



ADVANCED MANUFACTURING

INDUSTRY OVERVIEW

This sector uses technology and advanced processes to create goods for consumers and businesses. With high-tech jobs in computers and robotics, Advanced Manufacturing includes diverse industries such as electronics, aerospace, fabrication metals, biotechnology, maritime and more.

Fields:

- Engineering
- Computer or Software
- Drafting and Technician
- Production
- Composites

FAST FACTS



8,862
Businesses



217,420
People employed



12,421
5-year job growth



5.7%
5-year job growth rate



\$92,929
Average annual salary

Source: EMSI. February 2016. Non-QCEW, QCEW, self-employed and extended proprietor employment data.

Top Five Occupations by Educational Attainment and Median Hourly Wages

HIGH SCHOOL DIPLOMA

- Maintenance & Repair Workers **\$19.65**
- Welders & Solderers **\$22.27**
- Machinists **\$22.59**
- Computer User Support Specialists **\$27.54**
- Supervisors of Mechanics **\$31.56**

ASSOCIATE DEGREE

- Chemical Technicians **\$24.27**
- Web Developers **\$27.93**
- Mechanical Drafters **\$29.76**
- Engineering Technicians **\$32.07**
- Computer Network Support Specialists **\$35.55**

BACHELOR'S DEGREE OR ABOVE

- Computer Programmers **\$37.74**
- Mechanical Engineers **\$42.37**
- Software Developers **\$51.31**
- Computer Hardware Engineers **\$54.88**
- Electrical Engineers **\$55.78**

KNOWLEDGE



- Mechanical
- Building and Construction
- Computers and Electronics
- Engineering and Technology
- Telecommunications
- Production and Processing

SKILLS



- Equipment Maintenance
- Troubleshooting
- Programming
- Systems Analysis
- Critical Thinking
- Quality Control Analysis

ABILITIES



- Problem-Solving
- Information Ordering
- Deductive Reasoning
- Inductive Reasoning
- Written Comprehension
- Manual Dexterity

Learn more about Knowledge, Skills and Abilities at [ONETonline.org/search](https://www.onetonline.org/search)



Sample of Local Employers

COMPANY NAME	DESCRIPTION	NUMBER OF EMPLOYEES
Quality Controlled Manufacturing, Inc. Est. 1978	Specializes in precision machining of all metals excluding exotic alloys	51 - 200
WD-40 Est. 1953	Produces lubricants, hand cleaners, and household cleaners, including WD-40	201 - 500
D&K Engineering Est. 2000	Specializes in end-to-end research and development, product development, and manufacturing services	201 - 500
Taylor Guitars Est. 1974	Manufactures acoustic and electric guitars	501 - 1,000
General Dynamics NASSCO Est. 1959	Designs, builds and repairs ships for government and commercial clients	1,001 - 5,000

Source: LinkedIn May 2017.



How do I start my career in Advanced Manufacturing?

- **Earn an associate degree** — San Diego City College (sdcity.edu/ManufacturingEngineeringTechnology)
- **Bring your ideas to life** — Fab Lab San Diego (fablabsd.org)
- **Get training** — MiraCosta College Technology Career Institute (tci.miracosta.edu/courses-manufacturing.html)
- **Find out about paid apprenticeship programs** — California Division of Apprenticeship Standards (dir.ca.gov/databases/das/aigstart.asp)
- **Find an apprenticeship work-study program** — Advanced Manufacturing & Transportation Apprenticeships of California (amtac-apprentice.org)

Learn more at workforce.org/mycareer



CLEAN ENERGY

INDUSTRY OVERVIEW

Clean Energy is the research and application of environmentally friendly energy solutions. The majority of employers and jobs in San Diego County are in Energy Efficiency (e.g., efficient building) and Renewable Energy (e.g., solar power). A significant number of jobs in this sector have been repurposed from the building and trades industry, where new technologies are applied to traditional construction jobs. For example, roofers are now solar photovoltaic (PV) installers.

Sub-sectors or fields:

- Renewable Energy
- Energy Efficiency
- Alternative Transportation
- Greenhouse Gas Emission Accounting

FAST FACTS



9,985
Businesses



137,399
People employed



9,555
5-year job growth



7.0%
5-year job growth rate



\$65,891
Average annual salary

Source: EMSI. February 2016. Non-QCEW, QCEW, self-employed and extended proprietor employment data.

