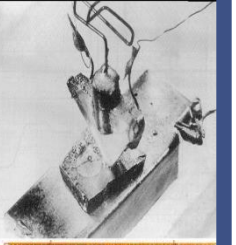
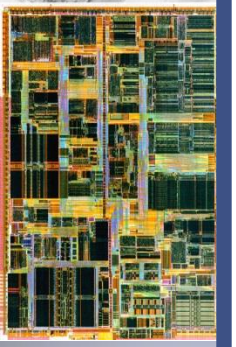
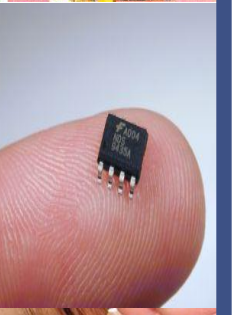
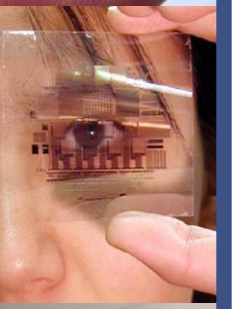
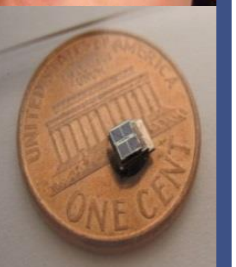
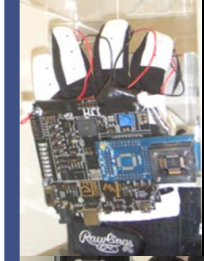




Computer Engineering Program

California State University, Fullerton

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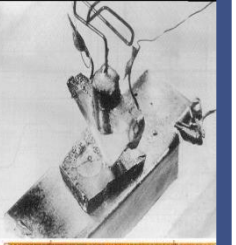
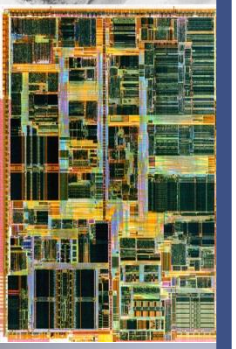
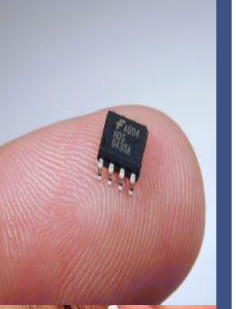
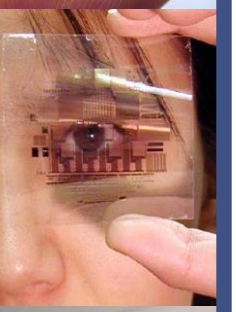
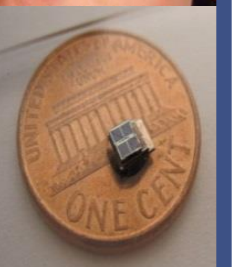
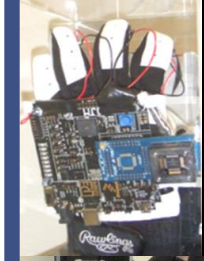
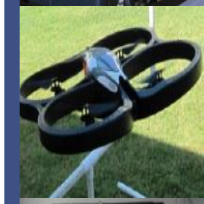






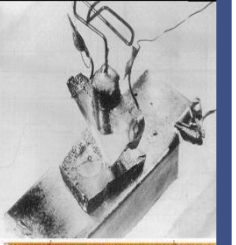
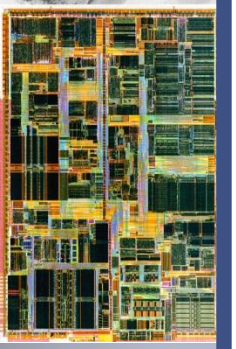
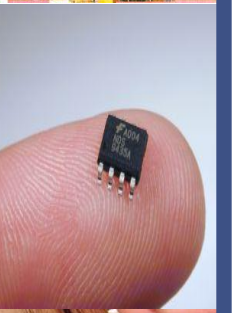
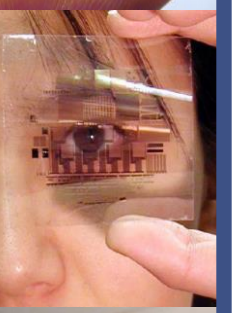
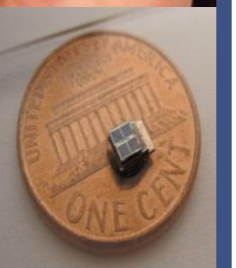
What do computer engineers do?

- Computer engineers design and implement faster, smaller, cheaper next generation computing systems.

- Computer engineers analyze, design and evaluate both hardware and software aspects of computing systems.





Why is Computer engineering is Unique?

