Mission Statement

The Computer Systems Engineering Technology (CSET) department offers an education that is highly regarded by students, colleagues, industry, and other universities for its quality in teaching and in pure and applied research. We recognize that computer systems engineering technology requires a solid foundation in fundamental principles to prepare our graduates for continued learning and adaptation to the increasingly rapid changes likely to occur in computer systems engineering technology. The mission of CSET department at Oregon Institute of Technology is to prepare our students for productive careers in industry and government by providing an excellent education incorporating industry-relevant, applied laboratory based instruction in both the theory and application of embedded systems engineering. Our focus is educating students to meet the growing workforce demand in Oregon and elsewhere for graduates prepared in both hardware and software aspects of computer and embedded systems. This environment is best fostered when there is a climate of collegiality and collaboration among the participants, integrity, honesty and trust.

CSET Scholarships

In addition to College of Engineering, Technology and Management and university scholarships, the CSET Department offers five scholarships from generous donors. These department-specific scholarships require the student to pursue a degree in the CSET Department.

1. The Jim Long Memorial Endowment Scholarship in Computer Systems Engineering Technology.

The Jim Long Memorial Scholarship was established in memory of Professor Jim Long for students in Computer Systems Engineering Technology (CSET) programs. Professor Long was an integral part of the CSET department at Oregon Tech for over 20 years, and beloved by students and faculty across campus. Recipient must demonstrate academic promise with a cumulative grade point average (GPA) of 2.75 or higher on a 4.0 scale.

2. Professor Donald L. Metzler Endowed Scholarship.

The Professor Donald L. Metzler Memorial Scholarship was established in memory of Professor Don Metzler for students in Computer Systems Engineering Technology (CSET) programs. Professor Metzler loved his students and was an integral part of the CSET department at Oregon Tech for over 30 years and was a major force of leadership within the department. His family wished to honor his legacy and commitment to higher education with this scholarship. Recipient must be a full-time student and demonstrate academic promise with a cumulative grade point average (GPA) of 2.75 or higher on a 4.0 scale. Recipient must have unmet financial need as determined by Oregon Institute of Technology Financial Aid Office.

3. Professor Donald L. Metzler Memorial Annual Scholarship

In addition to the requirements from point 2 above, the recipient must be in a sophomore class standing or above during first year of award. Recipient must fall into categories of traditionally underserved in areas of STEM education.

4. The Casey Bradley Memorial Scholarship in Computer Science.

Recipient must be enrolled on the Klamath Falls Campus. Recipient shall have self-disclosed that they have an active IEP (Individualized Educational Plan) on file for incoming freshmen or are currently registered with the Disability Services office at Oregon Institute of Technology. If no applicants choose to self-disclose having an active IEP with Disability Services, eligibility will be expanded to include financial need as determined by Oregon Institute of Technology Financial Aid Office.

5. The Clark Family Scholarship.

Recipient must demonstrate academic promise with a cumulative grade point average (GPA) of 2.75 or higher on a 4.0 scale. Recipient must have unmet financial need as determined by Oregon Institute of Technology Financial Aid Office. Recipient must be junior class standing or above during first year of award. Recipient must fall into categories of traditionally underserved in areas of STEM education.

CSET Internships

CSET Internships are very important ways for students to gain experience while attending college. They can be rewarding and can lead to exciting careers. Real-world, practical experience can enrich an already top-notch curriculum. If the student wants university credits, he/she must enroll in CST 490 Co-Op Internship (3 credit hours) the term that they work full time. Enrollment requires completion of a report at the end of the term to be evaluated by the instructor of records. Another opportunity for the CSET students is to apply for MECOP paid internships.

Jobs for our CSET graduates

CSET Graduates are working for companies such as: Hulu, Cisco, Alltrax, Tektronix, SpaceX, Google, Intel, Microsoft, Amazon, Expedia, Urban Robotics, Hewlett-Packard, Boeing, General Motors, and more. In addition, the official website of the 100 best jobs in the U.S.A. includes many jobs requiring our degrees (source: https://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs)

Bachelor of Science in Computer Engineering Technology

Students who complete the curriculum requirements in Computer Engineering Technology (CET) will be knowledgeable in the theory and applications of both computer hardware and software.

Career opportunities include working in the field of computer engineering technology such as application specific integrated circuit development, firmware development, embedded systems design, software development, testing and applications of technology. Computer Engineering Technology graduates will be involved in development of hardware, software and embedded applications that adapt digital logic and computer systems to solve problems in a wide range of industries from industrial manufacturing to consumer electronics. The curriculum goes beyond the associate's degree curriculum providing the greater depth and breadth of technical capability necessary for an engineer. The CET program is accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET, a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

The CET Program Educational Objectives reflect those attributes a student of the CET program will practice in professional endeavors, such as:

1. Demonstrate technical competency through success in computer engineering technology positions and/or pursuit of engineering or engineering technology graduate studies if desired.
2. Demonstrate competencies in communication and teamwork skills by assuming increasing levels of responsibility and leadership or managerial roles.
3. Develop professionally, pursue continued learning, and practice computer engineering technology in a responsible and ethical manner.

