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Chapter 1 : Science, Technology, Engineering, and Math (STEM) Careers | CAREERwise Education

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Page vi Share Cite Suggested Citation: *Careers in Science and Engineering*: The National Academies Press. Under the authority of the charter granted to it by Congress in , the Academy has a working mandate that calls on it to advise the federal government on scientific and technical matters. Alberts is president of the NAS. It is autonomous in its administration and in the selection of members, sharing with the NAS its responsibilities for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Harold Liebowitz is president of the NAE. The Institute of Medicine IOM was established in by the NAS to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the NAS in its congressional charter to be an adviser to the federal government and, on its own initiative, to identify issues of medical care, research, and education. Shine is president of the IOM. It includes current and former members of the councils of all three bodies. Page vii Share Cite Suggested Citation: Although it is understandable that students, particularly at the graduate level, identify with their faculty mentors and often aspire to academic research careers, education in science and engineering can be extremely valuable for a wide variety of career opportunities. Some of those careers involve direct participation in science or engineering—for example, as a chemist or engineer in industry or as a professional who performs research and development. Many others involve using a science and engineering background. For example, one might teach about science and engineering in schools or through the media or provide advice or develop policies on matters relevant to science or engineering. Each of these activities is a legitimate and valuable use of a science or engineering background. We need not focus on the doing of science and engineering as the only appropriate sequel to advanced study. To do so implicitly and sometimes explicitly has the effect of de-

Page viii Share Cite Suggested Citation: Discussions during the preparation and dissemination of that report indicated the need for a guide designed specifically to help students to plan their educational and professional careers. This guide is a result of those discussions. It seeks to assist students in taking a much broader view of the potential applications of their science and engineering education. An online version of this guide can also be obtained at the center. Which Sections Are For You? Different parts of this student guide will help students at different stages of their career and education. Secondary-school students and undecided undergraduates can use the guide to help them to understand careers in science and engineering and to find practical tips on how to proceed. Undergraduate students currently studying science and engineering can use this guide to decide what careers they are interested in pursuing Chapter 2 , evaluate their skills and attributes Chapter 3 , and determine whether they need additional graduate education or a professional education. If they decide to pursue graduate education in science or engineering, Chapter 4 will help them to select a graduate school and major. Beginning graduate students will have made many of the educational choices described in Chapter 4 , but the material on advisors, research topics, achieving breadth, and ensuring progress should be of interest. Chapters 2 , 3 , and 5 will also be of use for more-experienced students. Like those who are approaching the end of their undergraduate education, students approaching the end of their graduate studies will want to evaluate their careers and their personal skills and attributes as they decide what to do during the next stage of their lives. Some students will be interested in pursuing a career immediately; others will want additional graduate or professional education or post-doctoral appointments. Students who have already chosen their careers might still find this guide valuable. The guide emphasizes personal flexibility and broad education. It also provides sources of information that students can use in evaluating the potential job market in a chosen area. The guide also seeks to be helpful to those who administer graduate programs and to faculty members and others who

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advise students. Graduate students need more and better information about careers, and faculty advisers can play an important role in supplying it. Although this guide is brief and informal, it is designed to be useful throughout your career. The information in it should be relevant to students interested not only in research careers, but in other science-oriented careers as well. The content of this guide was shaped by information gathered from focus groups and surveys of students and postdoctoral appointees. Should I go to graduate school, and where? Where can I get advice about different disciplines? What type of experience should I obtain beyond my formal classwork? What classes should I take outside my major? What should be the relationship between me and my research adviser? How my career goals affect my choice of thesis topic? What nonresearch skills do I need, and how do I attain them? Page xi Share Cite Suggested Citation: How much salary will I make when I graduate? Is it worth the investment in time and opportunity cost? Students also expressed a need for career guidance information on Identifying careers. Educational requirements for various careers. Off-campus and postgraduate research and education extramural programs. Skills and attributes that could improve employment options. Addressing issues like these is fundamental to a satisfying professional career. In these pages, we encourage students to seek help from peers, friends, advisers, and many other sources in planning a career in science and engineering. It is true that you, the student, are finally responsible for shaping your own career, but your success is largely a product of the abundance and accuracy of career information and the guidance of those familiar with the world beyond graduate school. The group was aided by early reviews of its guide by an external advisory group consisting of graduate students and professors, members of science and engineering disciplinary societies and organizations, and focus groups of gradu- Page xii Share Cite Suggested Citation:

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Chapter 2 : Engineering Technology Jobs, Employment | www.nxgvision.com

Engineering Technology» Students» Careers in Engineering Technology Careers in Engineering Technology Engineering BS or Master Graduates will always have hundreds of challenging career opportunities due to the constant demand for their services.

