

FORM 3

**COVER SHEET
EXTENSION OF AN EXISTING PROGRAM NOTIFICATION OF INTENT
(LOCATION NOI)**

Part I requires the completion of the following forms: Appendices B-4, B-5, and B-6.

Program Information

Program Name: Electrical Engineering

Institution Name: Eastern Washington University

Degree-Granting Unit: College of Science, Health, and Engineering
(e.g. *College of Arts and Science*)

Degree: B.S. Electrical Engineering Level: Bachelor Type: Science
(e.g. *B. Chemistry*) (e.g. *Bachelor*) (e.g. *Science*)

Proposed Starting Dates: Fall, 2008

Projected Enrollment (FTE) in Year One: 20 At Full Enrollment by Year: 2010: 40 FTE
(#FTE) (#FTE)

Proposed New Funding: _____

Funding Source: State FTE Self Support Other:

Major: Electrical CIP Code: 14.1001

Mode of Delivery / Locations

Single Campus _____
(enter locations)

Off Site North Seattle Community College Campus (NSCC)
(enter location(s))

Distance Learning Two-way interactive with on-site laboratories
(enter formats)

Other

Note: If the program is the first to be offered at a given site or location, the submission must also include the information required for the establishment of a new teaching site as outlined in section B.1 of the Program and Facility Approval Policy and Procedures.

Scheduling

Day Classes Evening Classes Weekend Classes

Other (describe)

Attendance Options

Full-Time

Part-Time

Substantive Statement of Need

Attach Sheet

Contact Information (Academic Department Representative)

Name: Don Richter
Title: Professor and Chair
Address: 319 Computing and Engineering Building, Cheney, WA 99004
Telephone: (509) 359-2880
Fax: (509) 359-6420
Email: drichter@ewu.edu

Endorsement by Chief Academic Officer:

Date

I. Program Need

1.1 Relationship to Institutional Role and Mission

Eastern Washington University's mission states, "Its campus is located in Cheney, within the Spokane metropolitan area, with additional learning centers in the region and elsewhere in Washington State." A tremendous shortage of engineers exists in Washington State while Electrical Engineering graduation rates are not increasing. In light of this, additional Electrical Engineering student capacity is needed in the State. As the largest potential for Electrical Engineering students exist in the Puget Sound region it seems appropriate to conduct an Electrical Engineering program in the Seattle area, in addition to the existing one in Cheney.

Eastern Washington University will achieve its mission by, among other things, "providing high-quality integrated, interdependent programs that build upon the region's assets and offer a broad range of choices as appropriate to the needs of the University's students and the region." The September 2000 report "A Strategic Plan for the Sustainable Economic Development of the Spokane Area of Washington", written by Dr. David Kolzow, called for the local higher education institutions to strengthen or create programs in information technology, engineering, health sciences, software development, and professional services, all of which have been identified as important to the future growth of the Spokane area. Eastern Washington University is helping to achieve this economic development through the new Electrical Engineering program.

1.2 Documentation of Need for Program

1.2.1 Justification/workforce needs of program graduates

The American Electronics Association (AeA), the nation's largest technology trade association, reported in *Cyberstates 2007: A Complete State-by-State Overview of the High-Technology Industry*, that Washington's high-tech industry added 4,500 jobs for a total of 156,500 in 2005 ranking it 14th in the nation. This is the most current data available. The report further states that Washington's largest and fastest growing sector remains software publishers, which grew by 2,100 net jobs in 2005 for a total of 41,100 jobs. Washington ranks 2nd in the country in this sector, behind California. Other sectors that experienced significant growth in 2005 included Internet services (+1000 jobs), engineering services (+900 jobs), and computer systems design and related services (+900 jobs). Washington State had 6,800 high-tech establishments in 2005, ranking it 17th nationwide and 8th in electromedical equipment manufacturing employment with 3,500 jobs.

"Washington still faces a number of challenges going forward. We are not graduating enough scientists and engineers to maintain this growth," says Jeff Severs, CEO of SprayCool in Spokane (*Cyberstates 2007*). "Go to the websites of Washington's technology companies – large and small – and you'll find thousands of positions going unfilled because companies cannot hire enough qualified graduates from our universities and they cannot recruit talented foreign nationals due to visa restrictions. This does not bode well for the state's economic future."

Cyberstates 2007 further says that nationally the high-tech industry is becoming stronger. High-tech employment was up by 146,600 out of 5.8 million workers in 2006, the second year in a row that the U.S. tech industry has added jobs.