Curriculum

FRESHMAN YEAR

Fall
- CST 116 - C++ Programming I Credit Hours: 4
- CST 162 - Digital Logic I Credit Hours: 4
- MATH 111Z - Precalculus I: Functions Credit Hours: 4
- WRI 121Z - Composition I Credit Hours: 4

Winter
- CST 126 - C++ Programming II Credit Hours: 4
- CST 130 - Computer Organization Credit Hours: 3
- MATH 112Z - Precalculus II: Trigonometry Credit Hours: 4
- COM 111Z - Public Speaking Credit Hours: 4

Spring
- CST 120 - Embedded C Credit Hours: 4
- CST 131 - Computer Architecture Credit Hours: 3
- CST 136 - OOP with C++ Credit Hours: 4
- MATH 251 - Differential Calculus Credit Hours: 4

SOPHOMORE YEAR

Fall
- CST 133 - Digital Logic II Credit Hours: 4
- CST 134 - Instrumentation Credit Hours: 1
- CST 250 - Computer Assembly Lang Credit Hours: 4
- MATH 252 - Integral Calculus Credit Hours: 4
- WRI 227Z - Technical Writing Credit Hours: 4

Winter
- CST 204 - Intro to Microcontrollers Credit Hours: 4
- CST 231 - Digital Systems Design I Credit Hours: 4
- EE 221 - Circuits I Credit Hours: 4
- MATH 254 - Vector Calculus I Credit Hours: 4

Spring
- CST 240 - Linux Programming Credit Hours: 4
- EET 237 - AC Circuits, Filters & Signals Credit Hours: 3
- EET 238 - AC Circuits, Filters Lab Credit Hours: 1
- SPE 321 - Small Group/Team Comm Credit Hours: 3
- Advanced Math Elective Credit Hours: 4b

JUNIOR YEAR

Fall
- CST 337 - Embedded System Architecture Credit Hours: 5
- CST 315 - Embedded Sensor Inter & I/O Credit Hours: 4
- CST 371 - Embedded Systems Development I Credit Hours: 4
- PHY 221 - General Physics w/Calculus Credit Hours: 4

Winter
- CST 331 - Microprocessor Periph. Interfacing Credit Hours: 5
- CST 372 - Embedded Systems Develop II Credit Hours: 3
- PHY 222 - General Physics w/Calculus Credit Hours: 4
- Social Science Elective Credit Hours: 3

Spring
- CST 351 - Digital Systems Design II Credit Hours: 3
- CST 373 - Embedded Systems Develop III Credit Hours: 2
- CST 374 - Embedded Project Proposal Credit Hours: 1
- PHY 223 - General Physics w/Calculus Credit Hours: 4
- WRI 327 - Advanced Tech Writing Credit Hours: 3
- Humanities Elective Credit Hours: 3

SENIOR YEAR

Fall
- CST 418 - Data Comm & Networks Credit Hours: 3
- CST 471 - Embedded Senior Project Credit Hours: 3
- PHIL 331 - Ethics in the Professions Credit Hours: 3
- Technical Elective Credit Hours: 3a

Winter
- CST 344 - Intermediate Computer Arch Credit Hours: 3
- CST 472 - Embedded Senior Project Credit Hours: 3
- ECO 201 - Principles of Microeconomics Credit Hours: 3
  or
- ECO 202 - Principles of Macroeconomics Credit Hours: 3
- Technical Elective Credit Hours: 3

Spring
- ANTH 452 - Globalization Credit Hours: 3
- CST 473 - Embedded Senior Project Credit Hours: 2
- CST 442 - Adv Comp Architecture Credit Hours: 3
- Humanities Elective Credit Hours: 3
- Social Science Elective Credit Hours: 3

Total for a B.S. in Computer Engineering Technology: 180 Credit Hours

a See your advisor for acceptable technical electives

b Electives: MATH 253, MATH 465, MATH 341 or MATH 321

Bachelor of Science in Embedded Systems Engineering Technology

The Bachelor of Science in Embedded Systems Engineering Technology (ESET) requires 183 credit hours as prescribed by the curriculum outline. The ESET program is accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET, a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

The Program Educational Objectives reflect those attributes a student of the ESET program will practice in professional endeavors, such as:

1. Graduates of the ESET program are expected to understand the societal impact of embedded systems and technological solutions.
2. Graduates of the ESET program are expected to do hardware/software co-design for embedded systems. Graduates will continue to develop skills in analysis, approach, optimization, and implementation of embedded systems.
3. Graduates of the ESET program are expected to obtain the knowledge, skills and capabilities necessary for immediate

employment in embedded systems.
4. Graduates of the ESET program are expected to participate in life-long learning to be able to adapt to a changing environment.