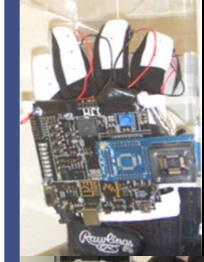
Courses in the program include:

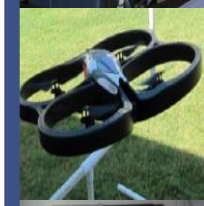
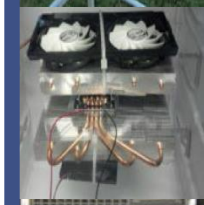
Electrical Engg. Courses

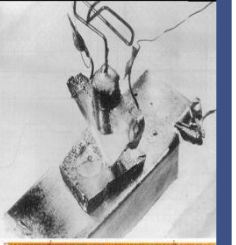
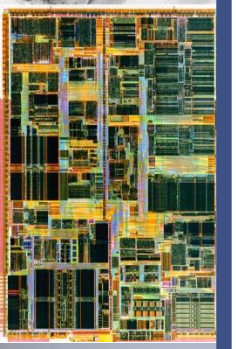
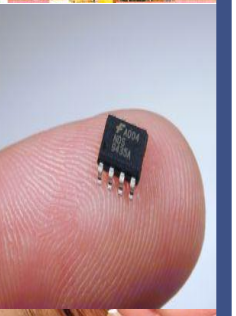
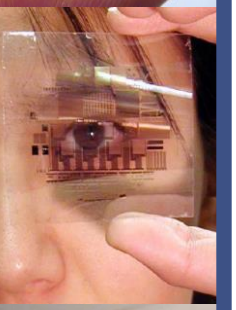
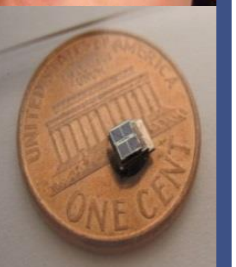
Computer Engg. Courses

Computer Engineering Curriculum

Computer Science Courses

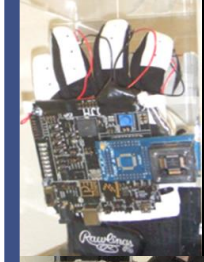


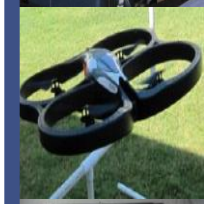
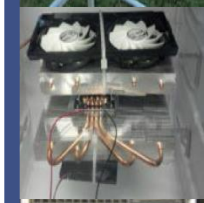



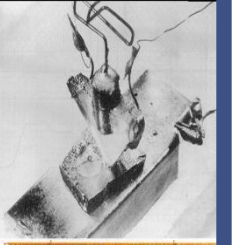
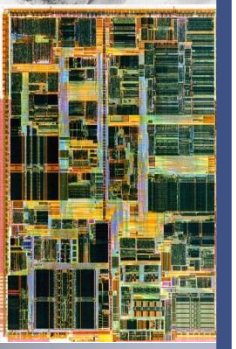
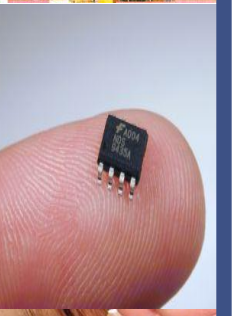
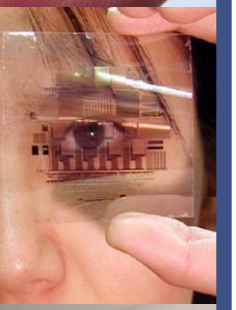






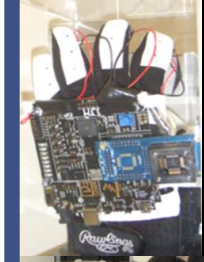
Computer Engineering Program - Highlights

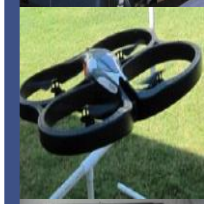
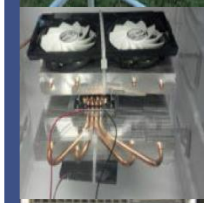
- **Program initiated in 2004 with BS degree**
- **First faculty hire in 2007**
- **Successfully graduated the first class in Fall 2008**
- **Program initiated MS and *4 yr. Integrated BS-MS* degree programs in 2014**
- **Over 600 students in BS, MS & BS-MS degree programs**
- **Currently program has 9 full time faculty**