A 2002 AeA evaluation of the need for engineers in Washington State concluded that eight of the ten fastest growing jobs in America over the next ten years require high tech degrees. Degrees must triple to keep up with job opportunities. But, on-the-other-hand the Washington State's institutions of higher education graduate fewer high-tech degrees now than ten years ago.

The US Bureau of Labor Statistics' *Occupational Outlook Handbook* (<http://www.bls.gov/coc/ocos027.htm>) provided the following statistics for electrical-related engineering fields:

- Computer hardware engineers are expected to have 9-17% increase through 2014. The manufacture of computer hardware is expected to be affected by intense foreign competition therefore much of the growth in employment should occur in the systems design and related services industry. Employment in computer system design and services will grow by 38.3% between 2006-2016.
- Electrical engineers should have favorable employment opportunities. Employment of electrical engineers is expected to increase about 9-17% for all occupations through 2014. Strong demand for electrical devices such as giant electric power generators or wireless phone transmitters should boost growth. Prospects should be particularly good for electrical engineers working in engineering services firms providing technical expertise to other companies on specific projects.
- Electronics engineers, except computer, should have good job opportunities, and employment is expected to increase about 9-17% for all occupations through 2014. Rising demand for electronic goods—including advanced communications equipment, defense-related electronic equipment, medical electronics, and consumer products—should continue to increase employment. Job growth is expected to be fastest in service-providing industries—particularly consulting firms that provide expertise in electronics engineering.

Table 1 documents Bureau of Labor Statistics employment data for Electrical Engineering-related fields in Washington State during the period 2002 to 2006.

Table 1. Employment in Electrical Engineering related fields 2002-2006

Employment*	2002	2003	2004	2005	2006
Washington State					
Electrical Engineer	3,030	3,680	3,800	3,920	No data
Electronic Engineers	2,980	2,600	2,910	2,850	3,460
Computer Hardware Engineers	1,140	1,120	1,020	1,150	No data

*(source: <http://www.bls.gov>)

It is important to point out that Table 1 presents increasing numbers for every year since 2002. The increase of total employment in the 2002-2005 range is 10.77%. Bureau of Labor Statistics says that two-thirds of the above mentioned computer, electrical, and electronic engineering positions in Washington State are in the Seattle-Tacoma-Bellevue area.

Table 2 provides data on past average growth for employment of electrical engineers. The electrical engineering degree provides course work in electronics and computer hardware. Therefore statistics on computer hardware engineers, electronics engineers, and electrical engineers were included.

Table 2. Past Growth for Electrical Engineers Occupational Projections

Estimated Employment*	Annual Avg. Growth 2003-04	Annual Avg. Growth 2004-05	Annual Avg. Growth 2002-05
Washington State			
Electrical Engineers	3.3%	3.2%	29.4%
Electronics Engineers	11.9%	-2.1%	-4.3%
Computer hardware engineers	-8.9%	12.7%	0.9%

*(source: www.bls.gov)

Workforceexplorer.com, a Washington State Employment Security Department Labor Market and Economic Analysis report, states that the State of Washington had 2847 openings in engineering in April 2007. The corresponding number of openings in computer/mathematical areas was 6237. Data for Washington State and King County from Workforceexplorer.com are shown in Table 3. This data indicates that the need for Electrical Engineering employment will grow annually by approximately 2.1% in King County and 1.4 % in Washington State between 2004 and 2014. The average of all occupations is expected to rise about 1.5 %. The total number of electrical, electronic, and computer hardware engineers expected to be employed in King County by 2014 is 4660, while in the State the equivalent number is expected to be 9384.

Table 3. Employment and long term expected growth

Estimated Employment*	Estimated employment 2004-14	Annual Avg. Growth 2004-14
Washington State		
Electrical Engineers	3390	1.4%
Electronics Engineers	3,674	1.3%
Computer Hardware Engineers	1138	1.4%
King County		
Electrical Engineers	1,204	2.2%
Electronics Engineers	2,242	1.2%
Computer hardware engineers	483	2.8%

*(source: Workforceexplorer.com)

Table 3 indicates that approximately 731 additional electrical engineers are needed in King County between 2004 and 2014 and in Washington State 1182. The existing state Electrical Engineering graduation rate cannot keep pace with this growth.

