

# THE CHEMICAL AND NUCLEAR ENGINEERING DEPARTMENT AT THE UNIVERSITY OF NEW MEXICO

COLLEGES  
OF  
ENGINEERING

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The history of what today is the Department of Chemical and Nuclear Engineering at the University of New Mexico began in the 1911-1912 academic year. A curriculum in engineering chemistry began in the Chemistry Department. This program moved into the Engineering School in the early 1920s and an offering in petroleum engineering was included. The program continued this way until 1936 when it was eliminated and the engineering chemistry program was reinstated. A few graduates were turned out each year until the program ended early in World War II.

The modern history began after the war when the College decided to offer the BSChE degree again. A search for a chemical engineer to head the program was begun and Thomas Castronguay joined the faculty during the 1946-47 year and began a period as Department Chairman that was to last 25 years. Freshman and sophomores were permitted to enroll that first year which led to graduates in 1949.

The history of nuclear engineering began when Glenn Whan joined the chemical engineering faculty at the beginning of 1957. After two and a half years, Glenn took a leave of absence to interact with the Los Alamos National Laboratory. The decision to begin the Nuclear Laboratory was made by Dean Farris and in January 1960 Glenn Whan returned from his leave as the head of the Nuclear Laboratory reporting directly to the Dean.

The nuclear program began offering graduate degrees in nuclear engineering and was returned to the Chemical Engineering Department in the 1962-63 academic year as a special graduate division. In April 1965 the UNM faculty authorized the Department of Nuclear Engineering as a graduate department and Glenn Whan was appointed Chairman.

The next significant development took place during the drastic drop in enrollment that occurred in the early 1970s. The nuclear engineering program had a relatively small number of graduate students and the chemical engineering program was likewise small and predominantly undergraduate. Therefore it made sense for Dean Dove to combine the departments for administrative efficiency. This was accomplished during the spring of 1972 and the Department of Chemical and Nuclear Engineering was formed and Glenn Whan was appointed Chairman.

Since 1972, the department has grown under the leadership of five chairmen. Dr. Whan served for two years and then took a sabbatical leave and Robert Long was appointed Acting Chairman for that year. Bob was then appointed to a three-year term as Chairman by Dean Gross. He took a sabbatical leave during the middle year of his term and Glenn became the Acting Chairman as Bob had done two years earlier. Dr. Long resigned from the faculty in 1978 to go to an industrial position which eventually led to his intimate involvement in Three Mile Island.

E. James Davis joined the department as Chairman after a productive career at Clarkson College. Jim was here for two years and had a marked impact on the manner in which the department operates. Jim also left when an opportunity at an industrial research laboratory was just too attractive to pass up. Since 1980, David Woodall and Richard Mead have been serving in a form of co-chairmanship where each has been able to provide effective leadership for each part of the department. The faculty decided last year that it was essential to find an individual of some prominence to lead the department to maturity and a search is currently underway.

## Chemical Engineering

The chemical engineering program survived the period in the early '70s when the enrollment dwindled and began a growth which continues. The table below highlights the growth by presenting the number of degrees, including an estimate for this year.

| Academic Year | B.S.Ch.E. | M.S. | Ph.D. |
|---------------|-----------|------|-------|
| 73-74         | 14        | 2    | 3     |
| 74-75         | 11        | 1    | —     |
| 75-76         | 13        | —    | —     |
| 76-77         | 15        | 2    | 1     |
| 77-78         | 20        | 5    | —     |
| 78-79         | 26        | 3    | 1     |
| 79-80         | 23        | 7    | —     |
| 80-81         | 20        | 14   | —     |
| 81-82         | 26        | 6    | 3     |
| 82-83         | 39        | 16   | 5     |

Currently there are about 140 undergraduates who

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are taking chemical engineering courses and 45 graduate students. We have reached the limiting size of about 45 juniors taking our laboratory course (the capacity of the facilities). Further growth would also require more faculty because we would have to offer multiple sections.