Top Five Occupations by Educational Attainment and Median Hourly Wages

HIGH SCHOOL DIPLOMA

- Solar Photovoltaic Installers **\$18.11**
- Plumbers and Pipefitters **\$24.44**
- Sales Representatives **\$25.02**
- Construction Equipment Operators **\$27.23**
- Electricians **\$27.68**

ASSOCIATE DEGREE

- Electrical and Electronics Drafters **\$27.05**
- Architectural and Civil Drafters **\$27.10**
- Civil Engineering Technicians **\$27.71**
- Electrical Technicians **\$30.41**
- Other Engineering Technicians **\$30.57**

BACHELOR'S DEGREE OR ABOVE

- Sales Reps of Scientific Products **\$31.92**
- Construction Managers **\$32.63**
- Business Operations Specialists **\$35.28**
- Civil Engineers **\$41.40**
- Technical Writers **\$42.22**

KNOWLEDGE

- Building & Construction
- Engineering and Technology
- Mechanical Methods
- Sales and Marketing
- Design
- Customer Service
- Administration & Management

SKILLS

- Critical Thinking
- Troubleshooting
- Quality Control
- Time Management
- Persuasion
- Installation
- Operation & Control

ABILITIES

- Flexibility
- Oral and Written Communication
- Dexterity
- Reasoning
- Control Precision
- Problem-Solving

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Sample of Local Employers

COMPANY NAME	DESCRIPTION	NUMBER OF EMPLOYEES
Renovate America Est. 2008	Assists homeowners in applying for PACE financing to make energy efficiency improvements to their homes	501 - 1,000
CP Group Est. 1954	Manufactures advanced recycling equipment and systems and waste management systems with multiple locations	201 - 500
EDF Renewable Energy Est. 1987	Produces renewable energy for utilities, commercial and industrial, and corporate entities	1,001 - 5,000
San Diego Gas & Electric Est. 1905	Regulates public utility and incentivizes customers to have energy efficient homes	5,001 - 10,000
Solar Turbines Est. 1927	Manufacturers industrial gas turbines able to operate on a wide variety of fuels, including renewable fuels	5,001 - 10,000
General Atomics Est. 1955	Specializes in nuclear technologies, which provide energy while emitting little to no greenhouse gasses	5,001 - 10,000

Source: LinkedIn May 2017.



How do I start my career in Clean Energy?

- **Get involved in projects** — Cleantech San Diego (cleantechsandiego.org)
- **Learn about certification programs** — San Diego Continuing Education (sdce.edu)
- **Explore certification programs** — Clean Tech Institute (cleantechinstitute.org/Training)
- **Plan for a career in Clean Energy** — Department of Energy (energy.gov/eere/education/clean-energy-jobs-and-career-planning)
- **Enroll in a paid apprenticeship program** — California Division of Apprenticeship Standards (dir.ca.gov/databases/das/aigstart.asp)
- **Volunteer and install solar panels for low-income families** — GRID Alternatives (gridalternatives.org/volunteer)

Learn more at workforce.org/mycareer



HEALTH CARE

INDUSTRY OVERVIEW

Health Care combines technology and empathy to help the public stay healthy or get well. It is one of the largest sectors in San Diego County; an estimated one in every eight jobs in the region is health services-related. This sector is also known to be “recession-proof” and stable as jobs grew during 2007–2009 when all other jobs in the region declined.

Sub-sectors:

- Hospitals
- Ambulatory Health Care Services
- Nursing and Long-Term Care

FAST FACTS



7,304
Businesses



139,344
People employed



19,105
5-year job growth



13.7%
5-year job growth rate



\$57,546
Average annual salary

Source: EMSI February 2016. Non-QCEW, QCEW, self-employed and extended proprietor employment data.

Top Five Occupations by Educational Attainment and Median Hourly Wages

HIGH SCHOOL DIPLOMA

- Home Health Aides **\$12.38**
- Receptionists and Information Clerks **\$14.88**
- Medical Secretaries **\$17.60**
- Billing Clerks **\$17.79**
- Office Supervisors **\$25.61**

ASSOCIATE DEGREE

- Nursing Assistants **\$13.90**
- Physical Therapist Assistants **\$31.70**
- Radiologic Technologists **\$34.03**
- Respiratory Therapists **\$35.18**
- Dental Hygienists **\$42.84**

BACHELOR'S DEGREE OR ABOVE

- Dental Assistants **\$19.48**
- Health Care Social Workers **\$33.57**
- Laboratory Technologists **\$37.10**
- Registered Nurses **\$40.67**
- Physician Assistants **\$50.90**

KNOWLEDGE

- Medicine and Dentistry
- Education and Training
- Customer and Personal Service
- Public Safety and Security
- Therapy and Counseling

SKILLS

- Social Perceptiveness
- Active Listening
- Service Orientation
- Critical Thinking
- Monitoring
- Coordination

