

Optical Engineering

MEDIAN STARTING SALARY (FOR ELECTRICAL ENGINEERING): \$ 57,300

MEDIAN INCOME (FOR ELECTRICAL ENGINEERING): \$89,630



Optical engineering is a progressive and exciting field. Optical engineers design and develop devices and measurement systems such as lasers, telescopes, and fiber optics that use the properties of light. They figure out how to bend, bounce, guide, scatter, colorize, block, and catch light to enhance medicine, make our lives more comfortable (your TV remote control uses light to change the channel) and allow us to see objects that are too tiny or too far away for the human eye.

Lasers are used in many different kinds of applications. Medical doctors use lasers to cut out birthmarks and cancerous growths, detached retinas, cauterize wounds, and vaporize kidney stones. Your home and car CD players use laser light to play your favorite music and holograms on credit cards are made with lasers. Laser printers and supermarket scanners are other examples of how laser technology has merged into our lives.

Fiber optics is another expanding branch of optical engineering. Fiber optics are hair-sized strands of glass that carry voice and video information over long distances in the form of pulses of light. Fiber optic systems run all over the world. They run across the country and even underwater to neighboring countries.

Optical engineers may design virtual reality games or air-combat simulators. They may seek to optimize CD storage capacity or develop new medical applications such as telemedicine. They may focus on making the Internet faster and more accessible. Currently there are only five accredited optical engineering programs in the United States. For more information, visit the International Society for Optics and Photonics at www.spie.org.

Job Outlook

Employment of optical engineers, similar to electrical and electronics engineers, is projected to grow 4 percent from 2012 to 2022, slower than the average for all occupations. Job growth is expected because of electrical and electronics engineers' versatility in developing and applying emerging technologies.

Industries with the highest levels of employment in this occupation:

1. Engineering services
2. Electric power generation, transmission and distribution
3. Navigational, measuring, electromedical, and control instruments manufacturing
4. Semiconductor and other electronic component manufacturing
5. Machinery manufacturing

Top paying industries for this occupation:

1. Federal government, excluding postal service
2. Semiconductor and other electronic component manufacturing
3. Architectural, engineering, and related services
4. Navigational, measuring, electromedical, and control instruments manufacturing
5. Telecommunications

Source: US Bureau of Labor Statistics

Glossary of Terms

Communications – the ways of sending information to people by using technology (merriam-webster.com)

Design – to plan and make (something) for a specific use or purpose (merriam-webster.com)

Digital – of or relating to information that is stored in the form of the numbers 0 and 1 (merriam-webster.com)

Electronic – operating through the use of many small electrical parts (such as microchips and transistors) (merriam-webster.com)

Fiber Optics - the use of thin threads of glass or plastic to carry very large amounts of information in the form of light signals (merriam-webster.com)

Hologram – a special kind of picture that is produced by a laser and that looks three-dimensional (merriam-webster.com)

Optics – the science that studies light and the way it affects and is affected by other things (merriam-webster.com)

Research – careful study that is done to find and report new knowledge about something (merriam-webster.com)

Signals - a detectable physical quantity or impulse (as a voltage, current, or magnetic field strength) by which messages or information can be transmitted (merriam-webster.com)

System - a group of related parts that move or work together (merriam-webster.com)

Telemedicine - the practice of medicine when the doctor and patient are widely separated using two-way voice and visual communication (as by satellite or computer) (merriam-webster.com)

Test – critical examination, observation, or evaluation (merriam-webster.com)

Transmit – to send (information, sound, etc.) in the form of electrical signals to a radio, television, computer, etc. (merriam-webster.com)

ABET Accredited Programs in Optical Engineering

School Name	Location	Website	Program and Degree Name
Norfolk State University	Norfolk, VA, US	www.nsu.edu	Optical Engineering, BSOE
Rose-Hulman Institute of Technology	Terre Haute, IN, US	www.rose-hulman.edu	Optical Engineering, BS
The University of Alabama in Huntsville	Huntsville, AL, US	www.uah.edu	Optical Engineering, BSE
University of Arizona	Tucson, AZ, US	www.arizona.edu	Optical Sciences and Engineering, BS