



# THE CONNECTICUT STATE UNIVERSITY

P.O. Box 2008 • New Britain, Connecticut 06050 • (203) 827-7701

RESOLUTION

concerning

LICENSURE AND ACCREDITATION

for a

BACHELOR OF ARTS (BA) IN METEOROLOGY

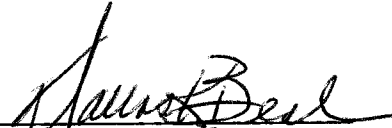
at

WESTERN CONNECTICUT STATE UNIVERSITY

June 17, 1988

RESOLVED, That under the authority granted to the Board of Trustees of Connecticut State University in Chapter 185b, Sections 10a-87 and 10a-149 of the General Statutes, the President of Connecticut State University is authorized to seek licensure and accreditation from the Board of Governors for Higher Education for a Bachelor of Arts (BA) in Meteorology to be presented by Western Connecticut State University.

A Certified True Copy:

  
Dallas K. Beal  
President

YOUR LETTER OF

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## BOARD OF GOVERNORS FOR HIGHER EDUCATION

61 WOODLAND STREET  
HARTFORD, CONNECTICUT 06106

## PROGRAM SUMMARY

DESCRIPTION OF PROPOSED ACADEMIC PROGRAM OR DEGREE		
PROGRAM NAME Meteorology		DATE OF SUBMISSION TO BHE February 1988
TITLE OF DEGREE (and abbreviation) B.A. (Bachelor of Arts)		
PROGRAM CODE NO. 4:0:0:4:0:1	TITLE Atmospheric Sciences and Meteorology	
DEPARTMENT AND SCHOOL OR COLLEGE Arts and Sciences		
APPLICANT INSTITUTION Western Connecticut State university		PROPOSED INITIATION DATE Fall 1988
GEOGRAPHIC LOCATION OF PROGRAM Danbury, Connecticut		
INSTITUTIONAL LIAISON PERSON Philip j. Steinkrauss	TITLE Vice President for Academic Affairs	TELEPHONE 797-42
BOARD OF TRUSTEES STAFF LIAISON (if applicable) Thomas A. Porter	Vice President for Academic Affairs and Research	
SUMMARY (Describe the proposed academic program below and on a separate page if necessary.)		

PLEASE FOLLOW THE GUIDELINES ON THE ATTACHED SHEET.

The proposed Bachelor of Arts program in Meteorology is designed to prepare students to obtain entry level positions in meteorology or another closely related field. Other alternatives would be to prepare for graduate education or to have students experience in-depth studies in meteorology as a culmination to a liberal arts education.

The specific objectives of the meteorology program are to provide students with: (1) A background in the liberal arts through general education requirement; (2) A thorough foundation in the fundamental components of meteorology; and (3) A synthesis of the practical and theoretical aspects of the discipline.

The program requires the completion of 122 semester hours (36 courses) which includes a senior research project. The major is structured with a core component of nine required courses and ten supportive courses in mathematics, science and computer science.

Projected student demand is based on a state-wide high school survey of student interest and on the number of students in the current meteorology concentration.

The curriculum of the proposed major is as follows:

DO NOT FILL IN	LICENSURE ACTION	ACCREDITATION ACTION
These items will be completed by the BHE staff.	SCA _____	SCA _____
	PAAC _____	PAAC _____
	BHE _____	

General Education	-	47 Credit hours
Electives	-	12 Credit hours
Major Courses:	-	63 Credit hours

MAT 102	Calculus II	4 Credit Hours
MAT 201	Calculus III	4
MAT 205	Differential Equations	4
CS 160	Computer Prog. I	4
CS 161	Computer Prog. II	4
PHY 110,111	General Physics I,II	8
PHY 150	Meteorology	4
PHY 220	Air Pollution	4
PHY 230,231	Weather Analysis and Forecasting I,II	8
PHY 315	Atmospheric Physics	4
PHY 320	Instrumentation	4
PHY 350	Senior Research	3
PHY 420,421	Geophysical Hydrodynamics I,II	8
	Total Credits	122

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3-14  
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Western Connecticut State University

B.A. Degree in Meteorology

1. PURPOSES AND OBJECTIVES (SEE 10-330-11)
  - a) STATE THE PURPOSES AND OBJECTIVES OF THIS PROGRAM IN RELATION TO THE GOALS AND OBJECTIVES OF THE INSTITUTION (BE AS SPECIFIC AS POSSIBLE).

The Role of Western Connecticut State University adopted in August 1987 highlights Western's Weather Center which provides a site for instruction, research, and public service in meteorology. The Weather Center was the first Center for Excellence within the Connecticut State University system and received an \$85,000 grant from the Board of Governors. The meteorological sciences have and continue to receive recognition and considerable outside support. Extensive research and service programs are conducted through the Weather Center. A nationally - recognized severe weather forecasting network developed in the Center helps public utilities and the state department of transportation to prepare for severe weather consequences. Based on the strengths of the Weather Center as a support unit for instruction and research, the Western Connecticut State University is proposing the establishment of a Bachelor of Arts Degree in Meteorology.

A portion of the Connecticut State University Mission Statement, September 1986, reads:

"It is the mission of the Connecticut State University to offer a broad range of instructional programs which are responsive to the changing educational needs of the citizens and the dynamic economy of the state."