ABILITIES

- Deductive Reasoning
- Inductive Reasoning
- Problem-Solving
- Oral Expression
- Written Comprehension
- Speech Clarity

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Sample of Local Employers

COMPANY NAME	DESCRIPTION	NUMBER OF EMPLOYEES
UC San Diego Health System Est. 1966	Only academic health system in region; includes several facilities with focuses on cancer treatment, cardiovascular treatment, etc.	10,000+
Rady Children's Hospital Est. 1954	Nonprofit hospital providing comprehensive pediatric medical services; only hospital dedicated exclusively to pediatric health care and pediatric trauma	1,001 - 5,000
Kaiser Permanente Est. 1945	For profit integrated health care association with an emphasis on preventative care	10,000+
Sharp Health System Est. 1946	Nonprofit, integrated, regional health care system with both acute-care and specialty hospitals	10,000+
Scripps Health System Est. 1890	Nonprofit health care system with hospitals and outpatient facilities; also includes clinical research and medical education programs	10,000+

Source: LinkedIn May 2017.



How do I start my career in Health Care?

- **Volunteer to gain experience** — UCSD Health (health.ucsd.edu/about/volunteer/Pages/opportunities.aspx), Alvarado Hospital Medical Center (alvaradohospital.com/About-Us/Volunteer-Opportunities.aspx)
- **Find an internship** — Rady Children's Hospital San Diego (jobs.rchsd.org/internships), Family Health Centers of San Diego (fhcsd.org/volunteer-with-us), Sharp Healthcare (sharp.com/interns-fellows), CONNECT2Careers (C2CSD.org)
- **Further your education** — San Diego Continuing Education (sdce.edu/job-training/health-career-training), Healthcare Academy California (healthcareacademycalifornia.com), SDSU (ces.sdsu.edu/healthcare), UCSD (healthsciences.ucsd.edu/careers), Mesa College (sdmesa.edu/academics/academic-programs/medical-assisting.shtml), Miramar College (sdmiramar.edu/academics/pgms/BIOH)

Learn more at workforce.org/mycareer



INFORMATION AND COMMUNICATION TECHNOLOGIES

INDUSTRY OVERVIEW

Information and Communication Technologies (ICT) is the sector that develops products and services in telecommunications, video gaming, cybersecurity, data analytics and bioinformatics, with employers ranging from innovative startups to large global corporations. This sector includes a variety of jobs in computer programs, web interfacing, information processing and data storage.

Fields:

- Computer Programming
- Network and Support
- Multimedia and Design
- Analytics

FAST FACTS



13,375
Businesses



200,594
People employed



15,135
5-year job growth



13.7%
5-year job growth rate



\$80,563
Average annual salary

Source: NAICS 54: Professional, Scientific and Technical Services used because all jobs include ICT skills. EMSI. February 2017. Non-QCEW, QCEW, self-employed and extended proprietor employment data.

Top Five Occupations by Educational Attainment and Median Hourly Wages

HIGH SCHOOL DIPLOMA

- Office and Administrative Support Workers **\$12.38**
- Receptionists and information Clerks **\$14.88**
- Billing and Posting Clerks **\$17.60**
- Secretaries and Administrative Assistants **\$18.02**
- Executive Secretaries and Executive Administrative Assistants **\$27.34**

ASSOCIATE DEGREE

- Bookkeeping, Accounting and Auditing Clerks **\$19.84**
- Graphic Designers **\$20.64**
- Computer User Support Specialists **\$26.62**
- Web Developers **\$27.46**
- Computer Network Support Specialists **\$34.18**

BACHELOR'S DEGREE OR ABOVE

- Computer Systems Analysts **\$42.54**
- Information Security Analysts **\$46.32**
- Software Developers, Applications **\$48.53**
- Software Developers, Systems Software **\$54.98**
- Database Administrators **\$45.31**

KNOWLEDGE

- Computers and Electronics
- Telecommunications
- Administration and Management
- Education and Training

SKILLS

- Speaking
- Critical Thinking
- Reading Comprehension
- Active Listening
- Complex Problem-Solving

ABILITIES

- Problem Sensitivity
- Oral and Written Comprehension
- Deductive Reasoning
- Inductive Reasoning

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Sample of Local Employers

COMPANY NAME	DESCRIPTION	NUMBER OF EMPLOYEES
Intuit Inc. Est. 1983	Develops software used for small business accounting (QuickBooks) and consumer tax preparation (TurboTax)	5,001 - 10,000
Viasat, Inc. Est. 1996	Provides internet service to customers by providing reliable communications ground systems and infrastructure	1,001 - 5,000
Teradata Operations, Inc. Est. 1979	Designs and delivers data storage systems that analyze information for businesses	10,000+
Cubic Corporation Est. 1951	Manufactures instrumentation systems for air and ground combat, global asset tracking and cyber security for defense markets	5,000 - 10,000
Qualcomm Inc. Est. 1985	Designs wireless communications equipment and semiconductor microchips	10,000+

Source: LinkedIn May 2017.



