

Application
to the
State Board for Community and Technical Colleges
for a
Bachelor of Applied Science Degree in Application
Development
Submitted
by
North Seattle Community College

Part C & D

**COVER SHEET
NEW DEGREE PROGRAM PROPOSAL**

Program Information

Program Name: BAS Application Development_____

Institution Name: North Seattle Community College (applying as lead on behalf of the Seattle Community College District)_____

Degree: Application Development__ Level: Bachelor__ Type: Science__ CIP Code:
11.0201_____ *(e.g. B.S. Chemistry)* *(e.g. Bachelor)* *(e.g. Science)*

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Chief Academic Officer

2/11/13

Date

Proposal criteria

Please respond to all 10 areas listed in proposal criteria Form D

Form D

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Introduction

North Seattle Community College is proposing to be the lead institution for the Seattle District in offering a Bachelor of Applied Science in Application Development (AD). This will be the second BAS that North Seattle has offered if this application is approved. South Seattle has two BAS's and Seattle Central is currently offering one. With the approval of the State Board for Community and Technical Colleges, North Seattle will begin to offer a BAS degree in Application Development (AD) for the 2014-2015 academic year. The college will start with a cohort of twenty-five students who will take thirty upper division credits that year and then take 30 more upper division courses the following year graduating with an AD BAS degree in the spring of 2016. The courses will be taught by highly qualified faculty in a variety of delivery modes – face-to-face, hybrid and fully on line. Because many of our students will be working, face-to-face and hybrid courses will be offered during the evening and weekends.

The college plans to add additional faculty, staff and library resources in order to accommodate this new degree. Faculty additions include part-time subject matter experts and a full-time Application Development faculty; the latter will teach and coordinate the new program. A part-time AD library faculty will be hired who will begin the first year of operation. To ensure student success, a dedicated advisor, an internship coordinator, and a financial aid assistant are being hired in the planning year and will continue through the first three years of operation. Besides a dedicated BAS AD librarian, substantial resources will be devoted to strengthening the library's research capability amounting to \$50,000 per year by the second year of operation. Moreover, as this application will attest, the college is confident that the AD degree will be rigorous and comprehensive and that the student support services will be in place for students to be successful in meeting their goals.

In addition, the Northwest Commission on Colleges and Universities (NWCCU) reviewed the Substantive Change document submitted by the college in the fall of 2012 and has granted North Seattle candidacy status at the baccalaureate level based on the nine required criteria outlined in the prospectus.

1. Curriculum Demonstrates Baccalaureate Level Rigor

The curriculum for the AD degree has been developed with the input of many experts both internally to the Seattle District and externally. Computer programming, computer science, and computer software development programs from across the country were studied, and a list of topics that should be covered in the degree was developed. Local tech companies both large (Microsoft) and small (Ramp Group) as well as information technology departments of larger organizations (the State of Washington, the City of Seattle, and Nordstrom's, for example) were

interviewed, as were faculty from four year institutions (See Appendix 1 for Employer List). The topics list was the first draft of the discussion for the six IT and computer science faculty and staff from North, Central and South Seattle Community Colleges who gave input on the program outcomes and then outlined a total of 13 new classes that a) provide for coverage of the topics deemed important for the degree, and b) provide for application of the learning in internships and practicums. A subject-matter-expert from Bellevue College was also part of the team. From this topic list, faculty and administrators put together the ten overarching program outcomes (see page 6).

The Chairs of the Department of Computer Science from Seattle University and from Eastern Washington University have reviewed the curriculum and are supportive of the program. Their comments and recommendations are in the attached Section 8.

The AD degree is designed for students who desire to pursue the following job categories:

- **Software Developers** Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team.
- **Software Developers, Applications** Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. ¹

It is further designed for students who currently work in IT related companies or departments and wish to upgrade their skills to the baccalaureate level. And it is for students who want to leverage their existing information technology coursework and experience, and add upper division courses that specifically prepare the student to work as an application developer as described above.

(1) Application Development Program Outcomes

¹ All occupational definitions from EMSI

This program prepares graduates for entry-level positions in software development careers by providing industry-relevant applied education in application development. Instruction focuses on current industry trends including web, cloud and mobile applications, as well as industry practices such as Agile and collaborative development. A strong emphasis on industry-based projects throughout the program will prepare graduates to meet current and future industry needs and emerging software trends.

By the end of the degree, graduates will be prepared to:

- Identify and analyze user requirements using industry-recognized tools and strategies to interview stakeholders, and to prioritize and document requirements
- Compare and assess different approaches to software development lifecycle and apply effective strategies to manage the process of developing, designing, testing, and delivering a software application
- Develop and document application functional design meeting the project objectives and constraints, including supporting justification and cost-benefit analysis
- Develop software components meeting the design specifications, and plan and execute integration of various components
- Develop and execute testing plan using industry-recognized strategies, including unit, systems, and acceptance testing, employing appropriate quality assurance standards and procedures
- Collaborate effectively with a wide range of professionals, in person and virtually, using tools and strategies that support cooperative software development practices
- Present and effectively communicate complex technical concepts and constraints to a wide range of technical and non-technical stakeholders
- Research trends in software development and acquire and integrate new skills and knowledge to keep abreast of changes within the software development profession
- Develop a portfolio of industry-based software development projects, documenting process, your role in the development team, and outcomes
- Manage software development project activities and deliverables in a timely and efficient manner

(2) Program Evaluation Criteria

North Seattle currently has an extensive program review process that it will incorporate into its AD program evaluation. It is a two-year process that examines all aspects of the program. The evaluation includes the following components:

- Total state and contract funded enrollments for the program
- Student FTE
- Faculty FTE
- Student/faculty ratio
- Student demographics including ethnicity, gender, age
- Course-level student success (Course Completion Rates)
- Program-level student success rates including retention, progression and completion rates across courses

Student learning will also be assessed in terms of the Course Outcomes, the Program Outcomes, and the college's Essential Learning Outcomes. The description of the full assessment process is available on request.