Note: The Portland-Metro campus is laptop-required.

Curriculum

FRESHMAN YEAR

Fall
- CST 116 - C++ Programming I Credit Hours: 4
- CST 162 - Digital Logic I Credit Hours: 4
- MATH 111Z - Precalculus I: Functions Credit Hours: 4
- WRI 121Z - Composition I Credit Hours: 4

Winter
- CST 126 - C++ Programming II Credit Hours: 4
- CST 130 - Computer Organization Credit Hours: 3
- MATH 112Z - Precalculus II: Trigonometry Credit Hours: 4
- COM 111Z - Public Speaking Credit Hours: 4

Spring
- CST 120 - Embedded C Credit Hours: 4
- CST 131 - Computer Architecture Credit Hours: 3
- CST 136 - OOP with C++ Credit Hours: 4
- MATH 251 - Differential Calculus Credit Hours: 4

SOPHOMORE YEAR

Fall
- CST 133 - Digital Logic II Credit Hours: 4
- CST 134 - Instrumentation Credit Hours: 1
- CST 250 - Computer Assembly Lang Credit Hours: 4
- CST 276 - Software Design Pattern Credit Hours: 4
- MATH 252 - Integral Calculus Credit Hours: 4

Winter
- CST 204 - Intro to Microcontrollers Credit Hours: 4
- CST 231 - Digital Systems Design I Credit Hours: 4
- EE 221 - Circuits I Credit Hours: 4
- MATH 254 - Vector Calculus I Credit Hours: 4

Spring
- CST 211 - Data Structures Credit Hours: 4
- CST 240 - Linux Programming Credit Hours: 4
- PSY 201 - Psychology Credit Hours: 3
- SPE 321 - Small Group/Team Comm Credit Hours: 3

JUNIOR YEAR

Fall
- CST 315 - Embedded Sensor Inter & I/O Credit Hours: 4
- CST 337 - Embedded System Architecture Credit Hours: 5
- CST 371 - Embedded Systems Development I Credit Hours: 4
- PHY 221 - General Physics w/Calculus Credit Hours: 4

Winter
- CST 347 - Real Time Embedded Op Systems Credit Hours: 4
- CST 372 - Embedded Systems Develop II Credit Hours: 3
- PHY 222 - General Physics w/Calculus Credit Hours: 4
- MATH 465 - Mathematical Statistics Credit Hours: 4

Spring
- CST 373 - Embedded Systems Develop III Credit Hours: 2
- CST 374 - Embedded Project Proposal Credit Hours: 1
- CST 417 - Embedded Networking Credit Hours: 4
- WRI 227Z - Technical Writing Credit Hours: 4
- Laboratory Science Elective Credit Hours: 4
- Humanities Elective Credit Hours: 3

SENIOR YEAR

Fall
- CST 455 - System on a Chip Design Credit Hours: 4
- CST 471 - Embedded Senior Project Credit Hours: 3
- Humanities Elective Credit Hours: 3
- Social Science Elective Credit Hours: 3

Winter
- CST 456 - Embedded System Testing Credit Hours: 4
- CST 472 - Embedded Senior Project Credit Hours: 3
- WRI 350 - Documentation Develop Credit Hours: 3
- ECO 201 - Principles of Microeconomics Credit Hours: 3
  or
- ECO 202 - Principles of Macroeconomics Credit Hours: 3

Spring
- ANTH 452 - Globalization Credit Hours: 3
- CST 466 - Embedded System Security Credit Hours: 3
- CST 473 - Embedded Senior Project Credit Hours: 2
- Humanities Elective Credit Hours: 3
- Technical Elective Credit Hours: 3a

Total for a B.S. in Embedded Systems Engineering Technology: 183 Credit Hours
a One additional CST upper division course

Bachelor of Science in Software Engineering Technology

The Bachelor of Science in Software Engineering Technology (SET) degree requires 181 credit hours as prescribed by the curriculum outline. The Software Engineering Technology is accredited by the Engineering Technology Accreditation Commission (ETAC) of ABET, a specialized accrediting board recognized by the Council for Higher Education and/or the Secretary of the U.S. Department of Education.

The Program Educational Objectives of Oregon Tech's SET Program are to produce graduates that:

1. Use their knowledge of engineering to creatively and innovatively solve difficult computer systems problems.
2. Regularly engage in exploring, learning and applying state-of-the-art hardware and software technologies to the solution of computer systems problem.
3. Will be an effective team member that contributes to innovative software design solutions to the resolution of real-world problems.
4. Will communicate effectively both as an individual and within multi-disciplinary teams.

