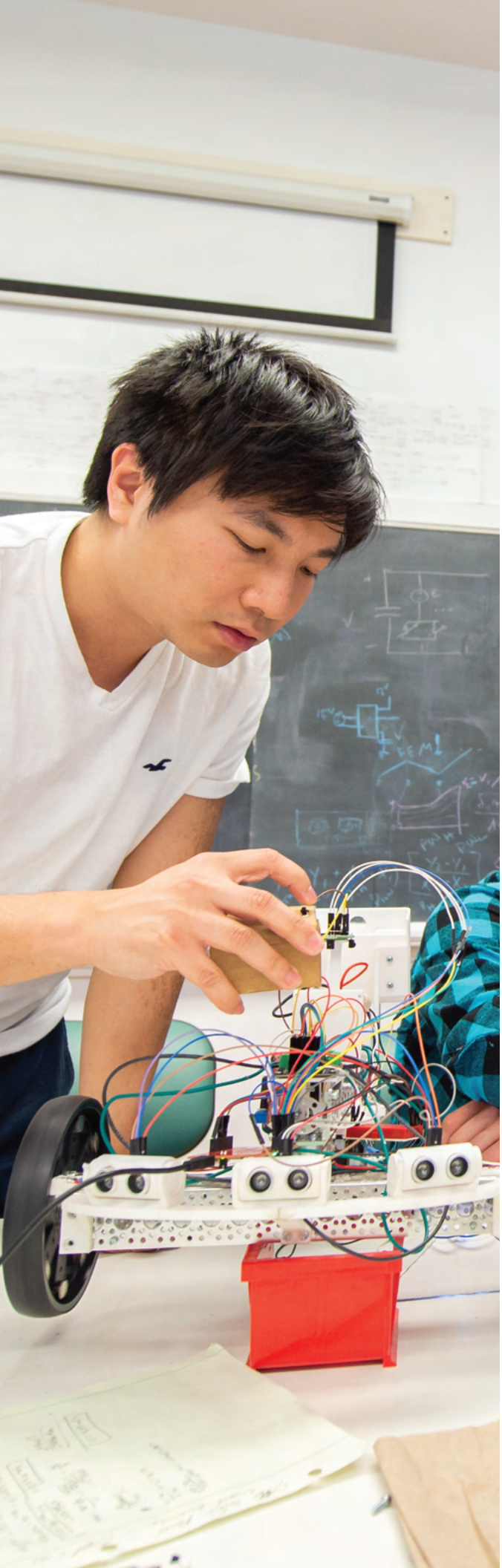

UNIVERSITY OF THE PACIFIC

Electrical Engineering

The Bachelor of Science degree in Electrical Engineering is offered by University of the Pacific through the Department of Electrical and Computer Engineering (ECPE). Electrical engineering encompasses a wide range of topics, including communication systems, automatic control systems, digital and embedded systems, electronics, energy conversion, digital signal processing, and integrated circuits. All electrical engineering students complete a team-oriented, multidisciplinary senior design project, which provides an opportunity to apply engineering fundamentals and design methods to solve a real-world problem. Graduates of this program have the essential knowledge to continue their education through graduate studies, or enter the workforce directly after graduation.

The electrical engineering laboratories at Pacific provide hands-on experience with circuits, test equipment, microcontrollers, robots, control systems, energy conversion, power electronics and the latest software. Students have easy access to all computer and laboratory equipment and can conduct approved independent research.

COOPERATIVE EDUCATION PROGRAM (CO-OP)

CO-OP coordinators work with students to arrange 7 month full-time, paid jobs with engineering employers. (CO-OP is optional for non-U.S. citizens)

ELECTRICAL ENGINEERING PROGRAM OBJECTIVES

Through their careers in electrical engineering or related professions, Pacific graduates are expected to demonstrate the following within a few years of earning their bachelor's degree in Electrical Engineering:

+ Competency in the electrical engineering profession via promotion to positions of increasing responsibility, publications and/or conference presentations

+ Adaptability to new developments in science and technology by successfully completing or pursuing graduate education in engineering or related fields, participating in professional development and/or industrial training courses, or pursuing professional licensure

For more information, contact:
Dr. Jeffrey Shafer, Associate Professor and Chair
jshafer@pacific.edu | 209-946-2302 | Anderson 230

UNIVERSITY OF THE PACIFIC | School of Engineering and Computer Science

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING - PROGRAM CURRICULUM

MATHEMATICS & BASIC SCIENCE

MATH 051 [4] CALCULUS I
MATH 053 [4] CALCULUS II
MATH 055 [4] CALCULUS III
MATH 057 [4] DIFFERENTIAL EQUATIONS
PHYS 053 [5] PHYSICS I
ECPE 127 [3] RANDOM SIGNALS
ADVANCED MATH ELEC. [4] (SEE LIST BELOW)

