DELTA COLLEGE
COUNSELING/ADVISING & CAREER SERVICES

CHEMICAL ENGINEER

Salary Range: $43,320 - $109,250
Personal Interests: Activities of a scientific and technical nature
Work Environment: Conditions vary considerably depending on place of employment

Description

Chemical engineers apply the principles of chemistry and engineering to solve problems involving the production or use of chemicals. They design equipment and develop processes for large scale chemical manufacturing, plan and test methods of manufacturing the products and treating the by-products, and supervise production. Chemical engineers also work in a variety of manufacturing industries other than chemical manufacturing such as electronics, photographic equipment, and pulp and paper mills.

Because the knowledge and duties of chemical engineers cut across many fields, they apply principles of chemistry, physics, mathematics, and mechanical and electrical engineering. They frequently specialize in a particular operation such as oxidation or polymerization. Others specialize in a particular area such as pollution control or the production of specific products such as automotive plastics or chlorine bleach. Chemical engineers are increasingly using computer technology to optimize all phases of research and production; therefore they need to understand how to apply computer skills to process analysis, automated control systems, and statistical quality control.

Working Conditions

Chemical engineers generally work as part of a team. They may supervise technicians and be supervised by a project director. Depending on the individual project, they may work with chemists, physicists, metallurgists, and other engineers and technicians of various kinds. Chemical engineers usually perform part of their work in modern, climate-controlled laboratories. Most chemical engineers work in manufacturing industries, primarily those producing chemicals, petroleum, and related products. Extremes in temperature, machine noise, and disagreeable odors may be experienced. Other chemical engineers work in plants that produce synthetic fuels, pharmaceuticals, food and beverages.

Some engineers work for pollution control agencies and public utilities where conditions vary considerably. Health hazards may be present because of toxic gases, fumes, dust, or liquids. Chemical engineers working in colleges or universities usually work in a well lighted and well ventilated environment.

Generally, chemical engineers work 8 hours per day, 5 days per week. They may work irregular hours when emergencies occur, when deadlines must be met, or when a new process goes into effect. Those teaching in colleges or universities may have varied hours depending on research and teaching assignments.

Training, Other Qualifications

A bachelor's degree (four years of study beyond high school) or a master's degree (five to six years of study beyond high

school) or a professional degree or doctorate (seven to ten years of study beyond high school) may qualify a person for this occupation.

Delta College offers a pre-engineering program that is transferable to several Michigan universities toward obtaining a bachelor's degree in engineering. Interested students need to check with Counseling & Academic Advising for a list of universities that have a transfer agreement with Delta College for engineering.

Job Outlook

Employment of chemical engineers in Michigan is expected to increase about as fast as the average for all occupations through the year 2014. An average of 37 openings is expected annually due to replacement of those who retire, die, or leave the labor force for other reasons. Additional openings will occur as workers change jobs or occupations.

OUTLOOK REGIONS	NUMBER EMPLOYED BY 2014	% GROWTH	PROJECTED YEARLY OPENINGS
Michigan - Statewide	1,011	10.7	37
Ann Arbor	63	18.9	3
Detroit	395	9.1	14
Grand Rapids	137	22.3	6
Jackson	25	25	1
Kalamazoo	33	10	1
Lansing	68	7.9	3
Saginaw	153	3.4	5

Nationally, approximately 31,000 chemical engineers were employed in 2004. Employment is expected to show little or no change through the year 2014. Additionally, about 2.3% of them were self-employed.

Earnings

Nationally, the median annual salary of all Chemical Engineers was $81,600 in 2006. In Michigan for May 2006, chemical engineers earned an annual wage range of $43,320 to $109,250 with an average of $71,050. Average wages for selected areas of Michigan were:

DEGREE	AVERAGE	RANGE
Ann Arbor	$66,190	$35,770 - $105,760
Detroit	$73,420	$37,610 - $107,470
Flint	$50,020	$44,300 - $74,430
Grand Rapids	$79,690	$42,460 - $113,200
Farmington Hills/ Warren	$70,780	$45,030 - $100,130

Related Occupations

Occupations related to chemical engineer are chemist, mechanical engineer, petroleum engineer, biomedical engineer, safety engineer, manufacturing engineer, and materials engineer.

chemical engineer.doc SC 8/2005 Updated 9/07
Sources: Occupational Outlook Handbook, Michigan Occupational Information System, Delta College Catalog.

Career Center, D132
Bay City/Saginaw (989) 686-9072
Midland/Auburn (989) 495-4000 ext.9072
Frankemuth, Birch Run, Reese & Vassar: (989) 758-3400, ext. 9072
http://www.delta.edu/careercenter.

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