"The University is committed to (1) serve qualified and qualifiable students at both graduate and undergraduate levels in professional, pre-professional, semi-professional, para-professional and liberal arts degree programs regardless of the heterogeneity of the groups to which they belong; (2) prepare students qualified to lead and to function effectively in a rapidly changing and expanding society."

The proposed bachelor's degree program in meteorology addresses these particular statements. There is no Bachelor's program in meteorology within the entire state of Connecticut, one of the fastest growing areas in the northeast. The potential pool for this program will be persons beginning their college studies, transfer students from the community and four year colleges, and persons who wish to use the degree for job advancement or career change.

The objectives of the program are:

- (1) to provide students with a background in the liberal arts through a general education requirement,
- (2) to provide students with a thorough foundation in the fundamental components of meteorology:  
thermodynamics, instrumentation, hydrodynamics,  
weather analysis, atmospheric physics and air  
pollution,
- (3) to demonstrate to students a synthesis of the practical and theoretical aspects of the discipline,
- (4) to prepare students to enter upon a career. The broad undergraduate background that the meteorology major receives in mathematics, chemistry, physics and

computer science (40 semester credits) prepares the student to enter a number of high technology positions in the State of Connecticut. It is presumed that these positions may not primarily require meteorological training, but the students' interests and background qualify them for entry level positions.

- b) STATE WHY THIS PROGRAM IS CONSIDERED TO BE AN APPROPRIATE OFFERING FOR THIS INSTITUTION AT THIS TIME. INCLUDE REFERENCE TO SUPPORTING INFORMATION SUCH AS AN INSTITUTIONAL MASTER PLAN.

The Western Connecticut State University Long Range Plan for 1987-1992 specifically identified as a major priority the initiation of a meteorology major within the School of Arts and Sciences. A staff member with a Ph.D. in atmospheric sciences has been added during the Spring semester 1987. Additionally the Weather Center employs two experienced staff with Bachelor Degrees: Ann Fitzgerald and Joe Furey (see Appendix A for resumes). Another important factor in choosing this time to propose the degree in meteorology is the availability of the well-equipped Weather Center facility at Western Connecticut State University. It is equipped with a Zephyr satellite receiver for the domestic data and public product from NOAA, five terminals, two printers, one digital facsimile machine and one microvax II computer. A Kavoris Radax for displaying severe weather is also available.

Under the direction of Dr. Mel Goldstein, the Weather Center provides information to industrial, public service and

media clients. It was the first designated Center for Excellence, chosen by the Board of Governors in 1985. Its type of practical application of meteorological theory provides a great opportunity for students. The students will be readily able to apply concepts learned in the classroom to practical employment requirements. Their personal contacts with the Weather Center clients can provide leads for employment opportunities.

The public service is performed for a number of clients. The information consists of snow storms, freezing rain and other forms of severe weather forecasting.

#### PUBLIC SERVICE CLIENTS

Office of Governor  
Connecticut Dept. of Transportation  
City of Danbury  
Town of Windsor  
Department of Environmental Protection  
Office of Civil Preparedness  
City of New Britain

#### SCHOOL SYSTEM CLIENTS

Bethel Public Schools  
Brewster Public Schools  
Danbury Public Schools  
New Fairfield Public Schools  
Easton/Redding Public Schools  
Ridgefield Public Schools



The media clients are provided with multiple updated daily weather forecasts. Typically, there are 4 taped weather broadcasts which are updated three times a day and a taped winter ski forecast which is updated twice a day. The daily weather forecast and Facts, Weather and Fun Column by Dr. Mel Goldstein in the Hartford Courant have a large following within the state (see Appendix C).

#### MEDIA CLIENTS

RADIO:	WADS - Ansonia	WNLK - Norwalk
	WATR - Waterbury	WGCH - Greenwich
	WAVZ - New Haven	WREF - Ridgefield
	WDAQ - Danbury	WLYQ - Norwalk
	WKCI - New Haven	WSHU - Bridgeport
	WKND - Windsor	WLEV FM - Allentown, PA
	WLAD - Danbury	WEST AM - Easton, PA
	WPUT - Brewster, New York	WKIP AM - Poughkeepsie
	WRVH - Patterson, New York	WRKZ - Harrisburg, PA
	WEAN - Providence, Rhode Island	
	WPJB - Providence, Rhode Island	

Television: Regional Channel 8 WTNH

Newspaper: Danbury News-Times  
Hartford Courant

Currently Dr. Mel Goldstein provides the voice for a live Channel 8 WTNH weather forecast four times, Monday through Friday. Possibly in the future, this will lead to a live studio broadcast from the Weather Center. The establishment of such a video studio would provide a new potential learning situation for meteorology majors.

Another equally important area served consists of industrial clients. These stretch from Connecticut to Nebraska and as far south as Florida, and are concerned with

severe weather that would interrupt power distribution as-well-as severe weather that would curtail shift work and production - distribution of their products.

