### Category I Proposal Transmittal Sheet

**Submit proposals to:** Office of Academic Planning and Assessment  
110 Kerr Admin -- Oregon State University

For instructions, see [http://oregonstate.edu/ap/curriculum/cati.html](http://oregonstate.edu/ap/curriculum/cati.html). Please attach Proposal, Library Evaluation (performed by the library), Liaison Correspondence, Faculty Curriculum Vitae, and Budget Sheets, as appropriate.

Check one:

<table>
<thead>
<tr>
<th>Full Proposal</th>
<th>Abbreviated Proposal</th>
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<tbody>
<tr>
<td>☐ New degree program</td>
<td>☐ Rename of an academic program or unit</td>
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<td>☐ New certificate program or administrative unit</td>
<td>☐ Reorganization – moving responsibility for an academic program from one unit to another</td>
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<td>☐ Major change in existing program</td>
<td>☐ Merging or splitting an academic unit</td>
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<td>☐ Establishment of a new College or Department</td>
<td>☐ Termination of an academic program or unit</td>
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<td>☐ Suspension or reactivation an academic program or unit</td>
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<td>☒ (new) Addition of Post-Bac eCampus path to an existing degree</td>
<td>☒ (new) Addition of Post-Bac eCampus path to an existing degree</td>
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For proposals to establish a new center or institute, contact the Research Office (737-3437).

For requests to offer existing certificate and degree programs at new locations, use the [New Location Request Form](http://www.ous.edu/aca/aca-forms.html) available on the Web:

http://www.ous.edu/aca/aca-forms.html

**Title of Proposal:**  

____ BS in Computer Science ____  

**Effective Date:**  

____ Summer 2012 ____

**Department/Program:**  

__Computer Science__

**College:**  

__College of Engineering__

I certify that the above proposal has been reviewed and approved by the appropriate Department and College committees:

<table>
<thead>
<tr>
<th>Sign (Dept Chair/Head; Director)</th>
<th>Date</th>
<th>Sign (Dean of College)</th>
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<tr>
<td>BELLA Bose</td>
<td>1/12/12</td>
<td>James R. Lundy</td>
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Print (Department Chair/Head; Director)  

Print (Dean of College)
Executive Summary  BS in Computer Science - Ecampus Post-Baccalaureate

Oregon State University  College of Engineering
School of Electrical Engineering and Computer Science

CIP:  110101
Effective Term:  Summer 2012
Title:  BS in Computer Science

Introduction: The School of Electrical Engineering and Computer Science (CS) is proposing a new Ecampus post-baccalaureate one-year BS degree in Computer Science program. An Abbreviated Category I proposal template is being used, because no procedure currently exists for this type of proposal. This degree program will add an Ecampus post-baccalaureate path to the existing BS in Computer Science degree. This proposed on-line degree will be one of the few, if not the only, one of its type in the nation.

Background: The demand for computer scientists is extensive, but there is a major shortage of graduates. The Oregon University System is graduating only 270 such students per year. Currently there are many CS jobs left unfilled due to the shortage of CS graduates. Additionally, there are many students who have earned degrees in other disciplines, but are unable to find employment. Not only are there many job opportunities for CS graduates, but current CS graduates are securing salaries from $60-90K directly after graduation.

Goals: The goal of this innovative degree program is to provide a quality CS baccalaureate degree program for post-baccalaureate students so that they will have the skills that will qualify them for immediate employment opportunities. This program is intended to provide sufficient breadth and depth to be immediately productive in entry level CS positions.

Expected Impact: We expect that this proposed degree program will draw students (from a variety of backgrounds) who are looking for a marketable change in their career paths. Our goal is that within 3 years, over 100 students annually will graduate from the proposed program. Overall, this proposed program will help to address the high unemployment rates in Oregon (and nationally) by realigning people's skills with the job opportunities.

One advantage of developing this Ecampus program is that our on-campus students, as well as students at OSU-Cascades, will have the option of taking courses through Ecampus. This could help our on-campus students graduate in a more timely fashion.