How do I start my career in Information and Communication Technology?

- **Learn to code** — Khan Academy (khanacademy.org) or W3Schools (w3schools.com/html)
- **Join a coding club** — Girls Who Code (sdfutures.org/girls-who-code-club-sdff), computer programming Meetup groups (meetup.com/topics/computer-programming/us/ca/san_diego)
- **Further your education and hands-on experience** — UCSD Extension courses or (extension.ucsd.edu/courses-and-programs/technology) bootcamp (codingbootcamp.extension.ucsd.edu)
- **Build your network** — Tech San Diego (techsandiego.org)
- **Connect with local community members** — San Diego Association of Information Technology Professionals (aitp.org/group/48), Technology Services Industry Association (tsia.com)

Learn more at workforce.org/mycareer



LIFE SCIENCES

INDUSTRY OVERVIEW

Life Sciences, or biotechnology, spans a variety of fields, such as medical devices, therapeutics and drug development. San Diego is ranked as one of the top five Life Sciences regions in the U.S., with more than 80 research institutions in the county.

Sub-sectors or fields:

- Agriculture Feedstock and Chemicals
- Drugs and Pharmaceuticals
- Medical Devices and Equipment
- Bioscience-related Distribution
- M-Health or Wireless Health

FAST FACTS



1,350
Businesses



46,095
People employed



5,278
5-year job growth



11.5%
5-year job growth rate



\$118,689
Average annual salary

Source: EMSI, February 2016. Non-QCEW, QCEW, self-employed and extended proprietor employment data.

Top Five Occupations by Educational Attainment and Median Hourly Wages

HIGH SCHOOL DIPLOMA

- Packaging Machine Operators **\$12.67**
- Team Assemblers **\$12.95**
- Office Clerks **\$15.57**
- Customer Service **\$17.85**
- Inspectors and Testers **\$19.71**

ASSOCIATE DEGREE

- Clinical Laboratory Techs **\$22.52**
- Chemical Technicians **\$22.86**
- Engineering Techs **\$30.38**
- Radiologic Technologists **\$33.77**
- Computer Network Support Specialists **\$34.19**

BACHELOR'S DEGREE OR ABOVE

- Biological Technicians **\$22.51**
- Scientific Sales Representatives **\$31.71**
- Medical Scientists **\$48.70**
- Operations Managers **\$50.00**
- Software Developers **\$51.75**

KNOWLEDGE



- Math
- Chemistry
- Biology
- Sales
- Marketing

SKILLS



- Quality Control
- Monitoring
- Critical Thinking
- Coordination
- Reading Comprehension
- Active Listening
- Complex Problem-Solving

ABILITIES



- Information Ordering
- Oral and Written Communication
- Deductive Reasoning
- Inductive Reasoning

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Sample of Local Employers

COMPANY NAME	DESCRIPTION	NUMBER OF EMPLOYEES
Organovo Est. 2007	Creates functional human tissues using three-dimensional bio-printing technology	51 - 200
Resmed Inc. Est. 1994	Develops medical equipment for respiratory disorders that occur during sleep	5,001 - 10,000
Illumina Inc. Est. 1998	Makes tools that isolate and analyze sequence pieces of DNA and RNA	5,001 - 10,000
Thermo Fisher Scientific Est. 1956	Offers innovative tools to accelerate life sciences research, improve patient diagnostics and increase laboratory productivity	10,000+
Pfizer Inc. Est. 1942	Produces medicines for ailments in cardiovascular health, metabolism, oncology, immunology and neurology	10,000+

Source: LinkedIn May 2017.



How do I start my career in Life Sciences?

- **Learn more about the sector** — California Life Sciences Association (califsciences.org)
- **Apply for a paid summer internship** — Life Sciences Summer Institute (workforce.org/life-sciences-summer-institute)
- **Get a certificate** — MiraCosta College (catalog.miracosta.edu/disciplines/biotechnology), UCSD Extension (extension.ucsd.edu/courses-and-programs/sciences)
- **Research companies** — BIOCOM (biocom.org/s/MembershipDirectory)
- **Learn more about undergraduate and graduate programs** — UCSD (biology.ucsd.edu), SDSU (sci.sdsu.edu/bioadvise/degree.html), or CSU San Marcos (csusm.edu/biology/bioms/index.html)

Learn more at workforce.org/mycareer