Curriculum

FRESHMAN YEAR

Fall
- CST 116 - C++ Programming I Credit Hours: 4
- CST 162 - Digital Logic I Credit Hours: 4
- MATH 111Z - Precalculus I: Functions Credit Hours: 4
- WRI 121Z - Composition I Credit Hours: 4

Winter
- CST 126 - C++ Programming II Credit Hours: 4
- CST 130 - Computer Organization Credit Hours: 3
- MATH 112Z - Precalculus II: Trigonometry Credit Hours: 4
- COM 111Z - Public Speaking Credit Hours: 4

Spring
- CST 120 - Embedded C Credit Hours: 4
- CST 131 - Computer Architecture Credit Hours: 3
- CST 136 - OOP with C++ Credit Hours: 4
- MATH 251 - Differential Calculus Credit Hours: 4

SOPHOMORE YEAR

Fall
- CST 250 - Computer Assembly Lang Credit Hours: 4
- CST 276 - Software Design Pattern Credit Hours: 4
- MATH 252 - Integral Calculus Credit Hours: 4
- WRI 227Z - Technical Writing Credit Hours: 4

Winter
- CST 211 - Data Structures Credit Hours: 4
- MATH 254 - Vector Calculus I Credit Hours: 4
- CST 236 - Engineering for Quality Software Credit Hours: 4
- Social Science elective: 3

Spring
- CST 223 - Concepts of Programming Lang Credit Hours: 3
- CST 238 - GUI Programming Credit Hours: 4
- MATH 327 - Discrete Mathematics Credit Hours: 4
- CST 240 - Linux Programming Credit Hours: 4

JUNIOR YEAR

Fall
- CST 229 - Introduction to Grammars Credit Hours: 3
- CST 316 - JR Team-Based Project Dev I Credit Hours: 4
- CST 324 - Database Systems and Design Credit Hours: 4
- PHY 221 - General Physics w/Calculus Credit Hours: 4
- SPE 321 - Small Group/Team Comm Credit Hours: 3

Winter
- CST 320 - Compiler Methods Credit Hours: 4
- CST 326 - JR Team-Based Project Dev II Credit Hours: 4
- PHY 222 - General Physics w/Calculus Credit Hours: 4
- WRI 350 - Documentation Develop Credit Hours: 3

Spring
- CST 334 - Project Proposal Credit Hours: 1
- CST 336 - JR Team-Based Project Dev III Credit Hours: 4
- CST 352 - Operating Systems Credit Hours: 4
- PHY 223 - General Physics w/Calculus Credit Hours: 4
- Social Science Elective Credit Hours: 3

SENIOR YEAR

Fall
- CST 412 - Senior Development Project Credit Hours: 3
- CST 415 - Computer Networks Credit Hours: 4
- Humanities Elective Credit Hours: 3
- Technical Elective Credit Hours: 3a

Winter
- CST 422 - Sr Development Project Credit Hours: 3
- MATH 465 - Mathematical Statistics Credit Hours: 4
- ECO 201 - Principles of Microeconomics Credit Hours: 3
  or
- ECO 202 - Principles of Macroeconomics Credit Hours: 3
- Humanities Elective Credit Hours: 3
- Technical Elective Credit Hours: 3a

Spring
- ANTH 452 - Globalization Credit Hours: 3
- CST 432 - Senior Development Project Credit Hours: 2
- Humanities Elective Credit Hours: 3
- Technical Elective Credit Hours: 3a

Total for a B.S. in Software Engineering Technology: 181 Credit Hours

a Three additional CST upper division courses. One CST upper division elective course may be exchanged for an upper division MATH course.

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Oregon TECH

Computer | Embedded | Software

Computer Systems Engineering Technology

(CSET) Department

Every person in every community is affected by technology, and the roots of technology were founded by innovative computer systems engineering technology. Skills mastered while studying computer systems engineering technology enable students to analyze, synthesize, and evaluate information, to articulate problems, and to develop solutions, thereby helping to prepare them for the competitive world in which they live.

Our Students

The CSET common first year provides the opportunity to take courses in each of our three degrees: Computer Engineering Technology, Embedded Systems Engineering Technology and Software Engineering Technology. This common set of courses allows you to experience what each program is like, therefore helping you make a more informed decision on which path is right for you. If you still can't decide because you enjoy the classes from all three majors, you might talk to an advisor about one of our concurrent programs which also have the same common first year. Among the typical courses, the CSET department offers hands-on oriented courses such as Introduction to Computer Systems, Computer Organization, C++ Programming, Computer Architecture, Introduction to Digital Logic, Introduction to Electronics, and more.

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