Support: Oregon industry is excited about this program. They believe it will address one of the biggest challenges they face to operate successfully in Oregon (i.e., the inadequate number of trained Computer Science graduates). Letters of Support are attached.

Program Structure: This one-year program will require 56 credit hours. It is an intensive program of 14 courses (4 credits each) that is intended to be started during summer quarter and end in spring quarter. It will be structured for a cohort group that progresses through the program together. It can also be taken over a 2-year period, as long as students take courses in prerequisite order.
BS in Computer Science – Ecampus Post-Baccalaureate

New category: The School of Electrical Engineering and Computer Science (CS) is proposing a new Ecampus post-baccalaureate one-year BS degree in Computer Science program. An Abbreviated Category I proposal template is being used, because no procedure currently exists for this type of proposal. This degree program will add an Ecampus post-baccalaureate path to the existing BS in Computer Science degree. This proposed on-line degree will be one of the few, if not the only, one of its type in the nation.

Oregon State University
College of Engineering
School of Electrical Engineering and Computer Science

Date: January 9, 2012

Effective Term: Summer 2012

Title: BS in Computer Science

CIP # 110101

Title: Computer and Information Sciences, General

Definition: A general program that focuses on computing, computer science, and information science and systems. Such programs are undifferentiated as to title and content and are not to be confused with specific programs in computer science, information science, or related support services.


Location within the institution's organizational structure: No change.
Objectives:

The goal of this innovative degree program is to provide a quality CS baccalaureate degree program for post-baccalaureate students so that they will have the skills that will qualify them for immediate employment opportunities.

Additionally, there are many students who have earned degrees in other disciplines, but are unable to find employment. Not only are there many job opportunities for CS graduates, but current CS graduates are securing salaries from $60-90K directly after graduation. It is expected that many of the students who complete this program will go on to become software engineers. Further, the students are likely to be dealing with embedded systems, mobile applications, and web development. The selected courses are intended to provide sufficient breadth and depth to be immediately productive in those and other entry-level CS positions.

Expected Impact:

The demand for computer scientists is extensive, but there is a major shortage of graduates. The Oregon University System is graduating only 270 such students per year. We expect that this degree program will draw students (from a variety of backgrounds) who are looking for a marketable change in their career paths. Our goal is that within 3 years, over 100 students annually will graduate from the proposed program.

Oregon high-tech industries are excited about this program. They are thrilled that we are addressing their needs for highly skilled CS graduates. They believe it will address one of the biggest challenges they face to operate successfully in Oregon (i.e., the inadequate number of trained Computer Science graduates). Overall, this proposed program is has the potential to help address the high unemployment rates in Oregon (and nationally) by realigning people's skills with job opportunities.
NEW

BS in Computer Science

- CPS #: 83186
  https://secure.oregonstate.edu/ap/cps/proposals/view/83186
- CIP #: 110101
- SIS #: New (TBD) (A new SIS number will be required upon approval)
- Degree Types: Bachelor of Science (BS)
- Program Type: Ecampus Post-Baccalaureate (Minimum of 56 credit hours)
- Academic Home: School of Electrical Engineering and Computer Science
- Options: None (Three other options available for the on-campus BS in Computer Science program)
- Undergraduate Minors: None (Computer Science Minor available on-campus; not via distance delivery)
- Course Designator: CS (Existing—No change)
- Delivery Mode and Location: Distance via Ecampus (No change to the BS in Computer Science program offered on the OSU-Main campus)
- Unique Admission Requirements:
  1. Students must have a baccalaureate degree from an accredited higher education institution
  2. Baccalaureate degree must be from a discipline other than Computer Science
  3. Prerequisite: MTH 112 or equivalent
- Enrollment Limitations: None (initially)
- Accreditation: None (Not accredited by the Computing Accreditation Commission of ABET)
- Proposed Start Date: Summer Term 2012 (Banner 201300)

The following is the set of courses and the schedule for a one year (4-term) Ecampus CS degree. It is assumed that students entering this program will already have a bachelor’s degree from an accredited program in some other field of study. The only pre-requisite will be that the student has taken the equivalent of Math 112 to indicate a basic level of mathematical maturity. Below is a term-by-term schedule of the 14 courses (56 credits).
**Summer Term**

Summer term will serve as a type of CS boot camp. The goal is for the students to gain proficiency in programming concepts and skills through the level of basic data structures, which is a key pre-requisite for further study. This will be accomplished by having the students take the standard three course introductory programming sequence during the summer. Since summer term allows for 4-week accelerated courses, the students will take the following sequence of courses over consecutive 4-week periods.