1.2.2 Justification/ economic development.

The need for Electrical Engineering within the region and state will exceed the current structures' ability to keep up with the demand for qualified personnel. The rapid growth of the computer industry, compounded by a very small number of educated personnel, is creating a demand that, in some areas of industry, will result in a workforce crisis with the rest of the industry following closely behind. As computer networking, electrical, and electronic applications continue to grow, the demand for Electrical Engineering graduates will continue to grow at an even faster pace. Among the reasons for this increase is the continuing growth of both e-commerce and the technological tools being used by businesses to track it. For example, personal data acquisition devices are now able to track shipments, supply costs and

inventory of most business, all in real time. For that and many other reasons almost all industries are quickly becoming dependent on electrical engineers, who will design, operate, and/or maintain their systems. The consumer has also felt the impact of these changes. Everything from smart appliances to drive-by-wire automobiles have been designed and developed by teams including electrical engineers. Increased applications of the computing and engineering sciences to defense and warfare systems has established a greater workforce need in government and defense as well.

Increasing the number and quality of students in the field of electrical engineering will help Washington State meet its economic development goals and, in fact, EWU's Electrical Engineering program will provide an essential step in this process. Most economic studies for Eastern and Western Washington identify the continued strengthening of these regions' infrastructure for high technology business and industry as a major economic development strategy. For example, a May 2003 study by the Seattle-based Technology Alliance states that the State of Washington should be keeping up with our peer states in terms of technology but we are not. Washington ranks down the list among its peers in education. The study makes the point that Washington State does not produce the number of bachelor degrees necessary to lead and sustain the technology-based industries. The Report states, "The number of bachelor's degrees granted overall, and particularly in science and engineering majors, is in the lowest third of the nation on a per capital basis." It further states that technology thrives in states where education systems stress science and engineering, producing technologically sophisticated workers. A 2007 study by the same organization notes that there is a "glaring disparity between the number of graduates we are producing to support our innovation economy and the number of degree holders working in Washington in [high demand] fields." Further, the report states that Washington State ranks 37th in production of bachelor's degrees in science and engineering.

The aftermath of 9-11 has resulted in greater need for defense and warfare systems thus increasing applications of the computing and engineering sciences. This has resulted in a greater engineering workforce need in government and defense. Technology companies will be challenged to find the skilled professionals they require as the economy recovers to advance projects that are currently on hold.

Washington State has many electronic, software, and engineering companies such as Itron, Keytronics, Itronix, Agilent Technologies, Oracle, Microsoft, Cisco/Nortel, Graybar, World Wide Packets, INTEL, Fluke, Boeing, Telect, Bayliner, Schweitzer Engineering, Bremerton Shipyards, Pacific Northwest National Laboratory, AVISTA, Bonneville Power Administration, Inland Power and Light, Columbia Lighting, and MC Engineering that need a technologically well-educated workforce. These and other companies in the state and region including many consulting firms and state agencies currently employ EWU graduates in a variety of technical fields and they continue to request graduates with solid backgrounds in Electrical Engineering and the ability to integrate engineering processes with software design.

1.2.3 Capacity

As described above, a tremendous shortage of engineers exists in Washington State while electrical engineer graduation rates are not increasing significantly. In light of this, additional public baccalaureate Electrical Engineering student capacity is needed in the State. As the largest potential for Electrical Engineering students exist in the Puget Sound region it seems appropriate to conduct an additional Electrical Engineering program in Seattle. At the same time, electrical/electronics laboratories have been created in North Seattle Community College (NSCC) and are currently greatly under utilized. A recent survey of these facilities indicated that they are generally adequate to begin offering an Electrical Engineering program at this site. The North Seattle Community College campus has digital/electronics laboratory stations available that will accommodate an estimated total enrollment of 96 students. This

laboratory is currently not utilized in the afternoons. Eastern Washington University has been in discussions with North Seattle Community College to utilize these facilities for the Electrical Engineering program.

Additionally, Washington State engineering schools currently turn prospective Electrical Engineering students away each year. Many of the students who are unable to enroll in the UW Electrical Engineering program may wish to attend another Electrical Engineering degree program in the vicinity of UW. Further, Eastern Washington University has been successfully providing distance education programs in Technology to Clark College, Bellevue Community College, and South Seattle Community College for some time. EWU has been conducting ABET accredited Computer and Mechanical Engineering Technology Programs for more than a decade on the main campus.

