

**Міроненко В.**

### **THE PROFESSION OF ELECTRICAL ENGINEER.**

Over the past ten or fifteen years a distinct division has fallen into place between the profession of electrical engineer and that of an electronic engineer. Professionals who are electrical engineers generally are involved with the macro side of electrical transmission and use: they are involved in the design of large electrical generation systems, transmission systems and to some extent, telecommunications. Usually the course work for electrical engineering degrees will cover the basics of electricity and its use; core subjects will include mathematics, physics, some basics in design of electrical systems as well as the principles of computer electronics. At some point in the educational process a student can opt to focus on the electrical engineering specialties or those commonly referred to as electronics engineering. Those that opt for the electrical design and operation of small systems such as computers, cell phones, household appliances and the hundreds of consumer items that contain computer chips today will end up studying electronics at the graduate level. Professionals in electrical engineering make many contributions to new developments just as those working in electronics do.

The global positioning systems (GPS) were the products of electrical engineers. The field of control systems is also a specialty for electrical engineers; possibly the most public example of a control system designed on a large scale is the NASA systems used to control manned space flights. Work in the telecommunications industry might include the design of broadband cable systems used to deliver both internet access and hundreds of television channels. In recent years these systems have moved from an analog format, which sent signals along a piece of coaxial cable as radio waves.

Today's digital systems use fiberoptic cable for trunk lines, which moves the data for internet communication and the video signals for TV channels using light instead of radio waves. Some electrical engineers specialize in control systems, a field that incorporates both electrical and electronic design. Control systems are the units that control jet aircraft, large naval vessels and hydroelectric plants down to the cruise control system on a car. With complex systems such as those required on ships the design is going to include microtechnology using tiny integrated circuits in instrument panels as well as high-volume electrical power that operates large motors. Electrical engineers can specialize in the construction field, working with architects on lighting systems for new buildings. They can work on power generating systems, a field that is going to see a lot of innovation over the next twenty years. They can work in laboratories, on construction sites or in a design office.

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Робота виконана під керівництвом ас. кафедри іноземних мов Подорожної А.О.