#### INDUSTRIAL CLIENTS

Union Carbide	Northeast Utilities
IBM	Toledo Edison Public Utility
General Electric	Omaha, Nebraska Power Distribution
Pepsi Cola	Niagara Mohawk Power & Light
Kimberly-Clark	Pennsylvania Power and Light
Boehringer I	
Berol	
Grolier	

- c) DESCRIBE THE CLIENTELE(S) TO BE SERVED BY THE PROGRAM (STUDENTS, EMPLOYERS, PROFESSIONAL GROUPS, ETC.)

A questionnaire was sent out in the spring of 1985, by WCSU to high schools within the state. The survey indicated that from 1983 to 1985, 40 students have intended to major in meteorology. Also, the counselors responded that over 60 students from the same survey indicated interest in a meteorology major at Western Connecticut State University. It was gratifying that out of 179 requests, there was a 39% response. There is an interested and adequate pool of capable Connecticut students for the program. In 1985-86, 28 Connecticut Students alone intended to enroll in area academic programs in meteorology. An additional pool of 49 students from Massachusetts and Rhode Island attended meteorology programs in the New England area outside of Connecticut. This evidence is not meant to exclude students from New York State, since we attract a number of these New York students based on our proximity to the Hudson Valley.

Holders of a Bachelor's Degree in meteorology ordinarily have three options. They may seek jobs in federal or state governments; they may seek jobs in private industry; or they may continue their education by entering graduate school. The last option offers a fourth opportunity of teaching/research at the college or university level.

During the spring of 1987, Dr. David Houghten, Commissioner of Manpower for the American Meteorological Society was contacted for his assessment of the job opportunities for B.A. graduates in meteorology. A summary of the telephone conversation with him follows.

"The National Weather Service has been affected by federal cutbacks and automation at the weather centers. However, the job market is stable since the meteorological technician entry level positions now require a degree in meteorology. The private sector of weather services has increased and this has also balanced the decrease in federal positions, e.g. WSI Corporation in Massachusetts, Accu-Weather in Pennsylvania and Kavouras Weather in Minnesota. If a graduate is willing to look for 6 to 9 months and to go where the jobs are available, there are sufficient positions available for the undergraduate major. The estimate is a minimum of 7 to 10 positions each month."

At present, there are over 106 private weather companies throughout the United States. There are additional positions with airlines such as American, United and Northwest. Also, the military provides careers for graduates should they want to pursue a military career as officers. Recently, the

Department of the Air Force has requested that its officer recruiters actively seek meteorologists for the Air Force's Weather Career Field (see Appendix B). These types of employment opportunities are also available in the other branches of the armed services.

Western Connecticut State University has an on-going co-op program with the National Weather Center, Washington, D.C. This provides students with entry level work experience, (GS-4) practical applications of their academic course work, and professional work experience for their resume. This can result in a program position upon graduation. We have had a number of requests over the past few years for our students; unfortunately, the students will not leave Connecticut to take such employment.

At the state level, Connecticut in particular, there is the need for more atmospheric modeling and monitoring of toxic gases. It is expected that the Department of Environmental Protection (Philip Floroski) will provide a stable employment base over the next 2-3 years since they have increased their staff to 100 positions. Many utilities are hiring meteorologists for their environmental work, as do some oil and chemical companies (Gale Hoffnagle, TRC Environmental consultants, East Hartford). Students trained in weather analysis and severe weather forecasting are in an especially strong position for employment by utility companies.

The most visible jobs are media forecasters. These require a particular combination of meteorological background and being telegenic. Although broadcasting is not a specific program objective, students majoring in meteorology will receive exposure to this broadcasting through contact with the University's Weather Center under the Directorship of Dr. Mel Goldstein.

## 2. ADMINISTRATION

- a) HOW WERE THE PROGRAM PLANS DEVELOPED AND APPROVED? GIVE DATES OF APPROVAL BY THE INSTITUTION AND THE GOVERNING BOARD.

The Academic Planning Committee gave the Department of Physics and Astronomy approval to plan a meteorology major on November 4, 1985.

Planning for the program was initiated by faculty in Spring 1985 and formal approval by the department was obtained from the University Planning Committee in May, 1987. The proposed program was approved first by the Liberal Arts Curriculum Committee and then by the University Wide Curriculum Committee in the fall of 1987.

- b) WHO IS DIRECTLY RESPONSIBLE FOR THE ADMINISTRATION OF THE PROGRAM AND SUPERVISION OF ITS FACULTY?

Under the University President, the Vice President for Academic Affairs has University-wide responsibility for program and faculty. These are subdivided into three schools (Professional Studies, Ansell School of Business, and Arts and Sciences) and the program in meteorology will be supervised by

the Dean of the School of Arts and Sciences. The Dean in turn delegates and shares with the chairperson of the Department of Physics and Astronomy some of these responsibilities, e.g. course projections, staffing, faculty evaluation and assessment.

The Weather Center serves as a resource for the academic meteorology program and is under the Director Dr. Mel Goldstein, who is a member of the Department of Physics and Astronomy.

c) LIST (1) ANY ACCREDITING AGENCIES WHICH ALREADY HAVE ACCREDITED THE INSTITUTION AND (2) ANY ACCREDITING AGENCY TO WHICH YOU PLAN TO APPLY FOR ACCREDITATION.

1) The State of Connecticut Board of Governors for Higher Education, The new England Association of Schools and Colleges.