The college will constantly work with the AD Technical Advisory Committee (TAC) to ensure that they are engaged and supportive of the program and represent a variety of IT related business sectors. The TAC, in turn, will also assess the program based in part on the criteria stated above, but also on their own workforce needs and the needs of the information technology economic sector. In addition, the program staff will monitor economic trends and labor market analysis to ensure that there are internship and employment opportunities for students in the AD program and for the graduates. Program staff will track wages upon hiring and advancement opportunities of our graduates as well as on-the-job retention at six months and one year. A survey will be developed to gauge employer satisfaction with our graduates to see where we can improve our curriculum; a similar survey will be sent to our employed graduates to determine their satisfaction with the program.

AD program staff and the District Institutional Effectiveness office will assess the impact of the AD program on our current certificate and associate degree coursework in terms of quality, resources, and campus climate and culture.

Finally, program staff as well as Seattle District BAS staff will measure the cost effectiveness of the program on an annual basis.

The Northwest Commission on Colleges and Universities (NWCCU) also has a set of criteria that the college is required to follow. As will be noted in Section 8 the college has submitted and been provisionally "approved" to offer the International Business BAS and has applied to the NWCCU for approval to offer this AD degree as a second Substantive Change.

(3) (4) (5) Planning sheet with prerequisites, general education components; and course work needed at junior and senior levels

Program Planning Sheet (Scope & Sequence)

PREREQUISITES

- Applicants must have a technical associate’s degree in information technology or related field (or equivalent credits) from a regionally accredited institution
- In addition, applicants must have a cumulative grade point average of at least 2.0, and a 2.0 or higher grade in all IT courses
- Programming – 10 credits – (5 credits of which should be Java or Object-oriented programming) - courses such as ITC 110, CTN 131, IT 115, ITC 172, ITC 240
- Database Development/ Programming – (5 credits of which should be in SQL)– courses such as ITC 220, 280,222, 250 or 260
- Web Programming/ Development – 5 credits – courses such as WEB 110, CTN 160
- General Education (GEN ED) 30 credits including
 - English – 10 credits (5 credits of which should be ENGL& 101 English Composition)
 - Quantitative Skills (college level math) – 5 credits (statistics recommended)
 - Social Science – 5 credits
 - Natural Science – 5 credits Lab course
 - Humanities – 5 credits

COURSE TITLES AND PROGRAM PLANNING SHEET

Program by Quarters (table) **FULL Time Schedule**

Fall, year 1	Winter, Year 1	Spring, Year 1
Component Software (5) 200	Web Application Development (5) AD 320 Prereq: Program entry	Web Application Practicum (5) AD 340 level Prereq : Web App Dev & Software LifeCycle
Software Lifecycle (5) AD 310 Prereq: Program entry	Data Structures and Algorithms (5) AD 325 Prereq: CSC 143	Discrete Math for computer Science (5) AD 315 (Natural Science GEN ED) Prereq: Program entry
GEN ED (5)	Professional Communication AD 330 (Humanities GENED) Prereq: Program entry	GEN ED (5)
Fall, Year 2	Winter, Year 2	Spring, Year 2

Mobile Application Development (5) AD 340 Prereqs: Web Apps & Data Structures	Mobile Application Practicum (5) AD 430 Prereq: Mobile App Dev & Software Lifecycle	Internship – or – Capstone (5) 490 level Faculty permission
Relational Database Technology (5) AD 350 Prereqs: Program entry	Cloud Computing – Software as Service (5) 420 level Prereqs: Web App Dev & Data Structures	Cloud Computing Practicum (5) AD 440 Prereq: Cloud Computing & Software Lifecycle
GEN ED (5)	Project Management in Software Development (5) AD 400 Prereq: completed at least one practicum	GEN ED (5 cr)

Part Time Schedule

	Winter – Year 1	Spring – Year 1
Fall – Year 1		
Component Software (5) AD 200 prereq: program entry	Web Application Development (5) AD 320 prereq: program entry	Web Application Practicum AD 410 (5) prereq: Web App Dev & SW Lifecycle
Software Lifecycle (5) AD 310 prereq: program entry	Data Structures and Algorithms (5) AD 325 prereq: Comp SW	Gen Ed (5)

Fall – Year 2	Winter – Year 2	Spring – Year 2
Mobile Application Development (5) AD 340 prereq: Web App Dev	Mobile Application Practicum (5) AD 430 prereq: Mobile App Dev & SW Lifecycle	Discrete Math for Computer Science (5) AD 315 prereq: program entry
GEN ED (5)	Professional Communication (5) AD 330 <i>prereq: program entry</i>	GEN ED (5)

Fall – Year 3	Winter – Year 3	Spring – Year 3
Relational Database Technology (5) AD 350 prereq: program entry	Cloud Computing – Software as a Service (5) AD 420 prereq: Web App Dev & Data Structures	Capstone or Internship (5) AD 490 prereq: Faculty permission
GEN ED (5)	Project Management in	Cloud Computing Practicum

	Software Development (5) AD 400 prereq: completed at least one practicum	(5) AD 440 prereq: Cloud Comp & SW Lifecycle
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COURSE DESCRIPTIONS

Component Software (5) AD 200

Prerequisites: Program entry

This course focuses on object-oriented programming using Java with an emphasis in the creation and use of software components. It also presents other programming concepts such as reusability, the model-view-controller (MVC) design pattern, elementary data structures (linked lists, binary trees), recursion, and algorithmic analysis using Big-O notation.

Software Lifecycle (5) AD310

Prereq: Program entry

An overview of tools, processes and practical approaches that support software product's life cycle, from inception to obsolescence. Topics include: software project life cycle management; team member roles; defining target customers; project tasks and timelines; responding to changing project requirements; dealing with limited time and resources; development paradigms such as waterfall and agile; quality documentation; and tools for source code management, automated unit testing and debugging.