An email from Loretta Seppanen, Assistant Director of Educational Services for the Washington State Board for Community and Technical Colleges, provided estimates and predictions for this document. She found that the University of Washington turned away about 20 last year from the electrical engineering program. Not all of these students live on the Westside, of course. She estimated how many students the community colleges prepare for the electrical engineering on the Westside compared to the number admitted to UW. That also came to about 20 students. These data are combined in Table 4, which shows all westside community college students prepared for Electrical Engineering and not enrolled in public baccalaureate programs. Loretta Seppanen further said that the community colleges, like universities, received special funding to increase the transfer pipeline for Science, Technology, Engineering, and Mathematics Programs (STEM). That new funding will increase the number of students prepared for Electrical Engineering in 2010-11.

Table 4. Forecasted Annual Transfers Seeking Electrical Engineering program

	2006/7	2007/8	2008/9	2009/10	20010/11	20011/12	2012/13
Feeder Colleges to NSCC Area*	22	20	22	25	40	40	40

*Key feeder colleges: Westside CTC students are counted from Lewis county in the south (Centralia) through Whatcom county in the north. The majority of these students enroll in Pierce, King and Snohomish counties and thus within driving distance of North Seattle.

The Washington Higher Education Coordinating Board’s February 2006 State and Regional Needs Assessment Report has provided additional support for the addition of degree offerings:

- By 2010, the public colleges and universities must grow to accommodate an additional 45,000 FTE students to meet demand resulting from population pressure and increased demand for degrees.
- The higher education system must increase the number of graduates with the skills required to meet the employer needs in a number of key occupations. Institutions should develop strategies to increase the numbers of students prepared to fill positions in the high-demand areas of computer science, engineering, software engineering and architecture, and health care occupations.
- After a several year period of falling numbers of public high school graduates, the number of graduates will increase to greater than the number of graduates in 2007/8.
- 13% of undergraduate students in Washington are from out-of-state.
- Figure 8 of the Report indicates that fewer workers with lower training levels and more workers with higher levels of training are needed.
- Regions in which we anticipate the greatest enrolment pressure due to population increases include SW Washington, Skagit, Island, and Snohomish Counties and King County. King

County expects to grow 9% with 3,651 FTE increase by 2010. These three areas will account for 54% of the total state growth.

- King County includes the urban center of Seattle, has a population of 1.7 million, and is home to one-third of the state's workforce.
- King County is home to 68,196 students who attend college, more than 2.5 times as many students as the next largest region.

A report from Senator Maria Cantwell (<http://cantwell.senate.gov/news/record.cfm?id=243415&>) indicated that there is an opportunity for Washington State to play a critical role in meeting the growing national demand for skilled workforce in energy-related fields. She stated further that both industry and academia are bracing for a critical shortage of engineers in this area. Compounding this issue is that more than one-half of the nation's science and engineering workforce will reach retirement age in the next twenty years.

1.3 Relationship to Other Institutions

There are four Electrical Engineering programs in Seattle, one of which is a public institution (University of Washington). The two private universities are Seattle University and Seattle Pacific University. All of these programs present curricula which comply with the requirements of the Accreditation Board for Engineering and Technology (ABET). EWU's curriculum has been designed to match the requirements of ABET as well. While there is a clear trend showing rising job markets in the State, Electrical Engineering programs have not increased the number of graduates, thus not meeting industry's need.

II. Program Description

1.1 Program Modes of delivery and technology

Eastern Washington University and Seattle Community Colleges will partner to offer the Electrical Engineering program. In Fall 2008 the junior year is proposed to begin on the North Seattle Community College campus. Courses will be taught face to face on both sites as well as over the network from the EWU campus and the NSCC campus. These classes will be broadcasted through specialized distance education classrooms to and from both the EWU and NSCC campuses. Students will have the option to complete the first two years (i.e. general education requirements, science (mathematics, chemistry, physics) requirements, and programming requirements) either at EWU or at a community college. In Fall 2009 junior and senior classes will be offered. The EWU program will serve the needs of students in western Washington, especially King County, who want to enroll in a four-year program and prefer to stay in the area of residence. The program takes advantage of optimal use of existing resources available at NSCC rather than leaving these resources underutilized and invest new money in additional facilities. Additionally, as the program will be beamed to and from NSCC campus and EWU's Cheney campus it will better utilize resources now being employed only at the Cheney campus.

Appendix I displays four-year plans for students transferring from the North, South, and Central Seattle Community Colleges.

