WHAT CAN I DO WITH A MAJOR IN … COMPUTER ENGINEERING

OCCUPATIONAL SUMMARY
Computer engineering is typically thought of as the combination of computer science and electrical engineering. The Institute of Electrical and Electronics Engineers (IEEE) (2004, December 12) explains that computer engineering “embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment.” IEEE explains that computer engineers design systems for highly specialized applications found in a variety of industries such as aerospace, automotive, telecommunications, power production, medicine, manufacturing, defense, and products such as electronics and major appliances.

Computer hardware engineering is a potential career path for computer engineers. The Bureau of Labor Statistics (BLS) (2012) explains that computer hardware engineers, “research, design, develop, and test computer equipment such as chips, circuit boards, or routers.” BLS also highlights that computer hardware engineers ensure that computer hardware components are compatible with emerging software updates.

EMPLOYMENT REQUIREMENTS
IEEE explains that computer engineers must have a strong foundation in computer science and electrical engineering concepts. Furthermore, IEEE highlights that computer engineers must be life-long learners in order to keep their knowledge and skills up-to-date with the rapidly changing computing field.

Specific to computer hardware engineering, BLS explains that a bachelor’s degree in computer engineering is the minimum formal education required to enter the profession. However, BLS also highlights that some large firms or specialized jobs require a master’s degree in computer engineering. Many employers in engineering fields value practical experience, making it important for computer engineering students to participate in internships and Co-ops while completing their degree. A graduate degree (M.S., M.E., and/or Ph.D.) is required to hold positions in management, research, or academia. Consult O*Net for more information on the specific KSAs (Knowledge, Skill, Ability) that are required for this career.

THE UNIVERSITY OF NEW MEXICO
The UNM Electrical and Computer Engineering (ECE) department offers a Bachelor of Science in Computer Engineering (B.S.Cp.E.), Master of Science in Computer Engineering (M.S.), and a Doctor of Philosophy in Engineering with a concentration in Computer Engineering (Ph.D.). The UNM Undergraduate Computer Engineering program offers three tracks: software, hardware, and digital media. Check the department website for more information on degree programs and research areas. The College of Engineering also offers various other degree tracks such as the Master of Engineering and the 2 + 3 B.S. & Master of Business Administration program. More information on these programs can be found in the University Catalog by selecting “Colleges” on the right and selecting “School of Engineering”.

INDUSTRIES & TARGET EMPLOYERS
A variety of employers specifically recruit UNM students and alumni. Consult UNM’s Lobo Career Connection for a complete list of employers and current job postings. Speak with a Career Development Facilitator at the UNM Office of Career Services for help with identifying employers or additional resources for your occupation of choice.

Business/Industry
Consulting, development, project management, electronics, fuels and energy, manufacturing, sales, aerospace, automotive, telecommunications, power production, medicine, electronics, major appliances, bioengineering, robotics, coding, cryptography, information protection, wireless networks, computer operating systems, automated vehicles, signal/image/speech processing

Government
Federal, national and local government agencies, Department of Energy, Department of Defense, research, national laboratories

Education
University/college instruction or administration, researcher
SUGGESTED STRATEGIES

- Gain related computer engineering or general engineering professional experience through involvement in internships, student employment, Co-ops, research, and/or volunteer opportunities.
- Shadow professionals in the field to gain a better understanding of the occupation and to build relationships with professional mentors.
- Build your network and get involved on campus through student organizations and campus events. The School of Engineering website outlines student organizations that are affiliated with the School of Engineering as well as the Computer Engineering department. You can find more organizations and events at the Student Activities Center website.
- Attend career-related campus events such as career fairs, company information sessions, and/or career workshops.
- Students who are interested in graduate school should maintain a high undergraduate GPA, develop relationships with faculty, and participate in undergraduate research. UNM’s Research Opportunity Database at http://research-match.unm.edu/. Some research opportunities include
  - Ronald E. McNair Scholars Program
  - Research Opportunity Program (ROP)
  - Minority Access to Research Careers Program (MARC)
  - Initiative for Maximizing Student Development (IMSD)
  - Undergraduate Pipeline Network
  - UNM Engineering Research Centers
  - Research at the University of New Mexico
- Speak with mentors and faculty about career opportunities.
- Job leads can be found on your department’s website, list-serv, newsletters, and social media sites.
- Familiarize yourself with the federal job application process.

STATE & NATIONAL WAGES

Adapted from CareerOneStop (2013)

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<th>Location</th>
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INFORMATIONAL WEBSITES

- Association for Computing Machinery
- Institute of Electrical and Electronics Engineers Computer Society
- IEEE Computer Society
- International Association of Computer Science and Information Technology
- IACSIT Software Engineering Society

REFERENCES