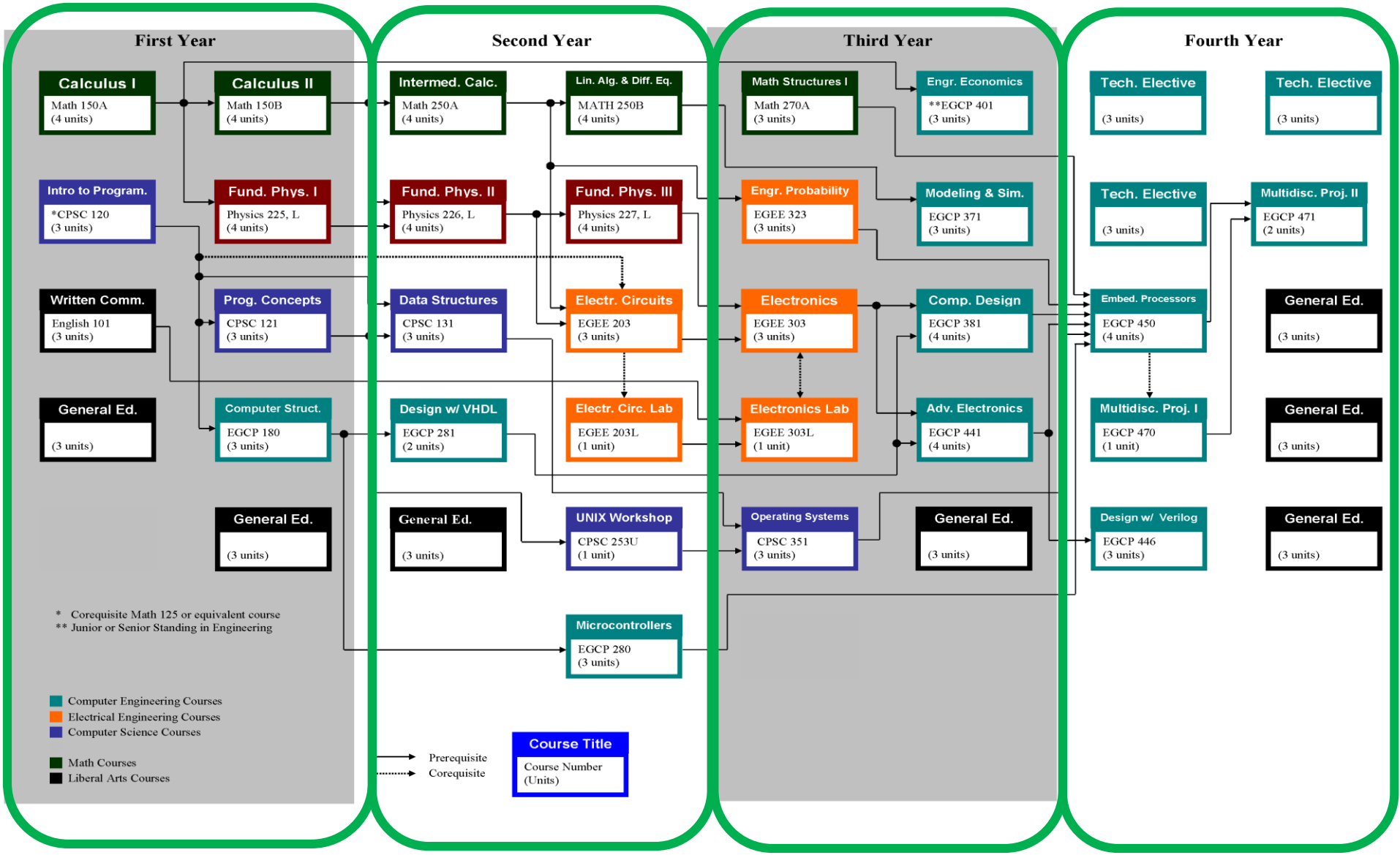


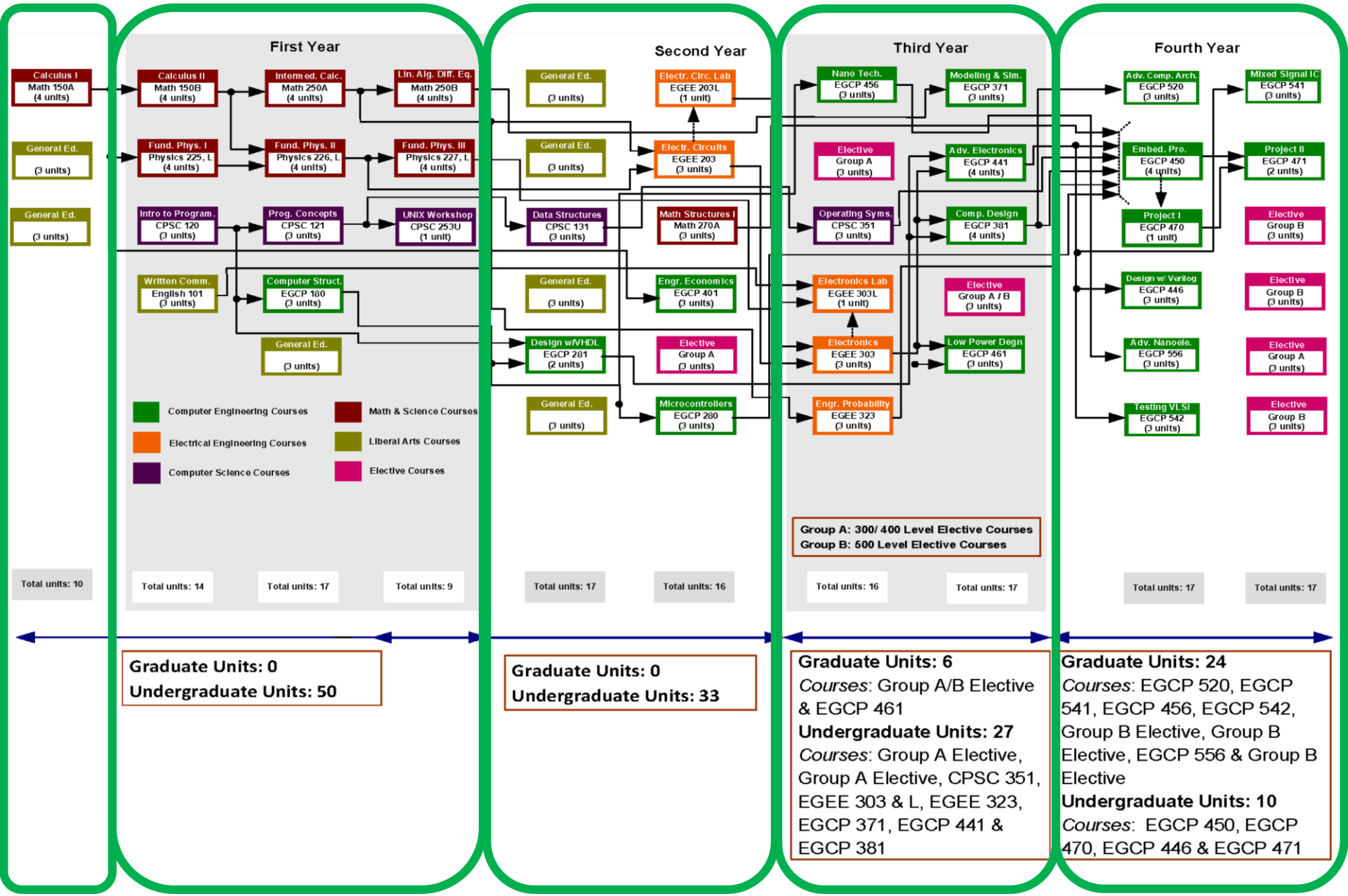
Degree Programs in Computer engineering:

- Bachelor of Science (B.S.)
- Master of Science (M.S.)
- 4 Year Integrated BS-MS Degree

Bachelor of Science (B.S.)



4 Year Integrated BS-MS Degree



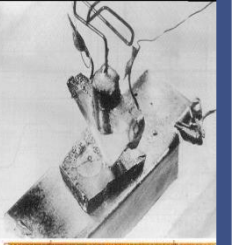
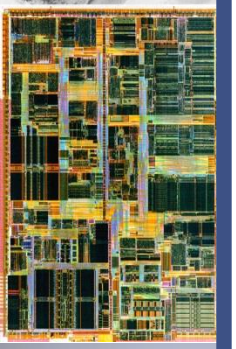
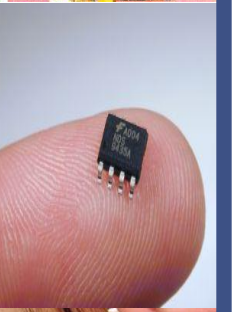
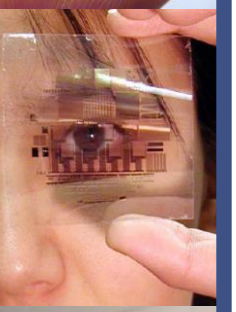
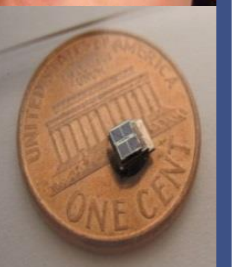
Graduate Units: 0
Undergraduate Units: 50

Graduate Units: 0
Undergraduate Units: 33

Graduate Units: 6
Courses: Group A/B Elective & EGCP 461
Undergraduate Units: 27
Courses: Group A Elective, Group A Elective, CPSC 351, EGEE 303 & L, EGEE 323, EGCP 371, EGCP 441 & EGCP 381

Graduate Units: 24
Courses: EGCP 520, EGCP 541, EGCP 456, EGCP 542, Group B Elective, Group B Elective, EGCP 556 & Group B Elective
Undergraduate Units: 10
Courses: EGCP 450, EGCP 470, EGCP 446 & EGCP 471

Computer Engineering One of the Top-Paid Majors

U.S. BUREAU OF LABOR STATISTICS

HOME | SUBJECTS | DATA TOOLS | PUBLICATIONS | ECONOMIC RELEASES | STUDENTS

Computer Hardware Engineers

Summary | What They Do | Work Environment | How to Become One | Pay | Job Outlook | State & Are

Summary

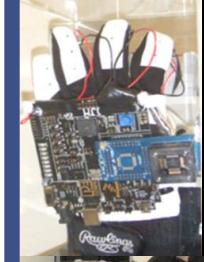
Quick Facts: Computer Hardware Engineers	
2018 Median Pay	$114,600 per year $55.10 per hour
Typical Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2018	64,400
Job Outlook, 2018-28	6% (As fast as average)
Employment Change, 2018-28	4,000