2) None

### 3. FINANCE

a) DESCRIBE THE AMOUNT OF FINANCIAL SUPPORT COMMITTED TO THE PROGRAM BY THE ADMINISTRATION AND TRUSTEES. INDICATE THE DATE(S) THESE FUNDS WILL BE AVAILABLE.

The funds needed for this program will come from the general fund. Renovation of available space for instruction, laboratory and research are underway as part of the White Street campus renovation project. We expect sufficient space to start the program to become available (Higgins Hall 214) during the Spring semester 1988.

The Weather Center was developed and is maintained through grants and private funds. The equipment in the Weather Center

(see pg. 3) would all be available for use in a meteorology degree program. Approximately \$20,000 of Weather Center resources will be used to support educational activities each year and an additional \$15,500 each year for two years (1988-1990) will be requested from the Western Connecticut State University equipment allocations in the general fund.

- b) COMPLETE A FISCAL STATEMENT FORM PROVIDED AND MAKE IT AVAILABLE TO STAFF AND THE BOARD.

See the appended statement. For the year 1988-89 the breakdown is for \$3,000 for library books. The \$12,500 (88-89) and \$12,500 (89-90) is for laboratory equipment and audio visual items for the expansion of Physical Meteorology, Air Pollution and Instrumentation.

- c) IF RESOURCES TO OPERATE THE PROGRAM ARE TO BE PROVIDED TOTALLY OR IN PART THROUGH REALLOCATION OF EXISTING RESOURCES, IDENTIFY THE RESOURCES TO BE EMPLOYED AND EXPLAIN HOW EXISTING PROGRAMS WILL BE AFFECTED.

The meteorology major relies upon currently available courses and faculty in mathematics, computer science, chemistry and physics. The library will be integral parts of this program as well as the academic computer facilities. Each student receives his own computer account which allows him to use the University facilities for his course work. As mentioned in section 3(a) and detailed in fiscal statement (C), the Weather Center is an integral part of the academic and research activities required in a B.A. Degree in Meteorology. The Weather Center will provide resources valued

FISCAL STATEMENT

Proposed New Academic Program: B.A. in Meteorology

Institution: Western Connecticut State University

	Year 1 1988-89	Year 2 1989-90	First Year of Full Operation 1990-91
<u>Estimated New Expenditure (private institutions list expenditures on General Fund Lines)</u>			
Personnel (Faculty and Support) <sup>1</sup>			
Full-Time positions			
Number	---	---	---
Salaries - General Fund	---	---	---
Salaries - Extension Fund	---	---	---
Part-time positions			
Number	.75 FTE	1.00 FTE	1.25 FTE
Salaries - General Fund	\$9,990	\$14,520	\$19,650
Salaries - Extension Fund	---	---	---
Other Expenses <sup>2</sup>			
General Fund	---	---	---
Extension Fund	---	---	---
Equipment (incl. Library Books) <sup>3</sup>			
General Fund	\$15,500	\$15,500	\$3,000
Extension Fund	---	---	---
TOTAL NEW EXPENDITURES	\$25,490	\$30,020	\$22,650
GENERAL FUND	---	---	---
EXTENSION FUND	---	---	---

<sup>1</sup>Faculty, professional, managerial, clerical, and other persons employed by the institution in support of the proposed new academic program.

<sup>2</sup>Compensation for services secured by contract with firms or individuals not employed by the institution and purchases of supplies, materials, and equipment not normally regarded as capital items.

<sup>3</sup>Items of equipment with a normal useful life of three years or more and a value of \$100 or more or, if the useful life is less than three years, a value of \$250 or more.

Board of Higher Education  
61 Woodland Street  
Hartford, Connecticut 06105



FISCAL STATEMENT

Proposed New Academic Program: B. A. in Meteorology  
 Institution: Western Connecticut State University

	Year 1 19 <u>88</u> -89	Year 2 19 <u>89</u> -90	First Year of Full Operation 19 <u>90</u> -91
<u>Estimated Revenue and Enrollment</u>			
Projected Enrollment (Headcount)*			
Full-time Students	15	25	30
Part-time Students	0	0	0
Income from Students			
Tuition	\$13,350	\$22,250	\$26,700
Extension Fund Fees	---	---	---
Funds Available from Other Sources (Federal, Private, Corporate, Foundation, etc.)	\$20,000	\$20,000	\$20,000

\*Indicate what portion of projected enrollment, if any, represents students transferring from other programs. Tuition and fee revenue should be based upon new enrollments only.

Use of Current Resources: Identify, describe, and estimate cost (prorated) of existing personnel and other resources which will be used in connection with this program. If existing personnel and resources are to be reallocated from other programs, indicate from where the resources will be diverted and what impact this action will have on any other activity within the institution.

