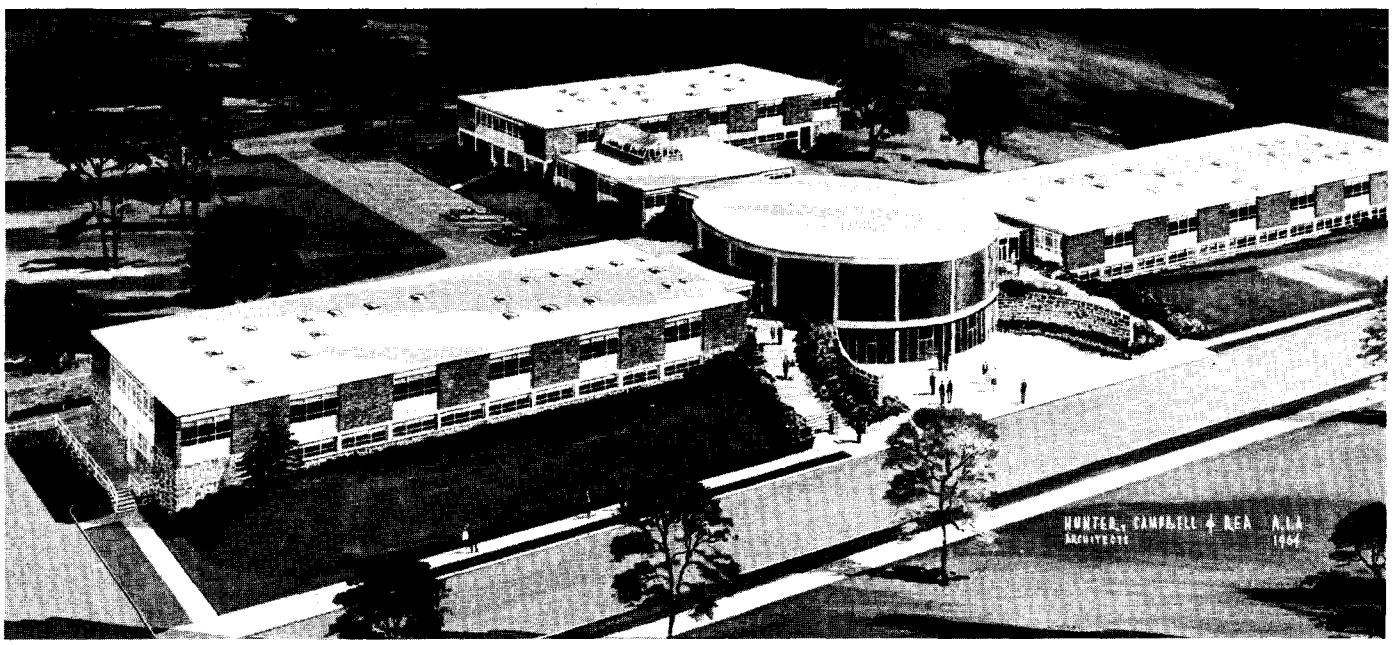


Juniata's triradiate science complex has separate wings for chemistry (left), physics, geology, and mathematics (right), and biology (rear). The central hub contains a downstairs lecture hall with a seating capacity of 400. Above is a science library with space for 18,000 volumes

Juniata College's Undergraduate Chemistry Facilities

AN UNDERGRADUATE CHEMISTRY STUDENT at Juniata College, Huntingdon, Pennsylvania, has at his disposal an outstanding array of analytical equipment and facilities which he can use as part of his laboratory instruction or in independent research.

Housing the science division is Juniata's ultra-modern, centrally air-conditioned science complex, consisting of three wings radiating from a hub section. The science complex has a total floor space of 100,000 square feet, and was built at an average cost of $21 per square foot.

Unique features of Juniata's chemistry wing are the two student-research areas. These have a total of 12 individual research stations, each equipped with all the usual laboratory services, drawer space, and equipment lockers.