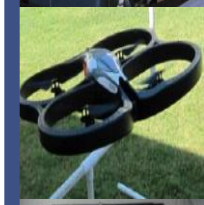
What Computer Hardware Engineers Do

Computer hardware engineers research, design, develop, and test computer systems and components

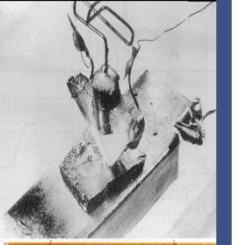
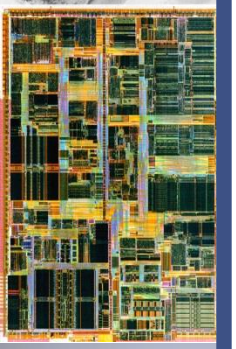
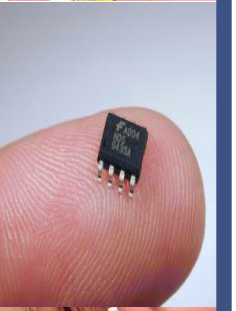
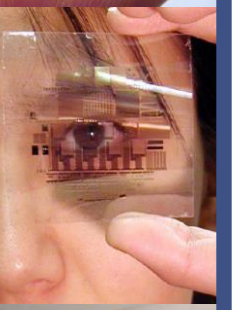
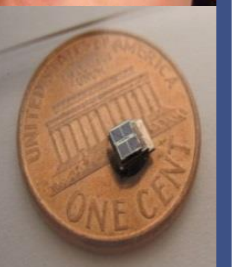
States with the highest employment level in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
California	19,940	1.15	2.48	$68.31	$142,090
Colorado	4,700	1.75	3.80	$57.42	$119,440
Texas	3,970	0.32	0.69	$54.66	$113,700
Maryland	3,940	1.46	3.16	$62.13	$129,240
Florida	3,090	0.35	0.76	$49.46	$102,880






Computer Engineering One of the Top-Paid Majors

U.S. BUREAU OF LABOR STATISTICS

HOME | SUBJECTS | DATA TOOLS | PUBLICATIONS | ECONOMIC RELEASES | STUDENT

Occupational Outlook Handbook > Computer and Information Technology >

Software Developers

Summary | What They Do | Work Environment | How to Become One | Pay | Job Outlook | State &

Summary

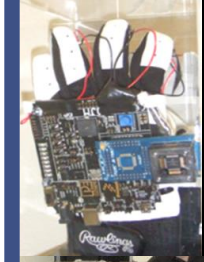
Quick Facts: Software Developers	
2018 Median Pay	$105,590 per year $50.77 per hour
Typical Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2018	1,365,500
Job Outlook, 2018-28	21% (Much faster than average)
Employment Change, 2018-28	284,100

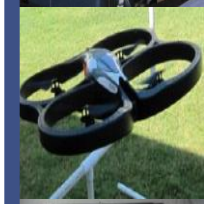
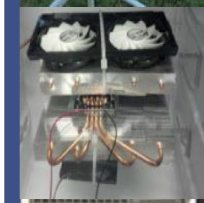
What Software Developers Do

Software developers create the applications or systems that run on a computer or another device.

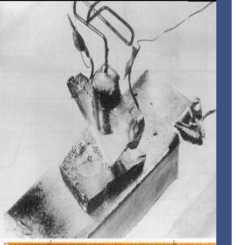
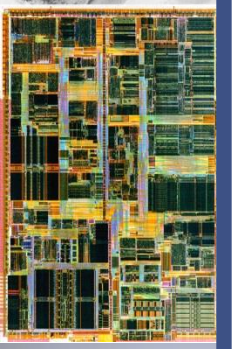
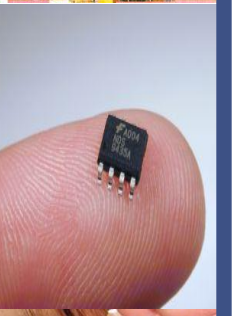
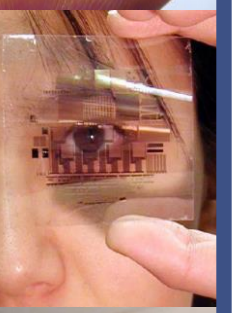
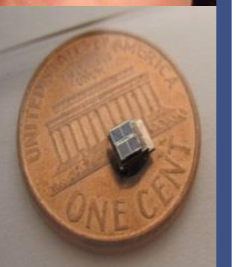
States with the highest employment level in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
California	249,620	14.36	1.50	$64.60	$134,370
Texas	109,510	8.81	0.92	$51.89	$107,940
New York	78,890	8.28	0.86	$57.48	$119,570
Washington	77,650	23.40	2.44	$63.40	$131,870
Virginia	73,310	18.90	1.97	$55.02	$114,440



