

▲ Engineering field tops prospective job list

Associated Press

The engineer is someone who can harness science and technology for practical results. One of those results might be a lucrative and stable career.

"There is such a need for engineers across the board that graduates emerging from college with an engineering degree should be able to choose the job they want at an attractive salary," says Alan Schonberg, president of Management Recruiters International, a Cleveland, Ohio, search firm.

His company surveyed corporate executives and found that engineering topped the list of fields they would recommend to college students, with a 25.8 percent response. Business administration, with 19.2 percent, and computer science, with 17.4 percent, followed. Other fields mentioned frequently included marketing, law, and accounting.

Factors fueling the need for engineers include overseas competition and changes in how people live and work, say experts in the field. And the need is creating many relatively new specialties.

• One of these is called human factors, or the science of helping people cope with machines themselves, from computers to nuclear reactors. "The role of human factors is to break down barriers

between the technical expert and the public at large," says Dr. Alan L. Stewart, professor of management at Stevens Institute of Technology in Hoboken, N.J.

Human factors specialists design controls and information displays that help humans interact effectively with their machines. These might include international traffic symbols, airliner cockpits, or software programs that can be used by the greatest number of people, Stewart says. A sub-specialty, ergonomics, involves designing office furniture and computers to help users avoid back pain and eye strain. Human factors specialists train in fields like experimental psychology, perception and engineering design.

The Human Factors Society, Inc., the field's professional group based in Santa Monica, Calif., estimates that a practitioner can earn an average of \$46,107 with a bachelor's degree, \$50,828 with a master's degree, and \$58,102 with a doctorate. And Charles J. Ross, who manages the Human Factors Placement Service in McLean, Va., says that fewer than 2 percent of his registrants are unemployed.

• Quality assurance engineers are vital performers for American companies, says Ruth Walton, career services director at Stevens. "Top management is focusing

on quality assurance to save time, cut costs and meet the demands of increasingly sophisticated consumers. That translates into an expanding job market for engineers who have the interdisciplinary skills needed to make products and systems more reliable and efficient."

Once cast in the role of policemen, quality engineers now work closely with manufacturing and design engineers and technicians to make products properly from the start, she explains. Management skills and expertise in testing and evaluating statistics are brought into play to design better and more reliable products. The quality engineer also designs manufacturing procedures to cut shipment delays, excess inventory, repair costs and other administrative burdens that would cut into profits and consumer satisfaction, she adds.

Salaries topping \$200,000 for some quality assurance consultants and department heads are reported by the American Society of Quality Control in its 1990 survey of members. The Milwaukee-based group says salaries average \$37,000 to \$49,000, depending on the industry, experience and geographic location.

• The need for qualified entry-level employees in the papermaking industry is so intense that companies routinely pro-

vide scholarships and co-op learning opportunities for students, says Robert Williams, president and chief executive officer of James River Corp., one of the country's largest papermakers.

Miami University of Oxford, Ohio, reports that its paper science graduates can expect starting salaries of over \$36,000. Dr. William Scott, who heads the school's paper science and engineering department, says that all his graduates have gotten jobs. "Colleagues at other paper science programs report similar experiences. There are excellent career opportunities in this field, but few students are aware of them."

• Law and technology now so often intersect that a technical law discipline has spawned a whole sub-group of specialties. Technical lawyers might help inventors get patents for inventions or copyrights for computer software, or help companies comply with the growing number of environmental laws that involve their operations. Stevens recently began an accelerated program with New York Law School to help exceptional students earn both bachelor's and jurisprudence degrees in six years, instead of the usual seven. These specialties include patent, environmental, energy, intellectual property (covering inventions) and computer law.

Engineering

▲ Stepping stone to success, experts say

Associated Press

Engineering careers can be a passport to management, say experts in the field.

"Engineering graduates with broad-based degrees that encompass fields such as mechanical, electrical and industrial engineering, who have a background in the humanities and the ability to communicate, will be in great demand," says Dr. Harold J. Raveche, president of Stevens Institute of Technology in Hoboken, N.J.