- a) Existing faculty in the Physics/Astronomy department will be used as instructors in the proposed program at a cost of \$52,000. (FTE = 1.25)
- b) Existing Academic Computer and Library holding will be used in the program at an estimated cost of \$35,000.
- c) See p. 14

	Year 1 19 <u>88</u> -89	Year 2 19 <u>89</u> -90	First Year of Full Operation 19 <u>90</u> -91
<u>Cost Summary</u>			
New Expenditures	\$25,490	\$30,020	\$22,650
Cost of Existing Resources			
Total Program Cost			

Catherine M. Bassett  
 Signature of Institutional Fiscal Officer

V.P. for Finance & Mgmt.  
 Title

5/20/88  
 Date

Richard H. Sullivan  
 Signature of Chief Fiscal Officer (for system, if different than above)

VP  
 Title

4/12/88  
 Date

Institution

**FISCAL STATEMENT**

(c) The Western Connecticut State University's Weather Center serves as a resource for this major. The hardware consists of a satellite receiver, data terminals, a facsimile machine, a microvax II computer, printers and a Kavoris Radax for displaying severe weather. Weather Center staff are available to support students in the use, and operation of this equipment and interpretation of the data. This resource (equipment and personnel) is conservatively valued at \$80,000 per year. It is provided from income outside of either the general fund or the extension fund. Of this amount, it is realistic to assume that one fourth or \$20,000 will be allocated each year for support of instruction in the meteorology program.

at \$20,000 each year. There is no expectation of any special commitments from other departments in the University.

This program will strengthen other supportive courses in mathematics and science. At a time when it is necessary to increase our population's literacy in mathematics and science, the meteorology major will recruit good students for the cognate areas.

#### 4. FACULTY

- A. LIST THE NAME, TITLE AND QUALIFICATIONS FOR EACH PERSON INVOLVED IN THE PROGRAM, INCLUDING DEGREES WITH AREA OF SPECIALIZATION, INSTITUTIONS AT WHICH THE DEGREES WERE EARNED, PERTINENT EXPERIENCE, AND PROFESSIONAL PUBLICATIONS.

Vitae for the faculty listed below are included in Appendix A.

The following faculty have responsibilities in the area of meteorology:

MELVIN G. GOLDSTEIN; Professor Meteorology, Director Weather Center; B.S. Pennsylvania State University; M.S., Ph.D. New York University. He has developed and taught all of the introductory, and advanced weather analysis courses.

RAYMOND A. CASTILLO: Professor Meteorology; B.S. State Teachers College, Albany, N.Y.; M.S. University of Maine, Ph.D. SUNY at Albany, N.Y. He has developed the instrumentation, physical meteorology and air pollution courses, and taught the introductory course in meteorology.

\*Cognate Faculty

A. Science

1. Kendziorski, Francis: Professor Physics; B.A. University of Detroit, Ph.D. Cornell University
2. Giordano, R.: Associate Professor of Chemistry; B.S., Ph.D. State University of New York, Buffalo
3. LeMay, Charlotte: Professor Physics; M.A. Mt. Holyoke College, Ph.D. Louisiana State University

B. Mathematics/Computer Science

1. King, B.: Professor of Mathematics; M.S. Syracuse University, Ed. D. State University of New York at Albany
2. Wohlever, J.: Professor of Mathematics; M.S. St. John's University; Ph.D. Yeshiva University
3. Brunell, Gloria: Professor Mathematics, M.A. Fordham University, Ph.D. Yale University
4. Rosenberg, Edwin: Professor Mathematics, B.S. Meteorology - Massachusetts Institute of Technology; M.A. Columbia University, M.B.A. New York University

\*See Appendix A for resumes.

- b) FOR EACH VACANT OR PROPOSED POSITION, PROVIDE TITLE, POSITION QUALIFICATIONS AND PROPOSED DATE OF APPOINTMENT.

In the future, full time faculty with the Ph.D in meteorology/atmospheric science and teaching experience will be sought.

Another innovative approach to the delivery of this proposed program in Meteorology at Western will be the use of the CSU system-wide Faculty Exchange Program. In October, 1984, the Board of Trustees of the Connecticut State University approved a policy (see Appendix D) on faculty exchange within the CSU. Following the procedures outlined in this Board resolution, a faculty member wishing to teach for a limited time at a campus other than the campus at which he or she holds appointment, may request an exchange.

In conversations among the system's Academic Vice Presidents, strong support for this approach was voiced. This would be one of the first program proposals tended to the Boards which would incorporate a vehicle to permit cross-campus, system-wide involvement. The other cooperating institutions within the system include Southern CSU, Eastern CSU, and Central CSU. Each campus has identified faculty with strong backgrounds in meteorology. Faculty in other cognate disciplines could also be involved.

- 4.c. DESCRIBE THE PROCEDURES AND CRITERIA, INCLUDING MINIMUM QUALIFICATIONS, FOR EMPLOYING ADJUNCT FACULTY.

Adjunct faculty must have at least a master's degree in meteorology to lecture in the program and a bachelor's degree to teach the laboratories in the meteorology programs.

Personnel with a Ph.D. will be sought if available.

5. CURRICULA AND INSTRUCTION (SEE 10-33-15)

- a) (1) GIVE THE NUMBER, TITLE, AND A NARRATIVE DESCRIPTION FOR EACH COURSE IN THE PROPOSED PROGRAM, NOTING WHICH COURSES ARE NEW. INCLUDE SUFFICIENT DETAIL IN COURSE DESCRIPTIONS SO THAT CONTENT AND LEVEL ARE CLEAR, OR ATTACH APPROPRIATE AND REFERENCE EXCERPTS FROM THE CATALOG.

As a starting point in developing this program, the Department was guided by "1984 Curricula in the Atmospheric, Oceanic and related Science", published by the American Meteorological Society and the University Corporation for Atmospheric Research.