Discrete Math for Computer Science (5) 315 (Natural Science GEN ED)

Prereq: Program entry

The purpose of this course is to understand and use (abstract) discrete structures that are backbones of computer science. In particular, this class is meant to introduce logic, proofs, sets, relations, functions, counting, and probability, with an emphasis on applications in computer science.

Web Application Development (5) AD 320

Prereq: Program entry

An intermediate course in developing a database driven web application incorporating MVC patterns. The course will cover state maintenance, CRUD and REST integration on both server and client side. Students will parse, cache and integrate API data achieved by third party providers into their application. Technologies can include as jQuery, CURL, AJAX and parsing JSON & XML.

Data Structures and Algorithms (5) AD 325

Prereq: CSC 143

Covers fundamental data structure and their algorithms and applications in problem solving by programming. Includes linked lists, stacks, queues, priority queues, binary and multi-way trees, directed graphs, hashing, internal and external sorting.

Professional Communication (5) AD 330

Prereq: Program entry

This course presents strategies for effective communication in professional settings with an emphasis on the technology environment. Students will apply best practices in formal and informal situations, for in-person and virtual communication, and to support effective development team collaboration will be examined and discussed in the context of various case studies. Students will apply communication styles to specific situations and audiences.

Mobile Application Development (5) AD 340

Prereq : Web Apps

This course will introduce students to the fundamentals of mobile application development, both in terms of native and web applications. Students will incorporate REST based services and integrate location aware third party APIs and mapping tools to build device agnostic applications.

Web Applications Practicum (5) AD 410

Prereq: Web Apps & SW Lifecycle

In this course students will work in teams to create an MVC based web application. Students will store and share code via a software versioning system and utilize small team agile strategies. Students will write requirements documents, build the application in stages and integrate components into a larger group project.

Relational Database Technology (5) AD 350

Prereq: Program entry

Covers intermediate programming in a relational database. Provides an introduction to non-relational databases as used in Cloud Computing and Big Data. The RDMS topics include stored procedures, triggers, indexing and abstraction techniques, query construct efficiency. Compare and contrast RDMS to noSQL databases: uses, terminology, indexing, storage, compute consumption, ROI, reliability.

Cloud Computing – Software as a Service (5) AD 420

Prereq: Web Apps & Data Structures

This course will introduce students to the fundamentals of cloud computing, both in terms of software as a service (SaaS) and infrastructure as a service (IaaS). Students will learn tools and strategies to build web applications based on cloud services and integrate third party APIs and integrate big data tools such as predictive analytics.

Mobile Application Practicum (5) AD 430

Prereq: Mobile Apps & SW Lifecycle

In this course students will work in teams to create a mobile web application. Students will store and share code via a software versioning system and utilize small team agile strategies. Students will write requirements documents, build the application in stages and integrate components into a larger group project.

Project Management in Software Development (5) AD 400

Prereq: Completed at least one practicum

This course provides a comprehensive overview of current processes, practices and tools used to manage software development projects. Using a combination of industry-relevant case studies and projects, students will learn and apply best practices for planning, organizing, scheduling, and controlling software projects, and how to adapt strategies to specific project needs and constraints. Topics also include requirement identification and analysis, project documentation and legal and licensing requirements.

Cloud Computing Practicum (5) AD 440

Prereq: Cloud Computing & SW Lifecycle

In this course students will work in teams to create a cloud hosted application. Students will store and share code via a software versioning system and utilize small team agile strategies. Students will write requirements documents, build the application in stages and integrate components into a larger group project.

Internship – or – Capstone (5) AD 490

Prereq: Faculty permission

Provides practical work experience and employment contacts by integrating academic studies with actual on-the-job training situations. Orientation to internships required prior to registration. Produce a major project that responds to a client problem or request. Work in teams or carry out an individual project as an intern/ extern. Select and work closely with industry mentors. Emphasis on research, accuracy, technology skills, timeliness, teamwork, quality, client/customer satisfaction and usability.

Notes

Usability design will be threaded throughout

Legalities, Ethics, and IP issues, will be threaded throughout

One of the GEN EDs has to be a Social Science

Suggested Electives

- Math 146 – Intro to Statistics (5) OR BUS 210 – Business and Economics Statistics (5)
- PHIL& 120 – Symbolic Logic

- PHYS 114 – General Physics I with Lab (5)
- NANO 101 – Intro to Nanotechnology (5)
- ENGR 240 – Intro to Numerical Methods (5)
- ECON& 201/202 – Micro or Macro Economics

The Curriculum Development Process

In the fall of 2012 former North Seattle President Mark Mitsui joined the Washington Technology Industry Association (WTIA) Task Force charged with increasing the number of IT related graduates in the State of Washington to try and help meet the chronic shortage of qualified, well-trained technology workers. This state-wide group was primarily composed of four year private and public university members, government officials and technology industry representatives. President Mitsui came back from this group convinced that North Seattle could play a role in alleviating the shortage by developing a Bachelor of Applied Science in Application Development. This would be a new degree that would stress application over the theoretical aspects of the traditional computer science degree. The proposal was met with support from the WTIA. WTIA member Phil Herres, Senior Advisor of Meridian Capital LLC, along with Bill McMeekin, Executive Dean for Career/Workforce Education at NSCC, and Malcolm Grothe, Associate Vice Chancellor of the Seattle College District, began interviewing tech company executives, chief information officers, and Human Resource representatives (see Application A and B to SBCTC) in the spring of 2013 to first gauge the need for the degree and secondly determine what the curriculum should stress. Early on in the interviews it was clear that the college should move forward with the degree.

Armed with this knowledge the proposed AD curriculum was put together by six faculty members from North, South and Seattle Central along with the Workforce Dean and Vice President of Instruction from North Seattle. It is in part based on interviews with fifteen companies, private and public, large and small and including IT temp agencies, about the proposed degree. Most of these interviews consisted of an hour interview with a set of sixteen questions (See Part B Application). In some cases as with Microsoft and Well Played Games, the Center of Excellence for Information and Computer Technology hosted a round table discussion with North's proposed BAS degree as the subject. The roundtable at the IT Summit put on by the COE on June 7th 2013, included two representatives from Microsoft and one representative from Well Played Games as well as seven other IT community college and high school faculty. The feedback we received from this group was very helpful in putting together our degree. We gained further input from our initial correspondence with Eastern Washington University and Seattle University where we discussed the proposed degree with the Computer Science Department Chairs. (The formal review from each university is in Section 8.)