- **CS 161: Introduction to Computer Science I (4)**
- **CS 162: Introduction to Computer Science II (4)**
- **CS 261: Data Structures (4)**

**Fall Term**

Fall term will provide the students with some breadth of knowledge, setting the stage for more advanced topics in the following two terms. The following courses will be taken in parallel.

- **CS 225: Discrete Structures in Computer Science (4) (new course)**
- **CS 271: Computer Architecture and Assembly Language (4)**
- **CS 275: Introduction to Databases (4)**

**Winter Term**

Winter term will cover more advanced fundamental courses.

- **CS 311: Operating Systems (4)**
- **CS 325: Analysis of Algorithms (4)**
- **CS 361: Software Engineering I (4)**
- **CS 494: Web Development (4) (new course)**

**Spring Term**

Spring term will complete the degree with advanced courses that are important in industry.

- **CS 362: Software Engineering II (4)**
- **CS 372: Introduction to Computer Networks (4)**
- **CS 440: Database Management Systems (4)**
- **CS 496: Mobile and Cloud Software Development (4) (new course)**
The program is structured as a 4-term program with a cohort group that progresses through the program together. It can also be taken over a 2-year period, but the three introductory courses are needed before taking the courses that follow them.

A flowchart of the proposed schedule of courses is given in Figure 1, which indicates course pre-requisite dependencies via arrows. The School of Electrical Engineering and Computer Science already offers 11 of the 14 courses as part of the on-campus program.

**BS in Computer Science – Ecampus Post-Baccalaureate**

![Figure 1. Proposed term-by-term schedule for the BS in Computer Science – Ecampus Post-Baccalaureate Degree Program. Arrows indicate course pre-requisite dependencies. Shaded boxes indicate new courses, while all other courses are already offered via the on-campus CS program.]
There are three newly proposed courses: CS 225: Discrete Structures in Computer Science, CS 496: Mobile and Cloud Software Development, and CS 494: Web Development. These three courses have already been approved via CAT II proposals.

In total, the one-year course set requires 56 credit hours. This is an intensive program of 14 courses (4 credits each) which is designed to be started during summer term and end in spring term.

One advantage of developing this Ecampus program is that our on-campus students will have the option of taking courses through Ecampus. This could help our on-campus students graduate in a more timely fashion.

**Outcomes and Assessment:**

The student learning outcomes and assessment methods are provided in each of the course syllabi. These criteria will be used in combination with the Ecampus “Suggested Elements for Review of Online Instruction”, which will be adapted to the nature of each course in order to assess the quality of instruction and student learning.

[http://ecampus.oregonstate.edu/faculty/manual/SuggestedElementReviewofOnlineInstructionRev5-08.pdf]

**Resources needed:**

The School of Electrical Engineering and Computer Science will hire 2-FTE non-tenure-track instructors to design, develop and offer the Ecampus versions of courses in the program. These activities will be conducted in collaboration with our current instructors/faculty, and actual course instruction will be distributed among current faculty and the new hires.

Position descriptions have been developed and advertisements will be disseminated shortly. The newly hired instructors can be located anywhere in the U.S. We will ensure that they work closely with existing OSU CS faculty, will oversee the course development and delivery to ensure a distinctive and top quality program.

**Budget Justification:**

The projected expense budget for the first year is $356,500. The projected income budget for the first year is $387,520. The program consists of 14 courses offered over 12 months. Eleven of the 14 courses are existing courses at OSU, but have never been taught via Ecampus. Three courses are new. Two FTE non-tenure-track instructors will be hired to design, develop, and help to teach the courses through Ecampus, in collaboration with our current instructors and faculty.
The budget also includes salary for a Program Director/Advisor for 12 months. The School is expecting that the program will draw about 50 students in the first year, 75 students in the second year, and 100 students in subsequent years. In order to provide adequate administrative support for the students and the degree program, this full-time Program Director/Advisor will be needed. Hired student assistants will be used for support wherever they are needed – by the instructors, by the Director, and for assisting students enrolled in the courses.