Courses will be taught using a variety of instructional methods. Regardless of whether lecture or laboratory is used, material will be presented using the latest technology. While traditional lectures will be the major form of education, these lectures will be broadcasted through the K-20 satellite link between

Cheney and North Seattle Community College. The Department of Engineering & Design has been using this instructional method for several years, with highly successful results. As a result of the construction of the new building for the School of Engineering and Computing Sciences, three classrooms with state-of-the-art distance education infrastructure are available.

Current EWU laboratories include: Control/robotics, Digital and Analog circuits, Microprocessor Systems, Communication Systems/ Digital Signal Processing (DSP), Networks, PC Labs, VLSI Systems, and Power Systems Labs. North Seattle Community College has laboratories similar to those existing at EWU, except for the VLSI lab. However, since VLSI labs are mostly computer based, EWU servers will allow direct access from NSCC. Agreements have been reached with NSCC for the usage of laboratories on its campus. Currently the laboratories are used until 1pm and at evening sessions. The Electrical Engineering curriculum would fill the unused gap in the afternoon. NSCC campus laboratories and their equipment are shown in Appendix II.

All students will have access to high-speed internet in the classroom and teaching laboratories, allowing them to link to the EWU library system, as well as a variety of other resources intrinsic to the Internet.

1.2 Uniqueness.

The uniqueness of the Electrical Engineering program at Eastern Washington University is threefold. First, it graduates students that are well prepared in the electrical engineering science, but also proficient in the laboratory, i.e. it has an extensive “hands-on” segment blended into the curriculum. Laboratories are included in more classes than any other four-year program in the State. Further, the faculty consists of people who have considerable industrial experience, thus easing student transition from the academic to the industrial environment.

Second, the EWU Electrical Engineering program will be offered in two locations: Seattle and Cheney. This not only targets the two most technologically advanced regions in the state, but also includes the two areas that currently have the largest need of engineers in the State.

Third, EWU’s program will offer non-traditional classes for students that are not only place-bound to Seattle and Spokane, but that also currently hold a job in industry and cannot attend classes with a “traditional” schedule. Further, EWU will expand efforts to target audiences that are not traditional at engineering programs, such as women and ethnic minorities. EWU has a strong recruitment and retention policy for such underrepresented groups.

1.3 Projected enrollments

The program will start with a junior year contingent of students at NSCC in Fall 2008 (see Table 5). The initial class is expected to be 20 students, with the following years having 20 students both for junior and senior classes. Table 5 summarizes the projected full time student enrollments for the first 5 years. Note that the expected pool of students attending the program at the NSCC campus is not restricted to current NSCC students, but includes potential students in pre-engineering from other community colleges in the region.

Community college transfer students are expected from North, Central, and South Seattle Community Colleges, Bellevue Community College, Edmonds Community College, Everett Community College, Highline Community College, Shoreline Community College, Green River Community College, Pierce

College, Tacoma Community College, Skagit Valley College, and Clark College. Students from any community college that offers engineering transfer curricula may be eligible to enter into the program.

Table 5. Size of Program (Junior and Senior Years)

Number of Students	Fall 2008	Fall 2009	Fall 2010	Fall 2011*	Fall 2012*
NSCC	20	40	40	40	40

*Full enrollment

Eastern Washington University has a strong recruitment program for underrepresented groups in engineering and technology. These groups include women, ethnic minorities, older students, and displaced workers. Aggressive recruitment strategies are currently being set up in a concurrent effort between the Department of Engineering Design and the Office of Admissions of EWU. The University maintains an office of Disability Support Services to assist students with special needs and offers a variety of academic support services. Similarly, the African American, American Indian, Chicano Education, and Women’s Studies programs offer support services to their respective client groups. We anticipate our student population to be reflective of the local population. North Seattle Community College has a variety of support services that connect the students to the North Seattle Community College campus as well. These include excellent transfer student advising, peer mentoring, cultural cohorts program, and transition support.

III. Future Expansion Plans

The Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC of ABET) accreditation team visited the Electrical Engineering program at EWU in November 2007. They will provide us a final report in July 2008. When the Bachelor of Science in Electrical Engineering program begins at NSCC, EWU will notify EAC of ABET.

Further, as the program expands, EWU will add additional faculty to the NSCC campus, expanding the specialization areas available to the students.

