of Health. Academically, she was an associate professor in the Graduate Program in Health Administration at Grand Valley State University, in Michigan; and was a co-founder of the graduate program in Health Care Policy and Administration at Mercer University, in Atlanta.