$10,000 has been budgeted for computers for the Instructors and Director.

$2,500 has been budgeted for marketing materials such as brochures and changes to the website.

For subsequent years, the School is anticipating a 4% increase in salaries and tuition due to inflation.

**Funding sources:**

Initial costs will be funded internally. The School expects the proposed program to be self-supporting once students enroll.

**Relationship of the proposed unit to the institutional mission:**

This proposed program aims to “sustain and accelerate improvements in student learning and experience through creation of outstanding academic and student engagement programs”. It will also enhance “… OSU's ability to produce strategies and solutions for the most important – and intractable – issues facing Oregon, the nation, and the world”.

[http://oregonstate.edu/leadership/strategic-plan]

**Potential positive impact:**

The selected courses will provide sufficient breadth and depth to be immediately productive in entry level CS positions. This new program is expected to draw students from a variety of backgrounds who are looking for a viable and efficient solution to underemployment. Overall, this program is intended to help address the high unemployment rates in Oregon (and nationally) by realigning people's skills with job opportunities.

**Potential problems:**

The first three courses must be taken sequentially in consecutive 4-week classes. If terms other than summer do not allow 4-week courses, then it would be difficult for students to start the program at times other than summer term. Ideally, the 4-week course options would be available through Ecampus at any time.
Long-range goals and plans for the unit:

The School’s goal is that the program will be self-supporting. By the beginning of the third year, we expect that over 100 students will graduate each year from the program. If the program grows beyond this point, the program will be scaled to meet the needs of students, based on available resources.

Relationship of the proposed unit to programs at other institutions in the state:

Since this is a post-baccalaureate program that is unique within the state, the School expects that the impact on other state institutions will be minimal. It is possible that students from other institutions will take some of our on-line courses for transfer credit to their home institutions.

Accreditation:

All but one of the courses offered in this program (i.e., CS 225) are part of the ABET-accredited Computer Systems Option of the BS degree in Computer Science. However, this post-baccalaureate program itself will initially not be ABET accredited.
Letters of Support

1. **email from Ken Saul (HP)**

Hi Mike,
I like this new version of the proposal in every way. It has the depth and breadth of computer science that employers are looking for. You may use my comments in whole or in part for your proposal.

I looked at HP's open jobs for new graduates as posted at jobs.hp.com. Fully 66% (42 of 64 positions in this spot check) require a CS degree. These are entry-level positions that include on-the-job mentoring but require basic knowledge of code development, debugging, documentation, databases, and test tools. Job titles include Software/IT Development Engineer, Technology Consultant, Field Technical Support, Security Operations Consultant, and Cloud Data Services Engineer. These jobs require a strong work ethic and the demonstration of quality work. I would highly recommend that the students maintain a portfolio of code to show prospective employers.

All the best,
Ken Saul
HP Senior Engineer and OSU Campus Manager

Additional support letters are forthcoming from SAO and the eCampus director.
To Whom It May Concern:

On behalf of the Software Association of Oregon, I am writing in support of the one-year baccalaureate degree in computer science program (BSCS).

Oregon's software industry is one of the state's fastest-growing industry clusters, showing great stability over the past decade and providing much-needed support to Oregon's economy. With the ever-increasing integration of software and technology across all industries, there is no real horizon to the growth of the software industry, or the need for well-educated, highly-skilled professionals to work in software-related fields.

As President of Oregon's only software trade association, I hear regularly from both industry members and recruiters about the hiring shortage in the software industry. A review of local recruiting sites, as well as statistics available from both the US Department of Labor and the Oregon Employment Department, confirms a consistently high rate of both employment and job openings for qualified software professionals.

In 2010, the US Department of Labor reported that the average wage for software industry professionals in the Portland Metro area was $88,471 compared to $46,846 for employees across all industries. Additional high-wage opportunities for software professionals exist in nearly every industry cluster across our state.