Appendices

Appendix I

Proposed Program for a Bachelor of Science in Electrical Engineering
Seattle Community Colleges Transfer 4 year Program

Appendix II

NSCC Laboratory Equipment

**Appendix I: Proposed Program for a Bachelor of Science in Electrical Engineering Seattle
Community Colleges Transfer 4 year Program**

	Fall	Winter	Spring	By subject
	Freshman			Engl 10
	<i>MATH 124 Calc. I</i> 5	<i>MATH 125 Calc. II</i> 5	<i>MATH 126 Calc. III</i> 5	Prog Prin 5
	<i>VLPA</i> 5	<i>VLPA</i> 5	<i>VLPA</i> 5	Math 15
	<i>English 101</i> 5	<i>English 102</i> 5	<i>CSC 142 Computer Progr.</i> 5	VPLA 15
45	Total 15	Total 15	Total 15	
	Sophomore			Engl 3
	<i>I & S</i> 5	<i>I&S</i> 5	<i>I&S</i> 5	Chem 5
	<i>CHEM 140 General Chem.</i> 5	<i>ECR 231 Techn. Writing 3 cr.</i> 3	<i>MATH 238 Diff. Eq.</i> 3	Math 10
	<i>PHYS 201 Engr. Physics I</i> 5	<i>PHYS 202 Engr. Physics II</i> 5	<i>PHYS 203 Engr. Physics III</i> 5	Phys 15
	<i>Math 224 Vector Calculus</i> 3	<i>MATH 220 Linear Alg.</i> 4	<i>Digital Circuits I (ENGR160)</i> 4	I&S 15
52	Total 18	Total 17	Total 17	Engr 4
	Junior			
	<i>Cultural/Gender Div.</i> 4	<i>Sig. and Systems I (ENGR 320)</i> 5	<i>Sig. and Systems II (ENGR 321)</i> 5	Cult. Div. 4
	<i>ECR 215 Fund. of Elect. Engr</i> 5	<i>Electronics I (ENGR 330)</i> 5	<i>Microcontrollers (ENGR 260)</i> 5	Engr 37
	<i>Tech. World. Civ.</i> 4	<i>Circuits II (ENGR 210)</i> 5	<i>Electronics II (ENGR 331)</i> 5	Math 5
	<i>Prob. & Stats (Math 380 or 385)</i> 4/5	<i>Digital Circuits II (ENGR250)</i> 2		Tech393 4
47	Total 17/18	Total 17	Total 15	
	Senior			
	<i>Energy Systems (ENGR 350)</i> 5	<i>EE Elective</i> 5	<i>EE Elective</i> 5	Engr 25
	<i>Digital Signal Processing (ENGR 420)</i> 5	<i>Electromagnetism (ENGR 401)</i> 5	<i>Digital Comm. (ENGR 440)</i> 5	Capstone 4
	<i>CMOS VLSI (ENGR430)</i> 5	<i>Capstone (ENGR 490)</i> 4	<i>EE Elective</i> 5	EE Elec 15
41	Total 15	Total 14	Total 15	

185

Italics indicates courses taken at Seattle CC

Mathematics	29/30	Sciences	20	Programming Proficiency	5
Core Courses	62	EE Electives	15	VPLA/I&S	30
Written and Oral Communications	13	Cult. Div.	4	Tech 393, Int. Studies Req.	4
		Capstone	4		
TOTAL 187/188					

Appendix II: North Seattle Community College Laboratory Equipment

Digital and Circuit labs

Item	Equipment Information	Quantity
Workstations (2 students per station)		40
Oscilloscopes	TEK 2205 (20 MHz - Dual Channel)	20
Digital Oscilloscopes	TEK TDS 2012	20
Logic Analyzers	Philips Model PM 3580	2
Computers	E-4000 Gateway Computers	40
Circuit Simulation Software	Multisim	40
Digital Multimeters	Fluke 8000A	20
Digital Multimeters	Fluke 8050A	20
Pulse Generators		0
Power Supply	TEK CPS 250 Triple Power Supply	20
Power Supply	BK Precision 1650 Triple Power Supply	20
Function Generators	BK Precision Model 3010	40
Frequency Counters	Fluke 7220A	15
Frequency Counters	Kenwood FC-757	10
Programmable logic devices	Altera CPLD board	20
LAB VOLT EQUIPMENT - FACET SYSTEM		
FACET Computer Interface Base Unit	Model 91000-20 (No built in power supply)	5
Laboratory Instrument	Model 1242 (Power Supply, Multimeter & Function Gen.)	5
Semiconductor Devices Module	Model 91005	5
Transistor Amplifier Circuits Module	Model 91006	5
Transistor Power Amplifiers Module	Model 91007	5
Transistor Feedback Circuits Module	Model 91008	5
Power Supply Regulation Circuits Module	Model 91009	5
FET Fundamentals Module	Model 91010	2
Thyristor and Power Control Circuits Module	Model 91011	5
Operational Amplifier Fundamentals Module	Model 91012	5
Operational Amplifier Applications Module	Model 91013	5
Digital Logic Fundamentals Module	Model 91014	5
Digital Circuit Fundamentals 1 Module	Model 91015	5
Digital Circuit Fundamentals 2 Module	Model 91016	2
32-Bit Microprocessor Circuit Board	Model 91017	1