The proposed program consists of 10 courses currently in place in Mathematics, Computer Science, Chemistry and Physics. The major is comprised of six courses currently being offered, which are listed below, plus three new courses. PHY 230 and PHY 420 are both expanded to a two semester sequence which will provide an opportunity for more time and depth in the subject matter. This results in PHY 231 - Weather Analysis and Forecasting II and PHY 421 - Geophysical Hydrodynamics II.

The other new course, PHY 320 - Instrumentation is fundamental to the program, since it presents the theory of those meteorological instruments commonly used for climatological and synoptic purposes. These nine courses meet the 1988 American Meteorological Society's recommendations for required undergraduate major courses in a liberal arts meteorology degree program.

PHY 150 Meteorology (formerly ES 130) 4 Sem. Hrs.

The purpose of this course is to investigate the various elements that contribute to the weather. The course is designed to familiarize the students with instruments and techniques used in measuring the recording weather data. It will include an introduction to meteorology and physical and regional climatology. Prerequisite: MAT 112 or equivalent.

(3 hours lecture - 2 hours laboratory)

Teacher - Staff

PHY 220 Air Pollution Meteorology 4 Sem. Hrs.

Air Pollution Meteorology examines the factors which contribute to the build-up of atmospheric pollution. The student receives an introduction to the overall air pollution problem and then a concentrated study of atmospheric diffusion and transport. Specific applications are made to the physical modeling of pollution from highway and industrial sources. Environmental impact statements are evaluated.

Prerequisite: PHY 150 or PHY 110 or PHY 120 or CHE 110.

(3 hours lecture - 2 hours laboratory)

Teacher - Castillo

PHY 315 Atmospheric Physics 4 Sem. Hrs.

This course concentrates on the basic physical elements and processes of the atmosphere. Areas of study include atmospheric structure, radiation, electricity, and precipitation. A basic background in general physics is required.

Prerequisite: PHY 111, PHY 150

(3 hours lecture - 2 hours laboratory)

Teacher - Castillo

PHY 350 Senior Research 4 Sem. Hrs.  
PHY 320 Instrumentation 4 Sem. Hrs.

This course concentrates on those meteorological instruments commonly used for climatoglogical and synoptic purposes.

Prerequisite: PHY 111, MAT 201

(3 hours lecture - 3 hours laboratory)

Teacher - Castillo

PHY 230, PHY 231 Weather Analysis I, II 4 Sem. Hrs. each  
and Forecasting

The following two semester course is intended for students who have a basic understanding of meteorology and would like to apply that understanding to practical forecasting problems. Weather systems are analysed, prediction techniques are studied, and forecasts are prepared on a routine basis. Existing facilities at the university will be utilized to receive world-wide data for the preparation of forecasts. The forecasting problem will be studied from the development of clouds to the formation of storms and the

evolution of precipitation.

Prerequisite: PHY 230, PHY 150 or equivalent introductory meteorology course or permission of instructor; for PHY 231, PHY 230.

(3 hours lecture - 2 hours laboratory)

Teacher - Goldstein

PHY 420, PHY 421 Geophysical Hydrodynamics I, II 4 Sem. Hrs. each

This two semester course is devoted to the exploration of geophysical fluid systems. A study is made of atmospheric and oceanic motion and the role of thermodynamics in the development of motion. Topics include tide mechanisms, stability, eddy diffusion, numerical weather prediction, wave motions and the general circulation.

Prerequisite: PHY 420, MAT 101,102 and PHY 110,111;  
for PHY 420, PHY 420

(3 hours lecture - 2 hours problem-solving session)

Teacher - Goldstein

A proposed schedule of course offerings in the major, mathematics, sciences, and computer science follows.

1st Semester	2nd Semester
PHY 150 Intro to Meteorology	PHY 220 Air Pollution
PHY 101 Calculus I	MAT 102 Calculus II
PHY 110 Physics I	PHY 111 Physics II
3rd Semester	4th Semester
PHY 230 Weather Analysis I and Forecasting	PHY 231 Weather Analysis II and Forecasting
CHE 110 General Chemistry I	CHE 111 General Chemistry II
MAT 201 Calculus III	MAT 205 Differential Equations
5th Semester	6th Semester
PHY 315 Atmospheric Physics	PHY 320 Instrumentation
CS 160 Computer Program I	CS 161 Computer Program II
7th Semester	8th Semester
PHY 420 Geophysical Hydrodynamics I	PHY 421 Geophysical Hydrodynamics II
PHY 350 Senior Research	



a) (2) DESCRIBE THE COURSE NUMBERING SYSTEMS

Courses in the 100 level are primarily freshman and sophomore level. Courses on the 200 level are for sophomores and juniors. Courses on the 300 and 400 levels are reserved for juniors and seniors.

a) (3) DESCRIBE EACH MAJOR COMPONENT OF THE PROGRAM INCLUDING THE CORE OR MAJOR AREA OF SPECIALIZATION; THE GENERAL EDUCATION COMPONENT (FOR UNDERGRADUATE PROGRAMS); COGNATE COURSES; AND ELECTIVES. INCLUDE LIST OF COURSES APPLICABLE TO EACH OF THESE REQUIREMENTS.