Computer Engineering One of the Top-Paid Majors

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Occupational Outlook Handbook > Computer and Information Technology >

Computer Network Architects

PRINTER-FRIENDLY

Summary | What They Do | Work Environment | How to Become One | Pay | Job Outlook | State & Area Data | Similar Occupations | More Info

Summary

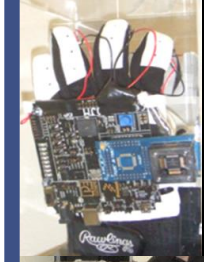
Quick Facts: Computer Network Architects	
2018 Median Pay	$109,020 per year $52.41 per hour
Typical Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	5 years or more
On-the-job Training	None
Number of Jobs, 2018	159,300
Job Outlook, 2018-28	5% (As fast as average)
Employment Change, 2018-28	8,400

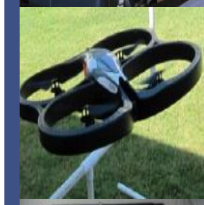
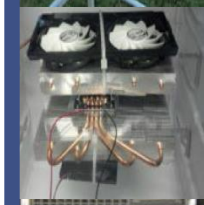
What Computer Network Architects Do

Computer network architects design and build data communication networks, including local area networks (LANs), wide area networks (WANs), and Intranets.

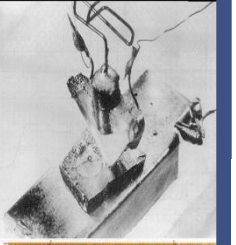
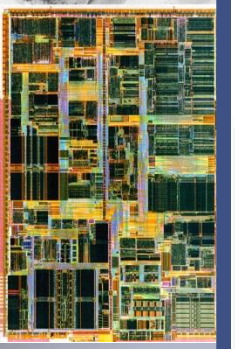
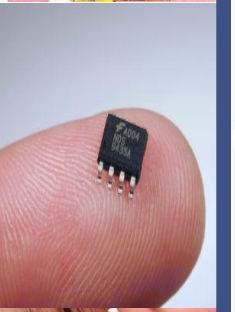
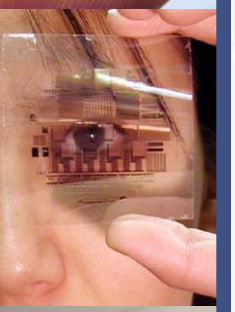
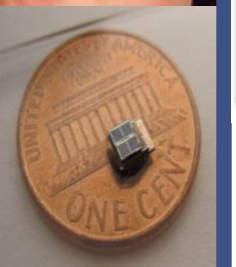
States with the highest employment level in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
California	18,210	1.05	1.01	$61.59	$128,100
Texas	13,080	1.05	1.01	$56.76	$118,060
Florida	8,410	0.96	0.92	$50.95	$105,980
New York	8,350	0.88	0.85	$59.02	$122,760
Virginia	8,030	2.07	1.99	$61.79	$128,530



Examples of Computer Engineering Design Projects

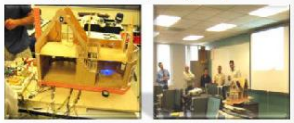
CALIFORNIA STATE UNIVERSITY
FULLERTON™

COMPUTER ENGINEERING SENIOR DESIGN PROJECTS

Glove Mouse Project (Fall 07, Spring 08)

The goal of this project was to build a computer mouse in the form of a glove which translates various hand movements into cursor movements.

"Smart" Home Project (Fall 08, Spring 09)



"Smart" home controls various aspects throughout the home such as the convenience of controlling the temperature, ability to turn on coffee makers in the morning and allowing blinds to open and close providing natural light to enter the home.

Solar Powered "Smart" Dog House (Fall 08, Spring 09)

The house incorporates several automated features in order to provide the pet means to have a healthy life. The main premise for the house is to care for the pet when the owner is unavailable or away.

Fully Automated Solar-Powered Biodiesel Processor (Fall 09, Spring 10)

The objective of the proposed research was to design and implement a solar-powered fully automated processor that produces biodiesel from waste vegetable oil (WVO), readily available from fast-food restaurants on campus..

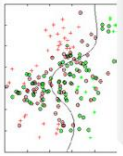
Solar Powered Dual Temperature Controlled Enclosure With Automated Solar Tracker (Fall 11, Spring 12)

Design and implementation of a solar Powered enclosure which utilizes the Peltier effect to provide refrigeration and heating methods.

High-Performance Computing (HPC) for Accelerated and Secure Health Information Exchanges and Electronic Medical Record Collection (Fall 11, Spring 12)

Accelerating data retrieval and operations using GPGPU Techniques on a CUDA framework.

Machine Learning Techniques for Digital Signal Processing Applications (Fall 11, Spring 12)



Implementation of a signal-processing receiver system, where supervised machine learning algorithms are utilized for improved weak signal detection in presence of noise.