Applied Learning Opportunities

This degree includes significant applied learning opportunities. The practicums are designed to ensure real world, practical applications of the concepts and tools learned. The internship will take place in a business of the student's choosing with the help of the internship coordinator.

Based on the feedback from the employers that the college interviewed, internships are an integral part of the learning experience. Advisory group members put a great deal of emphasis on applied learning activities. Experiential learning that is much more than job shadowing will be essential both for the student and for the employer. Meetings between industry employers and North's internship office are planned over the next six months to ensure a careful process is crafted. Program faculty and students will be included in the formulation of the internship plans. At the conclusion of the internship, students will be required to complete a paper or portfolio that documents and analyzes their experiences, makes recommendations for future operations of the business or businesses where they worked (if appropriate), and demonstrates their ability to relate theory to practice. The outcome of the practicum and the internship will be projects that can be incorporated into a portfolio to show the prospective employer our students can carry through on a given project from start to finish.

The success of the internship program rests in large part on the successful identification of businesses to participate. Program staff and faculty will continually work with the advisory committee and industry organizations to promote the program to businesses. By the time our first group of students are ready for their internships, the college's industry partners will be ready. Internships and job placement go hand in hand. North will hire a part-time internship coordinator who will work on job placement as well. This important advisor will meet with students and faculty on a regular basis beginning at the time they first matriculate. Working closely with faculty advisors and college counselors, the internship and placement coordinator will do the following:

- Help students identify special interest areas
- Work with program faculty on industry contacts
- Work with program faculty to identify student strengths and weaknesses
- Place students into appropriate internships
- Monitor progress, providing feedback and assistance to employer, faculty and student
- Help the students develop career plans
- Assist with job and career placement

Credit for Prior Learning

North Seattle Community College will accept up to 25 percent of the credits for the AD degree based on prior work experience. The college recognizes the importance and relevance of prior learning assessment and has made strides in making this easily accessible for students.

- North follows the recommendations made by the American Council on Education when evaluating military training and education records. The college's Veteran's Center will help active and veteran military personnel contact appropriate faculty to work with.
- Students may test out of specified courses by taking the final examination. This Credit-by-Exam method is widely used.
- Students may receive credit through the Prior Experiential Learning Portfolio (PELP) program. This method is appropriate for persons who have acquired knowledge and skills in ways that are not covered by "traditional" tests and transcripts. The college has made a special effort to assure that this process is publicized to students. While the review process for PELP is extensive, students will find faculty very helpful in completing the portfolio.

Essential Learning Outcomes (ELOs)

In addition to the Program Outcomes above AD students will have the same four Essential Learning Outcomes that North Seattle fosters in all its students:

Knowledge – Methodologies, facts, theories, and perspectives within and across disciplines
Intellectual and Practical Skills, including critical thinking and problem solving, communication and self-expression, quantitative reasoning, information literacy, technological proficiency, collaboration: group and team work

Personal and Social Responsibility, including civic engagement: local, global, and environmental, intercultural knowledge and competence, ethical awareness and personal integrity, lifelong learning and personal well-being

Integrative and Applied Learning – synthesis and application of knowledge, skills, and responsibilities to new settings and problems

The ELO's are embedded in the upper-division courses that are part of the AD degree.

2. Qualified Faculty

The program planners analyzed the faculty and staff needs of the program as well as their educational and professional qualifications. The number of instructors needed is based on the number of students to be enrolled and the number of courses offered per quarter during the school year. The college projects that there will be six new 300 level courses in Year 1 of

operation and seven new 400 level courses offered in Year 2. In Year 1 the college will hire a full-time AD faculty/coordinator for the program. These courses will be taught by full time faculty, part-time faculty or full-time faculty moonlights. There will be the equivalent of .67 FTE allocated the first year and then 1.34 FTE the second year.

The full-time faculty hired in Year 1 of operations will have a minimum of an MS in computer Science or Engineering with at least five years of work experience in software development. Experience in teaching in higher education, preferably at a four-year institution, and advising students at the bachelor's degree level or above will be required. While faculty with Ph.D.'s in IT related disciplines will be preferred, a candidate with an MS and extensive software development experience may be equally qualified given the applied nature of North's applied curriculum. Every effort will be made to find the most qualified candidate who has the credentials and classroom experience to be effective.

The college will also allocate \$10,000 a year to promote faculty "Back to Industry opportunities" to keep current with the rapidly changing information technology landscape.

Similarly high standards will apply to any part-time faculty we hire. Part-time instructors selected to teach for the core courses will have an advanced degree in computer science or engineering or related fields as well as real-world experience directly applicable to the course being taught. A preferred but not required qualification is prior college teaching experience.

The program will also utilize the experience of North's and the District's existing faculty who have earned advanced degrees and have college teaching experience at the four-year level. Selected faculty will be a part of the advisory committees, curriculum development committees, and faculty recruitment committees as well as participate in team-teaching activities and guest lectures.

The General Education requirements will be taught by North's current faculty who possess Master's Degrees and, in many cases, Doctorates.

Funds will be made available for faculty to further increase their pedagogical skills in order to deliver curriculum that compels and reinforces student engagement. The Seattle District is in an advantageous position with North Seattle, Seattle Central, and South Seattle also offering BAS degrees in other fields: moreover, there exists a critical mass of faculty within the district who can meet on a periodic basis to share successes and challenges.

All faculty teaching the technical courses will have the certification requirements included in the Washington Administrative Code.

North Seattle and the Seattle District are deeply committed to hiring diverse faculty. The college participates in national recruiting fairs specifically for faculty of color and advertises with higher education journals that focus on diversity hiring. This year for the first time selected administrators and faculty from North have been trained at Oregon State in OSU's

recruitment and retention of diverse faculty program, called Search Advocacy. North plans to apply the principles learned at the training to its hiring practices.