General Electronics Bachelor of Science BS Degree Engineering and technology play a critical role in defining modern-day life and society, and with the rapid development of technology in the information era, the demand for well-trained mechanical, electronic, and electrical engineers is greater than ever. In its quest, the College bested more than teams from 60 colleges around the globe. Another great feature of a Vaughn degree? Students are exposed to both theory and hands-on technical and research projects so they can adapt to ever-changing industrial needs. This exposure develops critical thinking and problem-solving skills that gives Vaughn engineering and technology graduates a success mindset that prepares them for future challenges and innovation. In addition, industry advisory members play a pivotal role in all the development of the degree programs. They work closely with faculty members of the department to develop cutting-edge, best-of-class course offerings that make Vaughn graduates truly stand out from the crowd. To find out why accreditation is important, visit ABET informational page for families and students. The engineering and technology student learning outcomes are available here. He has years of industrial experience in structural analysis, vibration elimination and fatigue prevention of engineering structures. Rahemi also conducted National Aeronautics and Space Administration NASA funded research in nondestructive testing and evaluation of surface and through crack detection using capillary diffusion method CDM. NASA, after reviewing his testing technique and procedures, accepted and added CDM to the list of potential inspection methods for surface defects for the space shuttle ceramic tiles. As a researcher, Dr. Rahemi is an ideal mentor for Vaughn students pursuing engineering and engineering technology careers. Rahemi is author of numerous conference papers and his most recent book is Engineering Analysis: He received his PhD from Virginia Tech. For more information, please see the department chairman. What are some of the courses I will take in aeronautical engineering technology pre-engineering? Material Science and Composites: This course will cover basic atomic structure, metallurgy, plastic and ceramic materials. Computational Methods in Engineering: This course will cover numerical analysis, finite difference approximations, matrix inversion methods, implicit and explicit procedures. This course emphasizes the interpretation of engineering drawings, combining theory and standard practice. How long does it take to complete the animation and digital technologies degree? A full-time student can complete the AAS program in four semesters or two years. What kind of equipment and software will I use during my animation and digital technologies studies? These computers, located in the graphics lab, are fully equipped with software programs such as: Studio Max, a 3-D animation program AutoCAD, a high-end engineering drawing software package Adobe Photoshop, a program which enables you to edit and manipulate images in a variety of ways Macro-Media Director, a program which combines text, video, images and sound to mix interactive media presentations What are some of the design courses I will take in the animation and digital technologies program? Creating artistically rendered, photorealistic and animated 3-D scenes using the 3-D Studio Max software. Introduction to Interactive Media: Creating interactive media productions using a range of popular software programs such as Dreamweaver and Flash. Learning the more advanced functions of the AutoCAD software program and creating and using layers and cross-reference drawings. How long does it take to complete the electronic engineering technology programs? A full-time student can complete the BS program in eight semesters or four years, and the AAS program in four semesters or two years. What type of engineering is mechatronics? Students in this field take courses in basic engineering sciences and application mechanical, electronic, computer and controls theory and are also required to take courses in automation, robotics and CATIA. Exposure to the design process exists throughout the curriculum in various engineering courses. To complete this program, students are required to take three credit hours of a senior

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project related to mechatronic components development. What kind of systems will I work on during my electronic engineering technology studies? Aircraft communications and navigation systems, pulse systems including transponders and distance measuring equipment DME , weather and radar altimeter systems, power and distribution systems, flight control systems including: Where have recent electronic engineering technology graduates been employed? About 98 percent of Vaughn graduates are employed or continue their educations within one year of graduation. The graduate class includes September , December and May graduates. Ready to Learn More? Need assistance with this form? Clicking the submit button constitutes your express written consent, without obligation to purchase, to be contacted by Vaughn College including through automated technology, e. Standard message and data rates apply.

Chapter 3 : Engineering Technology Degree | Find Top Schools

The Jobs Rated report measures a range of criteria to determine the top-ranked jobs, including the work environment, current hiring demand, average compensation, stress levels, the long-term career outlook and the physical effort required on the job.

Chapter 4 : Engineering Technology Management Jobs, Employment | www.nxgvision.com

Drafting and Design Engineering is an exciting career that allows the engineer to be involved in all stages of the design process, from conception to presentation of the finished plans. This career requires a working knowledge of drafting and design principles, material types and properties, and manufacturing processes.

Chapter 5 : Engineering Technology Careers | Purdue University

Engineering Career Job Growth, Prospects and Outlook The job outlook for the engineering field varies depending on the specific subsector. The table below outlines growth predictions for specific engineering jobs, as well as the states that have the most employment opportunities.

Chapter 6 : Careers in Science

Browse by Career Cluster Career Clusters contain occupations in the same field of work that require similar skills. Students, parents, and educators can use Career Clusters to help focus education plans towards obtaining the necessary knowledge, competencies, and training for success in a particular career pathway.

Chapter 7 : Career Cornerstone Center: Careers in Science, Technology, Engineering, Math and Medicine

Engineering technicians use the principles and theories of science, engineering, and mathematics to solve technical problems in research and development, manufacturing, sales, construction, inspection, and maintenance.

Chapter 8 : Careers in Engineering Technology | Engineering Technology

Quality control technology offers individuals with an interest in engineering technology and a detail-oriented work ethic a career path with ample opportunities for growth.

Chapter 9 : Engineering Technology Careers

Engineering Is a Versatile Career There is perhaps no other career that spans so many areas—healthcare, agriculture,

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entertainment, business, and more. Check out the many and varied ways the work of engineers is making a difference in all our lives.