A primary goal of the College's curricula planning is to introduce the students to chemical research as early as possible in their academic careers. Consequently, able students can begin problem studies the summer following their freshman year as part of an active summer research program characterized by close contact between faculty sponsors and student researchers.

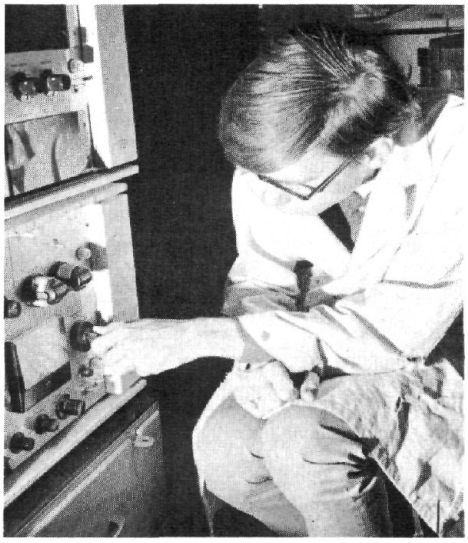
Undergraduates have an opportunity to use complex instruments to solve intricate analytical problems. Thus, they are able to follow and appreciate the scientific method.

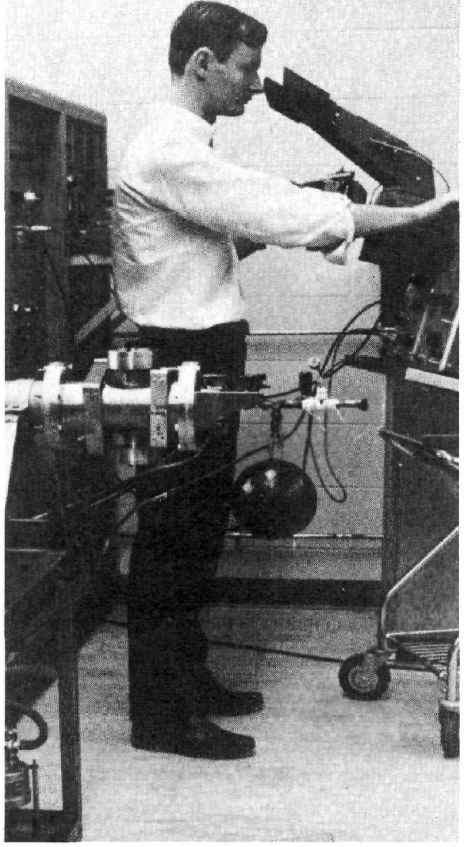
The Juniata undergraduate begins his association with chemistry in one of two general laboratories. These spacious labs are connected through a small stockroom and weighing room. Gas, air, vacuum, ac and dc power, and steam and water outlets are provided at each lab bench. In addition, every laboratory is equipped with unistruts on the walls from floor to ceiling for mounting apparatus and equipment. A walk-in refrigerator and freezer containing a lab bench and services is available for use by all labs.

As the student's work in chemistry becomes more exacting and sophisticated, so do the instruments available to him. In two large instrumentation laboratories, he will find such modern tools as a mass spectrometer, a high-resolution infrared spectrophotometer, several ultraviolet-visible spectrophotometers, gas chromatographs, and a variety of electrochemical instrumentation.

Faced with an analytical problem, the undergraduate can turn to any of six special-purpose laboratories. The

Students in the junior laboratory course use the gamma-ray spectrophotometer to detect the energy of gamma radiations from various radioactive sources. A howitzer, not shown in photo, contains 1-Curie neutron sources, and is used by students studying the Szilard–Chalmers process