Library Resources

The North Seattle Community College library has the physical facilities, the collection, the staffing and staff expertise, hours of operation and the collaborative agreements with other educational institutions which meet or exceed the needs of the Application Development Baccalaureate program.

The library has a total square footage of 37,953 feet. There is ample room to support a baccalaureate program. Though group study rooms are currently at a premium, there are plans to add more. Adding computers and upgrading furniture are additional considerations to support upper-division courses.

The college's full-time librarians are assigned to specific divisions within the college as liaisons. The librarians communicate with division faculty, asking for suggestions on books, media, and other resource purchases. More importantly, they use their subject expertise to instruct students and faculty in the information literacy skills required for each discipline, at the appropriate level required. Upper-level courses require more in-depth instruction in discipline-based resources and research skills. Therefore, the college will hire a part-time librarian that has a strong background in computer science and software development. Fifty percent of his/her time will be devoted to the program beginning with the first operational year. Additional funds will be allocated for acquisition of databases, journals, etc. to support the increased emphasis on research. With the new BAS program in International Business starting up this fall, the library's hours of operation have been expanded to accommodate the students.

Serials, periodicals and reference materials play a major role in resources for upper division courses. The college has an adequate book collection for lower-division courses and acquiring the necessary books and reference materials to meet the needs of junior and senior level students. Similarly, the periodicals and serials will be improved and upgraded to reflect the depth necessary for exploration and research. Finally, databases such as CM Digital Library, IEEE Computer Society Digital Library, and Science direct will be renewed annually.

The library is a member of a District-wide consortium, so many of the databases are covered. Some of the databases and resources that the college utilizes are due to this partnership. These shared databases include ABI/INFORM Trade Industry and Access Science and Academic Research Complete.

Finally, the Director of Library Services at North is developing a Memorandum of Understanding with the University of Washington libraries for onsite access; note, however, that there is no remote access to their databases.

Moreover, the college will ensure that students and faculty in the baccalaureate program have the appropriate information resources, subject matter experts, and facilities to support the currency, depth and breadth of the degree.

Administration

The program will be led by Interim Math and Science Dean, Tom Griffith. He currently supervises all STEM programs at the college including our very strong Computer Science Department. He also works very closely with Dr. Terry Cox, Dean of our Business, Engineering and Information Technology Department. In addition to hiring and evaluating faculty, he will be responsible for scheduling, curriculum development, budget monitoring, articulation agreements, supervision of support staff and coordination with other departments (particularly IT) on campus and throughout the district. He reports to Vice President of Instruction Peter Lortz, who will have the overall administrative responsibility for the program. Vice President Lortz will ensure that the academic quality, rigor, and integrity of the degree are maintained as well as ensuring that the necessary college-wide support for the degree is in place.

The faculty team involved in the AD program will work closely with the Dean and Vice President of Instruction to deliver rigorous high-quality instruction and maintain a high level of scholarship and professional development. As mentioned, funds will be made available for faculty to further increase their pedagogical skills and research interests in order to deliver curriculum that compels and reinforces student engagement. The Seattle District is in an advantageous position with all three Seattle colleges already offering BAS degrees. There exists a critical mass of faculty within the district who can meet on a periodic basis to share successes and challenges.

Moreover, a part-time clerical person, a part-time financial aid support person, and a part-time advisor will be hired during the Planning Year (2013-2014) and a part-time internship coordinator will be hired at the beginning of Year1 of operations (2014-15).

The classified staff person will provide clerical support to the faculty and Dean Griffith. Responsibilities will include fielding student inquiries, classroom scheduling, support with curriculum development, support for the AD Technical Advisory Committee, support for recruitment and admissions activities as well as other duties as assigned. The responsibilities of the advisor and internship coordinator have been covered in previous sections.

Enrollment

The program will enroll twenty-five students in its first year with an additional 25 in year 2 as the first class moves on to their senior year. From then on the college will enroll 30 students in each cohort.

	2014-15	2015-16	2016-17	2017-18	2018-19
Enrollments	25	50	55	60	60
Completions*	20	45	50	55	55
*factors in attrition					

Since many of the students who enroll in the AD program will be working adults, the college plans to offer the program through a variety of delivery methods including grounded (traditional face-to-face) classes, on line classes, and hybrid classes (part on line and part grounded). The hybrid and grounded classes will be offered in the evening and on Saturdays to accommodate the schedules of already employed students. North's convenient location just off 1-5 puts it within one hour of 2.5 million people.

As has been stated, the AD degree is designed for students who desire to work in technology companies or companies that have large IT departments, as well as those who already work in IT related fields. Students from several different IT related District AAS, AAS-T programs, will be qualified to enter the baccalaureate degree program. The table below delineates the number of IT related degrees and certificates, their enrollment history.

Table. Seattle District IT Related Enrollment History & Year Established

Colleges	Degree/Certificate	Enrollment (Years)					Total
		2007 -8	2008 -9	2009 -10	2010 -11	2011 -12	
North							
Est. 2001	Infrastructure and security Associate (527G/T)	93	55	48	119	142	457
2001	Cert IT Net Infra/Sec Support	61	74	99	77	60	371
2001	Cert Network Administration	75	69	104	117	67	432
2005	Linux/Unix Admin Cert (533D)				1	7	8
2005	Cert IT windows 200 Completion		7	14	3	1	25
2010	Cert Net Admin Microsoft Win Completion					3	3
Total		229	205	265	317	280	1296
Central							
Est. 2003	Network Design & Admin Associate (527T)	255	370	430	559	550	2164
2003	Computer Programming Associate (515T)	144	143	227	273	273	1060
2003	Web Design Associates (524T)	434	513	496	628	711	2782
2003	Database Design & Network Cert (503C)	222	245	307	292	173	1239
2000	Network Design & Admin Cert (527C)	62	102	205	243	196	808
2000	Computer Programming Cert (515C)	100	118	112	134	110	574
Total		1217	1491	1777	2129	2013	8627
South							
Est. 2004	Network Technician AAS (509/C)	8	7	16	7	23	61
2001	Network Admin AAS (527/527T)	294	325	571	573	517	2280
Total		302	332	587	580	540	2341
Overall		1748	2028	2629	3026	2833	12264

Students in the Associate Science Transfer, Option 2 would also be able to enroll in the AD program.

