

-- Career Analysis for Young People --

Industrial and Engineering Technology Employment

Associate's Degree Graduates

The following is a report I compiled as a public service that
may be useful to counsel high school students -

- I am retired, and have a passion for helping the next
generation of young people in "New World" -

The following is about career opportunities

In two important fields -

- Engineering Technology
- Industrial Technology & Related

As the job market is flooded with a huge surplus of four-year
College graduates with high student loan debt, employers are
Saying we need more public attention to the "Skilled Trades" -

- Technicians, Machinists, Tool and Die Makers,
And Industrial Robotics Technicians -

We need more emphasis on two-year Associate's Degrees,
One-year Certificates, and Apprenticeship programs - especially
In Manufacturing and Industrial Technology -

Two career fields of importance are "Engineering Technology"
And "Industrial Technology and Related" -

TECHNICIANS - in these two vital areas usually have a two-year
Associate's Degree in a technical field. This can be from a
Community college, or state technical school -

Some workers have completed an apprenticeship program, often
in partnership with a two-year college, with input from a local
Workforce or economic development commission -

The material in this report is based on two main sources, which
Although published some time ago, is still very relevant -

(1) "Course Construction in Industrial Arts, Vocational
And Technical Education"

- Giachino and Gallington, American Technical Society, 1967

(2) "Occupational Outlook Handbook" 2005 (2002 statistics)

- JIST Publishing and the Bureau of Labor Statistics -

Engineering Technology

This is more theoretical with more depth in math and science, and More design oriented than the "industrial" cluster... Pay is somewhat higher. Engineering technicians need a strong background in algebra, trigonometry, With basic applied calculus. This is NOT the very theoretical calculus that engineers and scientists have taken, but rather how to APPLY basic calculus To technical analysis.

Engineering technicians, though applied, are very close to the theoretical and design level of four-year degreed engineers and scientists. They are categorized as high-level "semiprofessionals" -

Engineering technicians are in sub-groups - Electrical - electronic, Mechanical, civil, chemical, and environmental. Although Drafters are listed as a separate category, they are included in this group for they must have a strong knowledge of design theory as well As some introduction to manufacturing processes. -

While Engineering Technology is a rewarding career, it is a much smaller and more narrowly specialized field than the Industrial - Related cluster. Engineering Technicians are generally more prone to economic downturns or cutbacks in defense spending.

Industrial Technology & Related

This category is more "practical" and more oriented to practice rather than design. This would include workers in various industrial occupations such as machinist, electrician, tool and die maker, welder, and industrial machine maintenance technician. Thus this field does not need as high a level of math. Usually, algebra and trigonometry is sufficient. Many workers in this cluster had a course in "Machine Shop Math" -

Employment Numbers

Engineering Technicians	478,000	
Drafters	216,000	Total - 694,000

Industrial Technology and Related	2,545,000	Total
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Below are sub-categories of the major sub-groups -

Boilermakers	25,000
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Stationary and Boiler Operators 55,000

Electricians 659,000

(More than 25 % in are
in construction)

Industrial Machine Maintenance 289,000

Computer Numeric Control 151,000

Machinists 387,000

Tool and Die Makers 109,000

Welding, Soldering, Brazing 452,000

Power Plant Operations 51,000

Water and Liquid Waste Treatment 99,000

Industrial Instrument Repair 17,000

Sheet Metal 205,000

Semiconductor Manufacturing 46,000

Analysis of Data

In 2002, there were about 1,760,000 more "Industrial Related"
Workers than in the "Engineering Technician" category -

This represents a ratio of 3.7 times more "Industrial" sector
Than "Engineering Technician" employment -

Young people often look at the "status" and "prestige" of a career, as well as the pay and promotion opportunities. However, they must also consider the number of job openings, competition with other job candidates, and the STABILITY of the career over the long term -

- How vulnerable is this career to corporate restructurings and Downsizing? Does this industry suffer from acute competition? And rapid technological change that can make them obsolete in just a few years? Will workers be able to keep up with? Technical and economic changes? -

- Many firms consider Engineers who are out of school for five Or ten years to be obsolete. That may be a myth, but that Attitude has resulted in firms doing a "forced turnover" Every few years -

Young people should not just think of "upward" promotion - which is now rarer than decades ago. They must also Think of "horizontal" career growth and development. Some Fields offer more broad options than others -

Hopefully this report can provide useful insight to Careers In the "Manufacturing - Industrial " sector.

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