Hybrid, High-Performance Cluster Computer Setup (Fall 10, Spring 11)

The objective of the project is to build a supercomputing system comprising of 8 computing nodes, each with GPUs and FPGAs with Infiniband fabric as the communication backplane.

Fully Automated Solar-Powered Water Purification System (Fall 10, Spring 11)

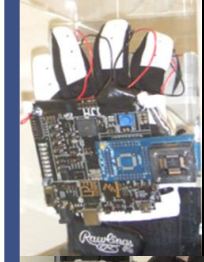
The objective of the project was to design and implement a solar-powered fully automated water purification system that is cost-effective, easy to use, and portable.

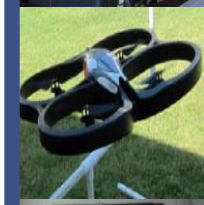
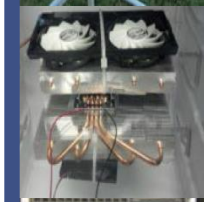
Air Quality and Surveillance (AQS) Copter (Fall 11, Spring 12)

Implementation of a multi-sensor air quality and surveillance copter with real-time video feedback.

Implementation of a Fully Automated Solar-Powered Photobioreactor for Algae Biodiesel Production (Fall 11, Spring 12)

Design and implementation of an automated system which cultivates algae and then utilizes it to create a viable fuel for use in a diesel engine.



Examples of Computer Engineering Designs

CALIFORNIA STATE UNIVERSITY FULLERTON™

COMPUTER ENGINEERING SENIOR DESIGN PROJECTS

Multi-Functional Automated Turret (MAT) (Fall 12, Spring 13)

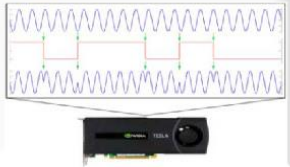
Stand alone turret using OpenCV libraries for image processing with real-time tracking utilizing Arduino microcontroller for motor Control was implemented (Collaborative project with Mechanical Engineering).

Robotic Arm Control Using Brain-Computer Interface (Fall12, Spring 13)

A brain control system that will manipulate a 5-axis robotic arm through a wireless EEG headset was implemented.

BPSK Receiver for Wideband Communications (Fall 12, Spring 13)

Digital BPSK receiver for wideband communications was designed and implemented. The wideband receiver, implemented on a high performance computing (HPC) platform, was designed to extract data from BPSK signals with unknown carrier frequencies and phases.



Operational Reconnaissance and Canvassing Aircraft (Fall 12, Spring 13)

Design and implementation of an unmanned aerial vehicle (UAV) which is capable of autonomous control via a ground station with the ability to locate and recognize targets using real-time image Processing (Collaborative project with Mechanical Engineering).

Spot Check (Fall 13, Spring 14)

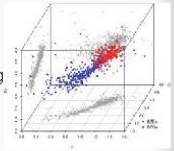
The system pin points the vacant spot in a parking structure using a mobile app. The system utilizes distance sensors that move on a suspended wire to scan for available spots.

Automated Bartender (Fall 13, Spring 14)

The systems allows the user to choose a drink from a list of pre-programmed selections, and creates/mixes the drink using available bottles of alcohol and other beverages. The system also has a wireless interface that lets the customers order drinks remotely from a smartphone.

Pulsed Radar Receiver (Fall 13, Spring 14)

The receiver is developed uses machine learning techniques and algorithms to extract key features from the received signals. These features are compared to a training set of data in order to achieve accurate signal modulation classification with an accuracy of up to 99%.

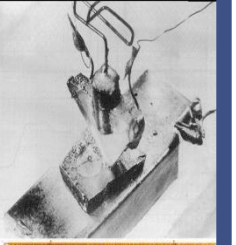
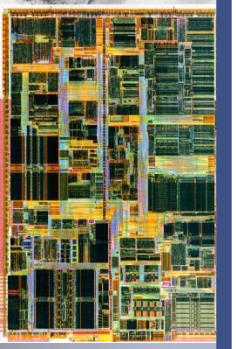
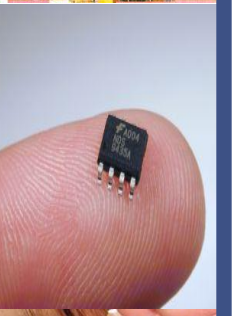
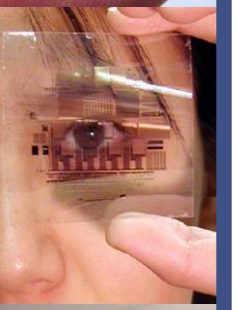
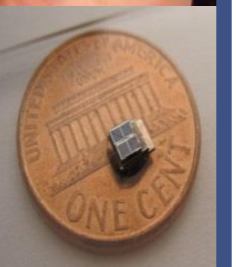


Robotic Reconnaissance System (Fall 13, Spring 14)

The reconnaissance system can be deployed into buildings during emergencies to study the interior layout of the building; the system takes photos at high frame rate to recreate the interior walls and then sends it back to the base station.