Potential Feeder Programs from Other Community Colleges

In addition, Shoreline, Edmonds, Highline, Bellvue and Olympic have strong IT feeder programs that will graduate likely candidates for the AD program.

Articulation agreements are being pursued with all these institutions for the one or more degrees that they offer. This fall BAS staff will alert the workforce deans and vice presidents at Edmonds CC, Shoreline CC, and Highline CC, that North is seeking approval to offer a BAS degree in Application Development. If approved, AD BAS program staff will be meeting with appropriate college staff at each of these community and technical colleges to work out articulation agreements and make sure that their students are aware of the best courses to take to transfer into the AD program at North.

It is important to note, though, that students coming to the program with any two year associate degree will be eligible for the program once the prerequisites are met.

3. Selective Admissions Process is Consistent with an Open Door Institution

Students will go through an application process, with clearly-defined minimum qualifications and prerequisites. Students will be expected to have completed an AAS, AAS-T, AAAS, or AB degree with a minimum 2.0 cumulative GPA, and to have completed 25 credits of IT-related courses. The applications will be reviewed and scored by a team of faculty, staff and advisors who know the program. A draft application has been completed and criteria have been set by a subcommittee of the BAS Implementation Team. Cohorts are expected to have 25 students and start each fall for the first two years then increase to 30. The students will attend an orientation, and have a Student Handbook that outlines procedures, expectations, and requirements for continuation in good standing in the program.

Every effort will be made to ensure that the program will serve a diverse population. As noted in Form B of the SBCTC application North Seattle Community College and the Seattle Community Colleges are in an excellent position to ensure diversity. The District enrolls over 50,000 students and is second only to the University of Washington in student population in Washington State. It is a very diverse district, with North Seattle enrolling 31% students of color out of a total of 6,303 students in 2010. Fifty six percent of Seattle Central's 6,000 students are people of color and 54% of South Seattle's 6,100 are nonwhite. Moreover, this strong ethnic mix will strengthen the Application Development program as it develops.

4. Appropriate Student Services Plan

The North Seattle Student Development Services (SDS) unit is in a very strong position to accommodate the changes that will occur with the new AD degree. The AD Implementation Task Force is working on policies and procedures to prepare for the students who are pursuing

the new degree. This is happening in the midst of major changes to the SDS area based on the statewide emphasis on the Student Completion Initiative. North is in its third year of offering more services than ever to ensure that students will be successful in meeting their academic and career goals including a much greater concentration on up-front advising and academic counseling. The new AD students will be able to take advantage of this more focused effort as well as build on the advising and retention strategies being used in our new BAS in International Business.

The college plans to hire a part-time advisor to work with the AD students exclusively. The advisor will be able to give comprehensive advising regarding credential evaluations, scheduling, financial aid, academic support options, and other student services needs that may occur. S/he will complement the Student Development Services departments that are already functioning at a high level. In addition, s/he and SDS staff will adapt the BAS Student Handbook that has been developed for the BAS programs at North and South Seattle. North can draw on the five years of BAS experience of South and the two years of BAS experience at Central and one year at North to provide the very best in student support. The AD handbook will include the following:

- Information about college including the goals and student learning outcomes of both the college and AD program specifically
- Procedures for getting started – admissions, advising, registration, financial aid, etc., as well as for finishing – graduation requirements.
- Program policies – leave of absence, satisfactory progress, etc.
- Course of study information – curriculum map, internships
- Student services – veteran’s services, bookstore, disability support, etc.
- Academic help – tutoring, writing center, math center, library, computer labs, etc.

The college expects that most AD students will be eligible for and will want access to financial aid. Therefore, the Financial Aid unit will dedicate a .25 person to work with the AD students. This staff member will specifically be assigned to help students navigate VA requirements, process FAFSA paperwork in a timely manner, and assist students in completing scholarship applications offered both internally and externally. Based on the experience of the BAS programs at South Seattle this is an essential position. North’s Financial Aid Department has been approved to offer third- and fourth-year funding from the Department of Education upon approval to offer the degree so that students can be assured of their reward in the spring.

Another important consideration for AD students is the location of the Opportunity Center for Employment and Education on the North campus. As mentioned earlier, this “one stop” center houses the colleges Workforce Education offices that will be important for financial aid support, the employment Security and WorkSource offices that can help with additional funding and job

search assistance, DSHS offices that can help basic needs such as food stamps, cash assistance, medical benefits, etc., as well as numerous Community-Based Organizations that can provide a variety of support to help students with retention and completion efforts.

In addition to this, the college will be hiring an internship coordinator for AD students. As has been mentioned in the curriculum section, the internship coordinator will be a key support person in working with faculty to set up the internships and matching student interests with employer needs.

While meaningful upfront advising and orientation are keys to student success, AD faculty and student support staff will focus on retention as well. Faculty will let the advisor know of students who are experiencing difficulty during the program. The staff will have an Academic Early Warning program similar to the one we offer to associate degree students. In the first year faculty mentors will be set up for students and as the program matures second year students will act as mentors for first year students who request additional support. As mentioned earlier Prior Learning Assessment will be used extensively in the program. This is a proven tool for retention. The Council on Adult and Experiential Learning (CAEL) has found that a student who receives PLA credit from his/her four year college is 2.5 times more likely to complete than a student who does not. (The research showed that students from two year colleges were twice as likely to complete if they receive PLA credit.)²

Moreover, the AD degree will have a very positive impact on the student body at North and the District by providing a much greater opportunity for students to successfully transfer to a four-year program. In addition, these students will serve as role models for other students who are not in the program but may aspire to continue their education. North and the District will now be able to offer a significant career and educational ladder from AAS-T to BAS at a convenient location and cost.