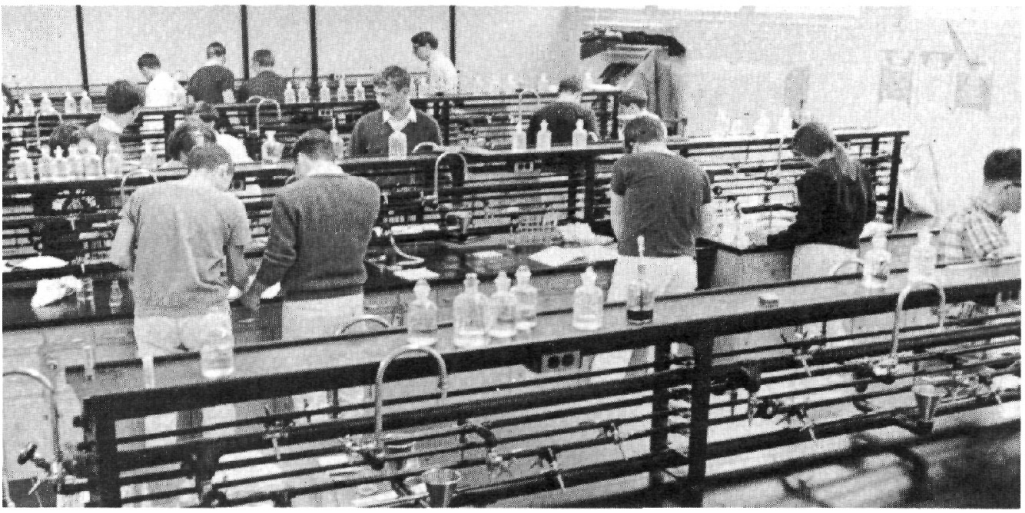




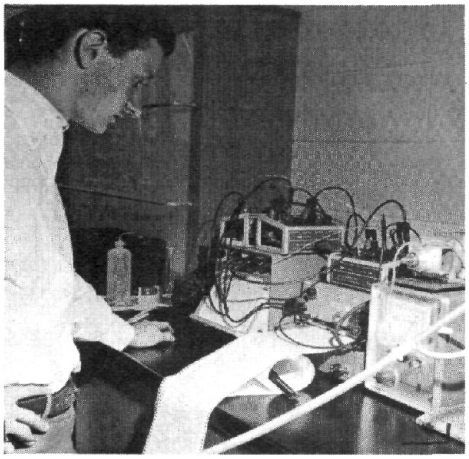
In the instrumentation lab, students use the mass spectrometer to determine the molecular structure of unknown compounds

The analyzers shown above are used by students in the junior lab course or in research programs to determine the nitrogen or carbon–hydrogen content of unknown compounds which they have prepared

Spacious general laboratories provide the initial contact with chemistry in the Juniata curriculum



This senior research student is trying to obtain data to substantiate a flip-flop model for a gas chromatographic column by using a simulated column



x-ray laboratory provides single-crystal x-ray diffraction equipment where he can determine the structure of an unknown compound, or the type of crystalline system with which he is working. An adjacent darkroom is part of this lab.

In the spectroscopy laboratory, the student will find equipment to study fluorescence and phosphorescence, as well as ordinary absorption spectra. There is available a spectrograph with various sources and a microdensitometer.

The high pressure laboratory is supplied with both high- and medium-pressure equipment for use in hydrogenation and other reactions requiring higher than normal atmospheric pressures.

A radiation laboratory, outfitted with a stainless steel filtering hood, provides radiation counters, a gamma-ray spectrometer, and five 1-Curie neutron sources in a howitzer. It is used primarily in the junior-level laboratory course where students study the Szilard–Chalmers process by irradiating a $KMnO_4$ solution and investigating the chemical forms of the radioactive species produced.

The microchemical laboratory is used in conjunction with the student research program and also in the junior-level laboratory course. As part of the lab course, students are given directions for the preparation of a metal complex with an organic ligand. They then must analyze the complex and attempt to determine its structure with analytical aids, such as an automatic carbon–hydrogen analyzer, a nitrogen analyzer, an electrobalance, and a Guoy balance.

Rounding out the analytical sextet is a laboratory designed for liquid chromatography. This lab is equipped with special ventilation at several bench positions for safe removal of solvent vapors. □