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Proposal for an Academic Major in Water Resources

The College at Brockport, College Senate

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Resolution #24

TO: President John E. Van de Wetering

FROM: The Faculty Senate Meeting on May 4, 1987
(Date)

RE: X I. Formal Resolution (Act of Determination)
 II. Recommendation (Urging the fitness of)
 III. Other (Notice, Request, Report, etc.)

SUBJECT: Proposal for an Academic Major in Water Resources



Signed John M. Wetering Date Sent 5/5/87
(For the Senate)

TO: The Faculty Senate

FROM: President John E. Van de Wetering

RE: I. Decision and Action Taken on Formal Resolution

a. Accepted. Effective Date July 87

b. Deferred for discussion with the Faculty Senate on _____

c. Unacceptable for the reasons contained in the attached explanation

II., III. a. Received and acknowledged

b. Comment:

DISTRIBUTION: Vice Presidents: See attached list

Others:

Distribution Date: 5/11/87

Signed: [Signature]
(President of the College)

Date Received by the Senate: _____

PROPOSAL FOR AN ACADEMIC MAJOR IN WATER RESOURCES

A. Planning Factors

1. Existing programs in related disciplines and expected impact:

The Department of the Earth Sciences at the State University of New York College at Brockport offers the Earth Science Major for interdisciplinary study of the air, water and solid earth sciences. Disciplinary Geology and Meteorology Majors are also offered by the Department.

The Water Resources Major is a concentration of course work in hydrology and closely-related earth sciences, their applications, and associated areas of study. The requirements for the degree are based upon suggested course work for hydrologist positions in the Federal Register, and programs described in American Institute of Hydrology materials. They include one year of calculus, physics and chemistry, and 33 credit-hours in water resources-related fields.

The Water Resources Major is distinct from the Earth Science Major as are the disciplinary majors in Meteorology and Geology. It complements the Aquatic Ecology program in Biological Sciences. The Major emphasizes the analytical abilities associated with mathematics and builds upon the physical sciences of physics and chemistry. It is expected that Brockport students majoring in Computer Science and some social and health sciences may also consider portions of the Water Resources sequence. It is anticipated that this program will meet the needs of a modest number of students majoring in these fields. It is also anticipated that this program will meet the needs of a modest number of transfer students with strong backgrounds in sciences and/or civil technology, from Monroe Community College and other colleges; and that some individuals who hold baccalaureate degrees will continue their education in water resources disciplines in this program.

Required courses for the Water Resources Major:

ESC 211 Weather or GEL 101 Our Earth	4
ESC 350 Computational Methods in the Field Sciences*	3
ESC 364 Water Resource Issues**	3
ESC 411 Hydrology Lab	1
ESC 412 Hydrology	3
ESC 418 Watershed Management or ESC 464 Environmental Internship	3
GEL 415 Geomorphology	3
GEL 462 Groundwater Geology	3
BIO 419 Limnology	3
BIO 436 Water Quality Analysis	3
ECT 207 Fluid Mechanics***	4
Total	33

Corequisite courses:

MTH 201, 202 Calculus I, II	6
PHS 201, 202 College Physics I, II	8
CHM 205, 206 College Chemistry I, II	8

Recommended elective courses:

ESC 311 Synoptic Meteorology	4
ESC 413 Environmental Climatology	3
ESC 455 Introduction to Soils	3
GEL 302 Historical Geology	4
GEL 408 Structural Geology	4
GEL 499 Independent Study - Groundwater Models	3
BIO 303 Ecology	3
CIT 102 Surveying***	3

* ESC 350 treats the methods of processing, displaying and analyzing environmental data. Topics chosen include graphical display techniques, use of computers for input, storage of data, statistical and numerical analysis routines, and simulation and modeling of environmental processes.

** Not to be used to meet Contemporary Issues requirement for Water Resources majors.

*** Offered through cooperation with Monroe Community College.

2. Similar programs at other institutions:

Hydrology is a small but growing scientific discipline. Federal agencies, including the National Weather Service and U.S. Geological Survey, developed the science and in-service training for their employees, who usually had received their educational training in the earth sciences or engineering. Increased demand for water resources personnel has resulted in hydrologic education at universities including the University of Arizona and Colorado State University. Brockport plans to make application to join the Universities Council on Water Resources, Inc. The proposed program integrates suggestions based upon examination of these programs, and others described at a recent American Institute of Hydrology Conference on Water Resources Education.

State University of New York College at Oneonta has developed a Water Resources Major in its Earth Science Department. The Water Resources Major at Oneonta includes thirty-six hours in hydrology, geology, meteorology, oceanography, chemistry and biology. Related work includes calculus, statistics, chemistry, physics and biology. The Brockport program is similar to that at Oneonta, as are other Departmental programs. There is to our knowledge no other undergraduate program of the kind proposed in our Western New York service area.

3. External arrangements:

Two courses in the program can involve interaction with public resource agencies. ESC 464 Environmental Internship is arranged through an internship contract among the student, the professional supervisor and the professor. The internship involves activities resulting in a report to the professional. ESC 418 Watershed Sciences is an individual or team analysis of a small watershed which similarly results in a report to a public agency. These courses are usually taken by senior students who have completed ESC 411.

Two courses, ECT 207 Fluid Mechanics and CIT 102 Surveying, will be offered in conjunction with Monroe Community College which has the excellent staff and unique laboratory facilities necessary. It is planned that, through scheduling coordination between the colleges Brockport students will be able to enroll there, or else that the courses will be held periodically on Campus at Brockport.

C. Need

There is a need for skilled personnel in hydrology and related water resources fields to meet the demands of society for water and energy and environmental control. Potential employers include private environmental consulting firms, federal, state and local government agencies, and industries and educational institutions. Many of these are located in New York State and other states in the Northeast.

D. Resources

No additional staff will be needed to implement this program. Additional equipment will be acquired over a period of time to support these courses as College and departmental resources permit.