5. Commitment to Build and Sustain a High Quality Program

Funding to North Seattle Community College for its applied baccalaureate degree in Application Development will begin in 2013-2014 and will include a one-time allocation from the college of \$126,660 for Year 1 and a one-time allocation for \$215,375.51 for Year 2, and \$40,188.01 for Year 3. The recurring revenue sources in future years' operations will be funds collected from student tuition and fees and the normal state allocation. For the current academic year the per-student tuition and fees for 10 credits of upper division courses is \$2,454.50 per quarter. That amount is used throughout the budget planning process even though tuition will likely increase.

² CAEL's multi-institutional study, [Fueling the Race to Postsecondary Success](http://www.cael.org) www.cael.org

The exact amount per student depends on the mix of upper- and lower-division courses in the student’s schedule and the student’s residency status.

The Seattle District has demonstrated the capacity and resources to build and sustain quality baccalaureate programs of study. This will be North Seattle’s second BAS degree and the sixth BAS degree for the District. This record of accomplishment demonstrates that the college will ensure that adequate financial and human resources are available to make the program a success. The financial plan for the AD program proposal is provided below, including projections of all the costs, expenditures, and revenue streams to support the proposal. Moreover, the proposed budget is sufficient to fund the necessary activities to build and sustain an outstanding program that will meet or exceed accreditation standards.

North Seattle projects the expenses to be \$126,660 for the planning year and \$364,845.51 for Year 1, then \$376,045.51 for Year 2. The increasing costs in the second year are due to offering courses at both a junior and senior level. Costs level off in the following years.

As mentioned, the college will make one-time allocations totaling \$387,210.50 to cover expenses over the first four start up years of the program. The first four years of operation (2014-15, 2015-16, and 2016-17, and 2017-18) will be supplemented by tuition and fees. A conservative estimate of Year 1 tuition revenues is \$147,270.00, increasing to \$331,357 with junior and senior year enrollments for Year 2 . In year 3 the college will begin increasing the cohort to 30. There will be two full cohorts at 30 each in year 4. We estimate we will lose students to attrition, but hope fill those slots immediately (See page 19).

Proposed Budget for AD BAS Degree

Expenses					
Staff	Year 0	Year 1	Year 2	Year 3	Year 4
PT - Faculty	\$ 45,000.00	\$ 8,000.00	\$ 28,000.00	\$ 28,000.00	\$ 28,000.00
FT Faculty/Coordinator	\$ -	\$ 56,000.00	\$ 56,000.00	\$ 56,000.00	\$ 56,000.00
Faculty Research	\$ -	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
Administrator (0.25)		\$ 20,397.00	\$ 20,397.00	\$ 20,397.00	\$ 20,397.00
Library (.5)		\$ 26,000.00	\$ 26,000.00	\$ 26,000.00	\$ 26,000.00
Advisor (.5)	\$ 10,000.00	\$ 24,000.00	\$ 24,000.00	\$ 24,000.00	\$ 24,000.00

Internship Coordinator (.5)	\$ 18,000.00	\$ 24,000.00	\$ 24,000.00	\$ 24,000.00	\$ 24,000.00
Clerical (0.25)		\$ 7,000.00	\$ 7,000.00	\$ 7,000.00	\$ 7,000.00
Financial Aide Assistant (0.25)		\$ 11,250.00	\$ 11,250.00	\$ 11,250.00	\$ 11,250.00
Contracted Services	\$ 2,500.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Subtotal	\$ 75,500.00	\$ 191,647.00	\$ 211,647.00	\$ 211,647.00	\$ 211,647.00
Benefits@31%	\$ 23,405.00	\$ 59,410.57	\$ 65,610.57	\$ 65,610.57	\$ 65,610.57
Cost of Living@1%	\$ 755.00	\$ 2,671.47	\$ 4,787.94	\$ 6,904.41	\$ 9,020.88
Total	\$ 99,660.00	\$ 255,845.51	\$ 282,045.51	\$ 284,161.98	\$ 286,278.45

Item	Year 0	Year 1	Year 2	Year 3	Year 4
Goods & Services	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Travel (Professional Development)	\$ 2,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
Equipment	\$ 5,000.00	\$ 35,000.00	\$ 10,000.00	\$ 10,000.00	\$ 10,000.00
Marketing	\$ 10,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Software	\$ 5,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00
Library Materials		\$ 39,000.00	\$ 49,000.00	\$ 49,000.00	\$ 49,000.00
Totals	\$ 27,000.00	\$ 109,000.00	\$ 94,000.00	\$ 94,000.00	\$ 94,000.00

Grand Totals	\$ 126,660.00	\$ 364,845.51	\$ 376,045.51	\$ 378,161.98	\$ 380,278.45
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Revenues					
Item	Year 0	Year 1	Year 2	Year 3	Year 4
Tuition and Fees@ \$7364 for 3q	\$ -	\$ 147,270.00	\$ 331,357.50	\$ 368,175.00	\$ 404,992.50
Fee's \$100 per Student	\$ -	\$ 2,200.00	\$ 4,500.00	\$ 5,000.00	\$ 5,500.00
Totals	\$ -	\$ 149,470.00	\$ 335,857.50	\$ 373,175.00	\$ 410,492.50

Enrollments: 20, 45, 50, 55

Difference	\$ (126,660.00)	\$ (215,375.51)	\$ (40,188.01)	\$ (4,986.98)	\$ 30,214.05
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Expenses