The required major courses are

PHY 150 Meteorology	4 sh
PHY 220 Air Pollution Meteorology	4 sh
PHY 230 Weather Analysis & Forecasting I	4 sh
PHY 231 Weather Analysis	4 sh
PHY 315 Atmospheric Physics	4 sh
PHY 320 Instrumentation	4 sh
PHY 350 Senior Research	3 sh
PHY 420 Geophysical Hydrodynamics I	4 sh
PHY 421 Geophysical Hydrodynamics II	4 sh

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35 sh

Please see attached sheet that identifies the general education component, cognate courses and electives. These courses are described in the attached college catalog.

b) HOW DO THE INSTITUTION'S POLICIES REGARDING TRANSFER OF CREDIT, CREDIT BY EXAMINATION, OR CREDITING EXPERIENTIAL LEARNING AND NONCOLLEGIATE SPONSORED INSTRUCTION APPLY TO THIS PROGRAM?

Corresponding courses may be transferred according to the University's policy; see page 10 of the University Catalogue. At least 20 credits in courses in the Meteorology Major must be taken at Western Connecticut State University.

PROPOSED Meteorology Major  
1990-91

I. COMMON CORE REQUIREMENTS (45 Sem. Hrs. plus Phys. Educ. COMMUNICATION SKILLS (6 Semester Hours)

ENG 140 or ENG 146 \_\_\_\_\_ 3 \_\_\_\_\_

CTA 160 or 162 \_\_\_\_\_ 3 \_\_\_\_\_

HUMANITIES (15 Sem. Hr. minimum, including  
3 or the 6 fields:

Fine and Applied Arts-only 1 Studio Course  
accepted toward minimum-Foreign Language,  
Humanistic Studies, Literature, Philosophy,  
Western History)

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\_\_\_\_\_  
\_\_\_\_\_ 3 \_\_\_\_\_  
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\_\_\_\_\_ 3 \_\_\_\_\_

SOCIAL AND BEHAVIORAL SCIENCES (12 sem. Hrs. minimum including 2 of the 3 fields:  
Non-Western Culture, Psych. Soc. Science)

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ 3 \_\_\_\_\_  
\_\_\_\_\_ 3 \_\_\_\_\_  
\_\_\_\_\_ 3 \_\_\_\_\_  
\_\_\_\_\_ 3 \_\_\_\_\_

NATURAL SCIENCES AND MATHEMATICS (12 Sem. Hrs.)

CHE 110,111 General Chemistry I & II 4-4 8 \_\_\_\_\_  
MAT 101 Calculus I 4 \_\_\_\_\_  
PHYSICAL EDUCATION-4 activity courses (2 Sem. Hrs.) 2 \_\_\_\_\_

II. MAJOR REQUIREMENTS (63) same

PHY110,111 Gen. Physics I&II 8

MAT 102 Calculus II 4

MAT 201 Calculus III 4

MAT 205 Diff Equations 4

PHY 150 Meteorology I,II 4

PHY 220 Air Pollution 4

PHY 230,231 WX Anal + Forecasting I&II 8

PHY 315 Atm Physics 4

PHY 320 Instrumentation 4

PHY 350 Senior Research 3

PHY 420,421 Geo Hydro I,II 8

CS 160 Computer Program I 4

CS 161 " " II 4

III. FREE ELECTIVES 12 (semester Hrs.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Foreign Language Requirement Completed YES \_\_\_ NO \_\_\_

+MINIMUM OF 122 SEM. HRS. INCLUDING PHYS. EDUC. FOR B.A. DEGREE

- c) INDICATE ANY REQUIREMENTS AND ARRANGEMENT FOR CLINICAL AFFILIATIONS, INTERNSHIPS, AND PRACTICAL OR WORK EXPERIENCE. DESCRIBE HOW THESE WILL BE ADMINISTERED AND FURNISH THE FOLLOWING ASSURANCE:

Western Connecticut State University has an ongoing co-op program with the National Weather Service. The Weather Center also provides work study employment by the University for students to help transmit forecasts to industrial clients and newspapers. These opportunities provide interested students with entry level work experience, practical applications of their academic course work and a professional work experience for their resumé.

6. RESOURCE CENTER AND LIBRARIES (SEE 10-330-16)

- a) WHAT LIBRARY AND OTHER LEARNING RESOURCES ARE AVAILABLE AT THE INSTITUTION OR ELSEWHERE WHICH SUPPORT THE PROGRAM? DESCRIBE THE ACCOMODATIONS IN TERMS OF STUDY SPACE, PROFESSIONAL ASSISTANCE AND TIME SCHEDULE OF AVAILABILITY.

The Ruth A. Haas Library on the midtown campus houses the main collection of print and non-print material of the library. With a professional staff of one director and 8 librarians, the facility provides excellent student access and support. The facility is open eighty-three hours a week and can accomodate about 500 students with seating.

- b) REPORT AS ACCURATELY AS PRACTICABLE THE NUMBER OF VOLUMES, PERIODICALS AND OTHER MATERIALS, BY SUBJECT AREA, WHICH DIRECTLY SUPPORT THE PROGRAM.