A significant milestone was accomplished during the spring of 1976 when the BSChE degree was accredited by ECPD (now ABET). The Department was re-visited in the fall of 1978 in conjunction with the rest of the College and again accredited. We are looking forward to the visit next fall.

There are currently seven chemical engineering faculty members, six nuclear faculty members, and Glenn Whan who is truly a chemical and nuclear engineer. All seven chemical engineering faculty are active in research and teaching and all hold the doctorate. Two professors are Registered Professional Engineers. Summarizing their research interests and when they joined the faculty:

|                   | <b>1st yr</b> | <b>Research Interests</b>                                |
|-------------------|---------------|--|
| Eric Nuttall      | 1974          | <i>Modelling &amp; Processing in the Geo-Environment</i> |
| Dick Mead, PE     | 1974          | <i>Process Metallurgy &amp; Mass Transfer</i>            |
| C.Y. Cheng        | 1975          | <i>Separation Processes</i>                              |
| Dave Kauffman, PE | 1977          | <i>Environment &amp; Advance Design</i>                  |
| Frank Williams    | 1977          | <i>Kinetics &amp; Catalysis</i>                          |
| Ebtisam Wilkins   | 1978          | <i>Solar &amp; Biomedical</i>                            |
| Harold Anderson   | 1981          | <i>Modelling &amp; Nuclear Waste</i>                     |

The addition of a senior chemical engineer as Chairman will further broaden the department and will allow us to continue to grow at the graduate level. Much of our emphasis has been directed toward New Mexico's problems and resources. As we continue to expand, we will be growing in some areas, but we hope to continue to be in tune with our state.

## Nuclear Engineering

For the past decade the graduate program has maintained a steady enrollment of about 25 full-time students with an equal number of part-time students. The following table summarizes the graduate degrees

granted during that period of time.

| <b>Academic Year</b> | <b>M.S.</b> | <b>Ph.D.</b> |
|----------------------|-------------|--------------|
| 73-74                | 6           | 2            |
| 74-75                | 17          | 0            |
| 75-76                | 9           | 2            |
| 76-77                | 7           | 2            |
| 77-78                | 6           | 0            |
| 78-79                | 10          | 6            |
| 79-80                | 9           | 3            |
| 80-81                | 9           | 1            |
| 81-82                | 6           | 0            |
| 82-83                | 5           | 2            |

In 1981 the bachelor's degree curriculum in nuclear engineering was approved by the faculty of the College of Engineering and the first BSNE was granted during the 1981-82 school year. Currently about 20 undergraduate students are in the program and the enrollment continues to increase each year. Within a few years we expect to grant 10-15 BS degrees each year. Next year the BSNE degree will request ABET accreditation.

All nuclear engineering faculty hold the PhD degree and two are Registered Professional Engineers. Their research and their year of joining the UNM faculty are summarized:

|                  | <b>1st yr</b> | <b>Research Interests</b>                          |
|------------------|---------------|--|
| Glenn Whan, PE   | 1957          | <i>Radiation &amp; Criticality Safety</i>          |
| Dave Woodall, PE | 1977          | <i>Plasma/Fusion Physics</i>                       |
| Craig Robertson  | 1978          | <i>Nuclear Measurements &amp; Instrumentation</i>  |
| Gary Cooper      | 1979          | <i>Fusion Engineering</i>                          |
| Mohamed El-Genk  | 1981          | <i>Thermohydraulic Design &amp; Reactor Safety</i> |
| Stan Humphries   | 1982          | <i>Inertial Fusion, Accelerator Technology</i>     |
| Norm Roderick    | 1982          | <i>Thermodynamics &amp; Hydrodynamics</i>          |

A number of cooperative research activities are underway with the Sandia National Laboratory, Kirtland Air Force Research Laboratory and the Los Alamos National Laboratory. Nuclear Engineering at the University of New Mexico is considered to be one of the centers of excellence in the United States. □