Module		
Analog Communications Circuit Board Module	Model 91018	1
Transducer Fundamentals Module	Model 91019	1
Digital Communciatoions 1 Circuit Board Module	Model 91022	1
Digital Communciatoions 2 Circuit Board Module	Model 91023	1
Fiber Optic Communications Circuit Board Module	Model 91025	2
Digital Signal Processor Circuit Board Module	Model 91027	2

Note: Maximum 60 students can use Digital labs.

Power lab

Item	Equipment Information	Quantity
Power System Simulator	Flexlab-The Standard Electric Time Co.	1
Motor/Generator Units	5 HP DC Compound Motor or Generator	4
	magnetically coupled to a	
	5 HP Wound Rotor Induction/Synchronous	
	Motor or Generator	
Series 100 Fractional Horsepower Motor & Generator Learning System	Hampden Model HMD-100-CM Console	5
Hampden Engeering Corporation	complete with AC-DC power supplies, AC instrumentation, DC instrumentation, single-phase and three-phase wattmeter panel.	
	DM-100A DC Machines	5
	SM-100 -3 Synchronous Machines	5
	CSM-100 Capacitor Start Motors	4
	SPM-100 Split Phase Motor	4
	IM-100 Induction Motor	5
	WRM-100-3A Wound Rotor Motor	5
	MFM-100 Multi-Function Machine	5
	PB-100 Prony Brake	1
	DYN-100-DM Dynamometer	5
	RL-100A Resistance Load Bank-DC	5
	RLC-100 Resistance/Reactance Load	5
	WRSC-100 Wound Rotor Speed Control	4
	SFR-100 Series Field Rheostat	4
	Strobe and Friction Tachnometers	10
	T-100A 1Phase Experimental Transformers	15
Rotating electric machines	Hampden Model H-REM-1ACM-MP	1

	Universal Laboratory Machine	

Note: Maximum 24 students can use Power labs.

Networking lab

Item	Quantity
Four Networking Lab Rooms with 28 Computer Stations per Room	112
with necessary switches, routers and test equipment.	
These classrooms are presently used to teach Network Administration, SQL Server,	
Exchange Server, Network Security Fundamentals, Network Defense and	
Computer Forensics	
Two CISCO Labs and one CISCO classroom.	
CCNA Lab Stations	24
CCNP Lab Stations	18
Labs include computers, routers, switches, PIX firewalls, Fluke one touch network	
analyzer and DS 4000 cable tester.	

Note: Maximum 80 students can use Networking labs.

FORM 8

**ACQUISITION OF OFF-CAMPUS PROPERTY
Part I**

To be submitted by a public four-year institution or the State Board for Community and Technical Colleges prior to acquiring by lease, purchase, or gift a major off-campus facility. Please complete Parts I and II. If the acquisition is not a major off-campus facility but will be used for a new program or Notification of intent to extend an existing program to a new site, please complete Part I only.

ACQUISITION OF OFF-CAMPUS PROPERTY – Part I			
Site Description (name)			
Size:			
Facilities (square feet)			
Property (acres)			
Age of Facilities:			
Exact Address:			
How the facility/property is to be acquired (circle):	Lease	Purchase	Gift
Lease:			
Lease Term			
Annual Lease Cost			
Acquisition Cost:			
Land			
Facility			
Personal Property/Other			
Total Cost			
Funding Source(s) and Amounts:			
Source A (specify)		\$	
Source B (specify)		\$	
Source C (specify)		\$	

NOTE: Form 8 although required appears not applicable.

HECB
P.O. Box 43430
Olympia, WA 98504-3430
www.hecb.wa.gov/autheval