1. \$45,000 will be allocated to faculty for curriculum development, attendance at advisory committee meetings, etc. during the planning year.
2. Personnel for instruction include salary and benefits for part-time faculty during Year 1 and the addition of a full-time faculty/coordinator in Year 1 of operation. Stipends for curriculum development and advisory committee coordination are included in this budget. It is expected that students will complete many of their general education requirements by enrolling in existing courses.
3. Because of the importance of research for the AD degree, \$10,000 will be awarded to faculty for curriculum-related research projects each year of operation.
4. During the planning year, additional library staff hours will be dedicated to the project. A 50% portion of time for the faculty librarian will be funded in the operational years to facilitate materials selection and acquisition associated with expansion of the library to support the baccalaureate degree as well work directly with the BAS students.
5. The college will hire a part-time (.5) advisor to help support the students. This will begin winter quarter of Planning Year.
6. The part-time (.5) Internship coordinator will be hired at the beginning of spring quarter of the Planning Year.
7. A part-time (.25) clerical support person will also be hired in the Year 1 of operation.
8. A part-time (.25) Financial Aid assistant will be dedicated to the BAS students in Year 1 and will continue through the next three years. This funding will help support an additional hire in the department.
9. Benefits are calculated at 30% with a 1% cost of living raise per year.
10. Goods and services include desk supplies, and teaching and learning materials for the program.
11. Travel includes registration, hotel and travel expenses to conferences for faculty/staff professional development.
12. Equipment includes mobile devices and computer lab for BAS students purchased in Year 1 and its on-going maintenance in the next three years of operation.
13. Marketing and outreach costs include brochures, college fairs, etc.
14. Software includes purchasing and licensure.
15. Library materials include the acquisition of databases, journals, etc. to support the increased emphasis on research.

Revenues

16. The college forecasts enrollment at 25 students per year for a total of 50 students in the program for the second two years of operation. In year 3 the incoming class will increase to 30 students for a total of 55 students and the incoming class in year four will also be 30 students for a total of 60. A few students will inevitably drop out, additional students may enroll in winter and spring quarters to make up vacancies. For accuracy, however, the actual tuition and

fees collection in the budget is based on 20 students in Year 1, 45 students in Year 2, 50 students in year 3 and 55 students in Year 4. Class caps will be at 30 in future years.

17. In addition to the one time allocations in Years 1 and 2 from college resources, AD program staff will work with the North Seattle Education fund (Development Office) and the college foundation to raise additional funds for both scholarships and operations.
18. The calculations for tuition and fees -\$2,454.50/student/quarter- are based on the current year (2012-2013) rates for the Applied Baccalaureate degree according to the SBCTC. Even though tuition has risen yearly at 12% over the last four years, for planning purposes the college will use the current fee schedule. In addition, there are three rates used by the SBCTC: 10 credits of upper division courses = \$2,454.50; 15 credits of upper division courses = \$2,503.90; and 18 credits of upper division courses = \$2,533.54. This is all on a per quarter basis. For planning purposes 10 credits @ \$2,454.50 per-quarter is being used.
20. Each student will pay approximately \$100 per year in fees.

The college realizes that with any new endeavor there may be start- up problems. If enrollment does not reach the enrollment targets listed here, or the attrition rate is higher than we anticipate, the college will underwrite the program until such time that the enrollment and retention have reached satisfactory numbers.

6. Program Specific Accreditation

The college submitted *The Prospectus for Substantive Change* to the Northwest Commission on Colleges and Universities in late September of this year. Former NSCC President Mitsui received a letter from the commission dated November 26, 2012 granting *candidacy status* at the baccalaureate level and NSCC was approved to begin enrolling students in our International Business program. We are awaiting similar - "approval" for this degree. One of the first tasks for the advisory committee is to help with determining what other accrediting bodies the AD program should affiliate with. Many computer science programs and software engineering technology programs in the state list ABET accreditation. Since Application Development is such a new degree there is not at this time an accreditation forum. ABET accreditation may be pursued after the first two years of the program are completed. Should an accreditation process emerge specific to this degree, faculty and staff will follow up immediately. A second accreditation possibility for immediate graduates of the program is the Certified Software Development Associate, and the Certified Software Development Professional sponsored by the - IEEE Computer Society. These are avenues we will explore in the first year.

7. Pathway Options Beyond the Baccalaureate Degree

North Seattle will be meeting with Seattle University, Eastern Washington University Computer Science Departments and the University of Washington Department of Computer Science and Engineering to discuss potential for articulation agreements for the MS programs. The Tacoma

and Bothell campuses of the University of Washington will also be included. Because the programs at all three universities are so competitive, articulation agreements may not be possible, but we hope to ensure that North Seattle AD graduates would be judged on the merit of their applications just as any other applicant. AD staff will be meeting with other four year universities including City University, Western Governors University, Western Washington University, Washington State University, Northeastern University as well as other MS programs in the Puget Sound region to set up potential articulation agreements. Talks have already started with City University and WGU.

Appendix 1

Employers Interviewed for the Degree

Company	Description	Contact
Nordstrom	National Wide Clothing Store	John Mayfield, VP for IT
City of Seattle	IT Department	Erin DeVoto, CIO Shawn Abernethy IT – HR Dept
WA Sate OCIO	State’s IT Department	Michael Cockrill Chief Information Officer
Expedia	Online Travel Business	Rajeev Khanna, VP for IT
Microsoft	Software Publishing, Gaming, etc,	Jim Pinkelman, Peli de Hellaux, MS Research
Piraeus Data	IT Consulting- Digital Tools works with Microsoft	Jared Hennessey Director of Dev.
F5 Networks	Large Networking company – Application Delivery	Jack Alfred Product Support
Synapse	Engineering and Design Firm	Scott Bright Board Co-Chair
Freelock Computing	High End Web Development Company	John Locke Principal
Prithvi Catalytic	IT Temp Agency with MS Connections	Shannon Krohn VP for Operations
Bold IQ	IT Consulting	Roei Ganazarski President
RAMP Group	Gaming Company working closely with MS	Bob Duffy Managing Partner
Energy Savvy	IT Consulting in energy field	Leo Shklovski Chief Technology Officer
Well Played Games	Gaming Company	Chris Orth – Owner
Bruce Shatzman	IT Consultant/Entrepreneur	Owner – sold one start-up, currently has 2 in development, former MS