"An engineering degree is the most useful undergraduate degree, whether the individual seeks a career in management, law, medicine, the ministry, or a host of other professions," says Caleb B. Hurtt, former president and chief operating officer of Martin Marietta and a Stevens graduate.

An undergraduate degree in engineering, with course work in economics and engineering management, is a strong credential for a student whose sights are set on a management career, says Ruth Walton, director of career services at Stevens. The student will be well prepared for programs leading to a master's of business administration or master's of science degree. "The engineering program is tougher. Every engineering student I have known who went on to take an M.B.A. found the graduate program a piece of cake."

Raveche says that those in technical and engineering careers come to a cross-

roads about four to seven years out of college. They can choose to continue to serve in technical positions, or they can take on responsibilities such as budgeting, hiring and supervising other engineers.

Engineers commonly move into technical-management positions. A study by the American Association of Engineering Societies in 1985 found that of those surveyed who said they had been out of college five years, 34 percent had supervisory responsibilities. Of those who had been out for 25 years, 70 percent said they had such responsibilities.

"Not many engineers start as supervisors, but within 10 years, 30 to 40 percent are in technical management, and a small percentage go into non-technical management," says Dr. William K. LeBold, director of information and educational systems at Purdue University in Lafayette, Ind. These engineers work at companies that depend on high-technology products or processes, including pharmaceutical, chemical, oil, automotive, electronics and telecommunications firms.

Engineers are sought not only for their technical expertise but for their management potential, says Dr. Donald N. Merino, professor of management at Stevens. "It's nearly impossible for a non-engineer to advance at these companies. And although each company may have a different corporate culture that emphasizes a different engineering specialty—electrical-engineering at AT&T, chemical engineering at DuPont—the management is still dominated by engineers."

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THE UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE

Salem College Career Connections

Salem College, a liberal arts college for women, does not wait until a student's senior year to help her find a job. Career workshops and networking are available to her from the moment she arrives as a freshman.

"Our focus is on teaching them skills early on—when they are freshman, sophomores and juniors," said Peggy McAllister, director of student developmental services for the college. "We concentrate on getting them out there, getting them exposed to work environments early on. We have 'shadow days' in which they spend time with mentors."

Many students find jobs through internships. Salem College's internship program "is one of the most stellar in the state," McAllister said. Students have done internships program in the arts (including the National Gallery of Art and the Corcoran Gallery); in the sciences (including Bowman Gray School of Medicine and Burroughs-Wellcome Co.); in communications (MTV Networks in California, various television stations and public-relations firms); in sociology (the Morningstar Foundation, a Washington organization dedicated to issues facing American Indians, and various mental-health and crisis counseling agencies); in accounting (various accounting firms); in banking (including Wachovia and NCNB) and many other career fields.

Salem offers a full-range of workshops in job-search skills. This spring, every junior will be invited to attend a half day of workshops that will address such issues as how to look for a job and how to apply to graduate school. Other services, such as training in resume-writing and practice in interviewing skills using videotaping, are available on a year-round basis to all students at Salem. Salem also co-sponsors two job fairs each year, and many businesses, as well as government, social service and non-profit agencies, send representatives to talk to students.

Salem, one of the oldest women's colleges in the nation, has a dedicated network of alumnae in many career fields who are committed to helping Salem students find internships and jobs. Surveys of alumnae show that most found jobs through relationships they formed with alumnae, internship placements, and contacts they made through their friends and families, McAllister said. "It was not from sending out a thousand resumes, or even from campus interviews," she said. "A few years ago, I heard one statistic that only 10 percent of students at larger universities got jobs through campus interviews."

Salem will be expanding its career placement services even further. Later this year, the college plans to implement the Salem Career Connection, a computer network that will help students and alumnae locate and contact alumnae in many different professions throughout the country. "These alumnae have volunteered to provide everything from career advice to internship placement to short-term housing during job interviews," McAllister said. "We have such a strong alumnae network to begin with, and this will be a way to formalize it and provide even more information."