ELECTRICAL ENGINEERING CORE

IDEA 010 - INTERDISCIPLINARY DESIGN & SUCCESS
IDEA 020 - INTERDISCIPLINARY DESIGN & INNOVATION
ECPE 041 [3] CIRCUITS
ECPE 041L [1] CIRCUITS LAB
ECPE 071 [3] DIGITAL DESIGN
ECPE 071L [1] DIGITAL DESIGN LAB
ECPE 121 [4] DIGITAL SIGNAL PROCESSING
ECPE 131 [4] ELECTRONICS
ECPE 141 [4] ADVANCED CIRCUITS
ECPE 172 [4] MICROCONTROLLERS
ECPE 195 [2] SENIOR PROJECT I
ECPE 196 [2] SENIOR PROJECT II

MINIMUM TOTALS: 120 ACADEMIC UNITS: 32 CO-OP UNITS

TECHNICAL ELECTIVES

ECPE 124 [4] DIGITAL IMAGE PROCESSING
ECPE 133 [4] SOLID STATE DEVICES
ECPE 135 [4] POWER ELECTRONICS
ECPE 136 [4] DESIGN
ECPE 161 [4] AUTOMATIC CONTROL SYSTEMS
ECPE 162 [4] COMMUNICATION SYSTEMS
ECPE 163 [4] ENERGY CONVERSION
ECPE 165 [3] POWER SYSTEM ANALYSIS

ECPE ELECTIVES

ANY 100 OR 200 LEVEL ECPE COURSE
BENG 171 [4] BIOELECTRICITY
BENG 175 [3] HUMAN/BRAIN MACHINE INTERFACE
IDEA 130 [4] INTRODUCTION TO MOBILE ROBOTICS
IDEA 131 [4] AUTONOMOUS MOBILE ROBOTICS

GENERAL EDUCATION

CORE 1 [3] PROBLEM SOLVING AND COMMUNICATIONS
CORE 2 [4] WRITING AND CRITICAL THINKING
GEN ED [3-4] ARTISTIC PROCESS & CREATION
GEN ED [3-4] CIVIC & GLOBAL RESPONSIBILITY
GEN ED [3-4] LANGUAGE & NARRATIVES
GEN ED [3-4] SOCIAL INQUIRY
ENGR 030 [3] ENGR., ETHICS & SOCIETY

ENGR 025 [1] PROFESSIONAL PRACTICE SEMINAR COMP 051 [4] INTRO TO COMPUTER SCIENCE
COMP 053 [4] DATA STRUCTURES
PHYS 101 [4] ELECTRICITY AND MAGNETISM
OR ECPE 144 [4] APPLIED ELECTROMAGNETISM

PROFESSIONAL PRACTICE (CO-OP)

ENGR 181 [16]
ENGR 182 [16]

ELECTIVES (5 ELECTIVES FROM LIST BELOW)

- TWO TECHNICAL ELECTIVES
- TWO ECPE ELECTIVES
- TWO SOECS ELECTIVES

ADVANCED MATH ELECTIVES (SELECT ONE)

MATH 075 [4] INTRO TO LINEAR ALGEBRA
MATH 110 [4] NUMERICAL ANALYSIS
MATH 145 [4] APPLIED LINEAR ALGEBRA
MATH 148 [3] CRYPTOGRAPHY
MATH 152 [4] VECTOR ANALYSIS
MATH 155 [4] REAL ANALYSIS I
MATH 157 [4] APPLIED DIFF. EQUATIONS II
MATH 174 [4] GRAPH THEORY

SOECS ELECTIVE (SELECT ONE)

ANY BENG, CIVL, COMP, ECPE, ENGR, EMGT, IDEA OR MECH COURSE (ECPE, EPHY, OR COMP MUST BE 100 LEVEL. EXCLUDES ENGR 10, 19, 25, 30, 150, 181, 182, 183, COMP 187, IDEA 10, 20 AND 132)

32 UNITS OF CO-OP ARE REQUIRED TO GRADUATE. CO-OP IS OPTIONAL FOR NON - U.S. CITIZENS.
***ECPE 191: INDEPENDENT STUDY, AND ECPE 197: UNDERGRADUATE RESEARCH CAN BE TAKEN FOR 1-4 UNITS; A MINIMUM OF 3 OR MAXIMUM OF 4 UNITS CAN COUNT AS AN EE ELECTIVE. ECPE 193: SPECIAL TOPICS MAY QUALIFY AS AN ECPE ELECTIVE. GRADUATE (200 LEVEL) COURSES MAY ALSO COUNT AS ECPE ELECTIVES. A 3.0 GPA IS REQUIRED TO TAKE A 200 LEVEL COURSE AS AN ELECTIVE.**