To fill current industry needs and continue the move toward positive economic growth in our state, we must increase both the size and skill levels of Oregon's professional workforce. The proposed one-year, post-baccalaureate BSCS degree program is an example of such an opportunity to provide strong educational offerings right here in Oregon.

As more and more Oregonians seek education and advanced skills in the software and technology fields, e-coursework and online programs such as this create additional degree opportunities across our state, enhancing OSU's position as a leading provider of education in this field, and increasing the likelihood that Oregon students will be able to complete their studies and find employment here in our state.

The SAO strongly supports implementation of the BSCS program, and we strongly encourage you to approve the proposed curriculum. We look forward to working with you to promote this program to Oregon's software industry and ensure that the program is accessible throughout our State.

Sincerely,

Skip Newberry
President
Dear Terri,

Please accept this note as confirmation of Ecampus intent to provide financial and technical support for the proposed online Post Bacc degree in Computer Science. The details of the funding, technical support and program delivery will be detailed in the forthcoming MOU. Delivery of the program is contingent on the curricular approval of the abbreviated program Cat-I proposal.

Alfonso Bradoch
Director, Department and Learner Services
OSU Extended Campus
4943 The Valley Library
Corvallis, OR 97331-4504
541-737-9116
To Whom It May Concern:

As a Board Member of the Software Association of Oregon (SAO) and on behalf of FUSE Insight Labs Inc, I am writing in support of the one-year baccalaureate degree in computer science program (BSCS).

The software industry in Oregon has been defined as an important cluster for the economic development of our region. Our industry touches all other industries and is a recognized keystone for developing new innovation-based strategies for driving growth, jobs and economic prosperity in our State.

The greatest challenge our industry confronts, faced by our largest companies, such as IBM and Intel, down to our start-ups, is talent. We simply do not have enough students being graduated from our higher educational institutions who have the toolsets needed for our highly dynamic and growing industry.

We cannot depend on importing talent. We must create new programs to educate our own students for these exciting and rewarding careers.

OSU has a long reputation as an education leader in our field. Proposed programs such as the one year, post-baccalaureate BSCS degree program will not only be fully supported by our industry but will re-enforce, once again, your role as a strategic partner for our industry. As the CEO of a software company and a strong advocate for our industry, I fully support this program.

Sincerely,

[Signature]

Thompson Morrison
CEO, FUSE Insight
Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 prohibits discrimination against individuals with disabilities and mandates the provision of reasonable accommodations to ensure access to programs and services. Oregon State University is committed to providing equal opportunity to higher education for academically qualified students without regard to a disability.

For questions and assistance with addressing access, please contact the Office of Disability and Access Services (737-4098) or the Office of Affirmative Action and Equal Opportunity (737-3556).

Title of Proposal:               Effective Date:  
___BS in Computer Science___               ___Summer 2012___
Department/Program:                          College:
  Computer Science               College of Engineering

☑ Faculty Guidelines  
  (http://ds.oregonstate.edu/facultystaff.aspx?Title=ResponsibilitiesFacultyStaff)  
☑ Information Technology Guidelines (http://oregonstate.edu/accessibility/)

By signing this form, we affirm that at we have reviewed the listed documents and will apply a good faith effort to ensure accessibility in curricular design, delivery, and supporting information.

Sign (Dept Chair/Head; Director) Date   Print (Department Chair/Head; Director)  
1/12/12  

Library Evaluation  

ECampus Post-Bac One Year CS BS Degree

Oregon State University  
College of Engineering  
Department of Electrical Engineering and Computer Science

CIP:  
110101

Effective Term:  
Summer 2012

Title:  
BS in Computer Science

Proposal # 83186

Library evaluation is not required for this proposal
Faculty CVs  ECampus Post-Bac One Year CS BS Degree

Oregon State University  College of Engineering
Department of Electrical Engineering and Computer Science

CIP:  110101
Effective Term:  Summer 2012
Title:  BS in Computer Science

Proposal # 83186
Faculty CVs are available upon request.