Intelligent Indoor Air Quality and Ventilation System (Fall 13, Spring 14)

The system automatically detects and ventilates out hazardous indoor chemicals by constantly monitoring and controlling indoor and outdoor levels of predetermined chemicals to ensure safe indoor air quality.

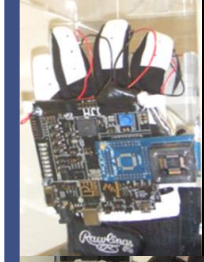
Senior Designs Project Video

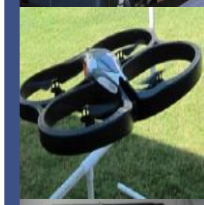
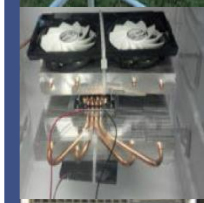
Design Project Video Link:

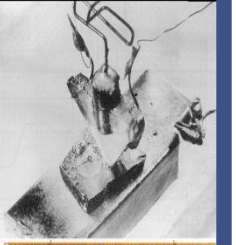
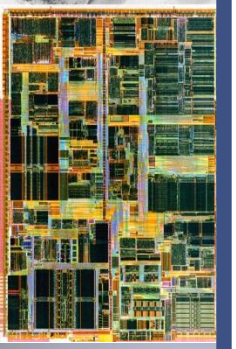
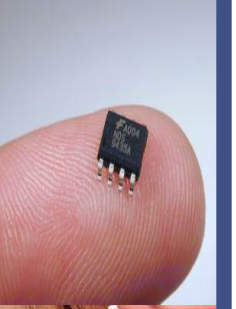
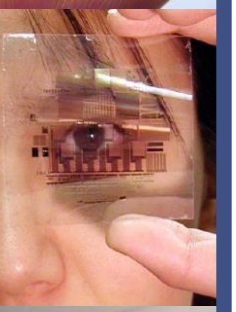
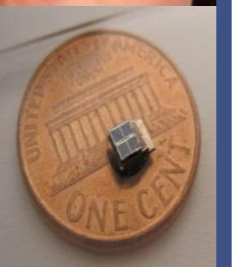
https://www.dropbox.com/s/51gu27u3wwocvv2/Senior%20Design%20Projects.mp4?dl=0

Design Project Abstracts:

http://kgeorge.ecs.fullerton.edu/CpE-SeniorDesignProjects%202008%20-%20Present.pdf



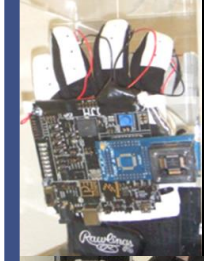
Computer Engineering Program Weblinks

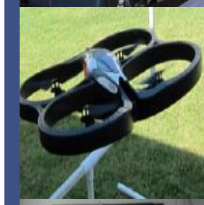
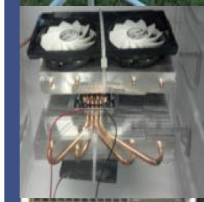
Bachelor of Science (B.S.) in Computer Engineering
http://www.fullerton.edu/ecs/cpe/degrees/bachelors/index.php

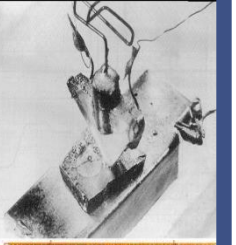
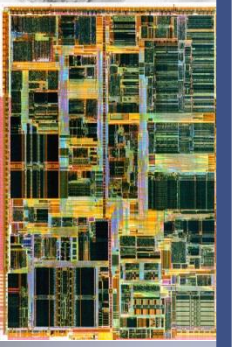
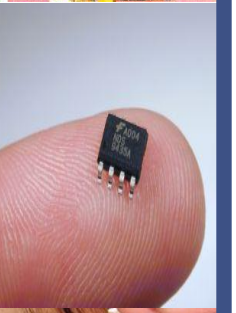
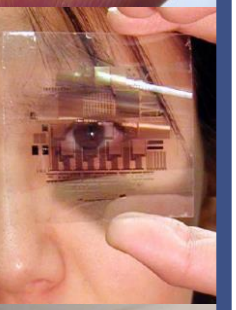
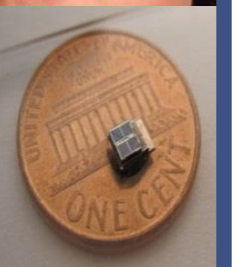
Flowchart for BS Degree:
http://www.fullerton.edu/ecs/cpe/_resources/pdf/CpE%20BS%20Curriculum%20Flowchart.pdf

4 Year Integrated BS-MS Degree in Computer Engineering
http://www.fullerton.edu/ecs/cpe/degrees/integrated/index.php

Flowchart for Integrated BS-MS Degree:
http://www.fullerton.edu/ecs/cpe/_resources/pdf/CpE%20BS-MS%20Curriculum%20Flowchart.pdf



Thank you!!