The Ruth A. Hass library holds all the material related to meteorology and the relevant mathematical and scientific support areas. The meteorology volumes number 150 and by next fall (1938) the collection will more than double since the

library has ordered approximately \$5,000 worth of texts. Further doubling is anticipated for 1988-1989 if the proposed library budget is approved. The basis for this collection was a list of volumes held by the Pennsylvania State University.

There are over 20 periodicals in support of the program. Ten of these are federal which can be updated as-to-selection each year and the remainder are reviewed literature publications of professional societies or technical publications. The collection is strengthened by our inter library loan. We also are able to access data base searches to further amplify our periodicals.

c) PROVIDE A REPRESENTATIVE LISTING OF PERIODICAL LITERATURE IN THE LIBRARY WHICH WILL SUPPORT THE PROGRAM.

National Weather Service & Meteorological Center  
Publications

- 1) General Publications 0275  
Regulations, Rules, Instructions (P) 0278-A
- 2) Handbooks, Manuals, Guides 0275-E
- 3) Weather Service Observing Handbooks (P) 0275-E
- 4) Forecasters Handbooks (P) 0275-E  
National Weather Service  
(numbered) (P) 0275-G
5. National Weather Service Engineering  
Handbook (EHB series) (P) 0275-E
6. Monthly and Seasonal Weather Outlook  
(semi-monthly) (P) 0275-F
7. Weather Supply Outlook for the  
Northeastern United States (monthly)  
(MF) 0275-R
8. Oceanographic monthly summary  
(P) 0275-H
9. Bibliographies and Lists of Publications  
(P) 0275-1
10. Daily Weather Maps (weekly series) (P)  
0273-D-04

Other Publications - Technical and Professional Societies

- 1) Journal of Geophysical Research
  - 2) Science
  - 3) Nature
  - 4) Weather Wise
  - 5) EPA Journal
  - 6) Journal of Applied Meteorology
  - 7) Journal of Applied Physics
  - 8) Journal of the American Chemical Society
  - 9) National Geographic Research: A Scientific Journal
  - 10) Mathematics and Computer Education
- d) LIST ANY NEW LEARNING MATERIAL WHICH WILL BE ADDED FOR THE PROGRAM. INDICATE WHEN THEY WILL BE AVAILABLE FOR STUDENT AND FACULTY USE.

It is planned that at least two periodicals and 50 books be added each year for the first five years of the program.

7. ADMISSION, STUDENT PERSONNEL, AND GRADUATION POLICIES  
(SEE 10-330-17)

- a) DESCRIBE THE ADMISSION REQUIREMENTS FOR THE PROGRAM, THE POLICIES AND REQUIREMENTS FOR ACADEMIC ACHIEVEMENT TO REMAIN ENROLLED IN GOOD STANDING AND THE REQUIREMENTS FOR GRADUATION. NOTE ANY DIFFERENCES FROM GENERAL INSTITUTIONAL POLICIES.

Students must meet the general admission, retention and graduation requirements for a B.A. degree at Western Connecticut State University.

- b) WHAT ACADEMIC AND CAREER COUNSELING OR OTHER SERVICE WILL BE PROVIDED FOR STUDENTS WHO MAY ENROLL IN THIS PROGRAM?

All students enrolled in the program will be assigned a faculty advisory from the Department of Physics and Astronomy.

The Career Development Center (CDC) provides a career related service to students and alumni at Western. Currently, there are three major career components which are offered: 1) Career Planning and Placement designed to offer students help

with job search, resume and interviewing strategies, 2) Cooperative Education and Internships designed to offer students practical work experience closely related to their academic major and 3) Career Development Workshop.

- c) HOW MANY STUDENTS ARE EXPECTED TO ENROLL IN THE PROGRAM? LIST THE NUMBERS BY PART-TIME AND FULL-TIME.

Initially it is anticipated that all the students in the program will be full-time.

<u>Year</u>	<u>Estimated full-time new students</u>
1988-89	15
1989-90	10
1990-91	5
1991-92	5
1992-93	5

8. STUDENTS AND ALUMNI RECORDS (SEE 10-330-18)

HOW IS THE PROGRAM GOING TO BE EVALUATED INTERNALLY? WHAT CRITERIA HAVE BEEN ESTABLISHED? WHERE WILL THE PROGRAM RECORDS BE KEPT?

INTERNAL EVALUATION WILL INCLUDE:

- a) Student evaluations at the end of each course
- b) end of year faculty evaluations of the curriculum
- c) Alumni evaluations - one and three years after graduation
- d) Number of students enrolled
- e) Number of students completing the program
- f) Types of positions obtained by those graduating with the B.A. in meteorology
- g) Number of alumni pursuing graduate studies

Internal program evaluation is the responsibility of the

Department under the direction of the chairperson consistent with the Department By-laws.

Student records are maintained and kept by the University Registrar. They are available to faculty for purposes of advisement.

9. PHYSICAL PLANT AND FACILITIES (SEE 10-330-19)

1. DESCRIBE THE PHYSICAL FACILITIES (CLASSROOMS, LABORATORIES, OFFICES) AND SPECIALIZED EQUIPMENT NOW AVAILABLE, OR WHICH WILL BE PROVIDED (INCLUDING SCHEDULE FOR ACQUISITION) TO INITIATE AND MAINTAIN THE PROGRAM.

The offices of the members of the Physics/Astronomy Department are located in Higgins Hall at the Mid-town campus.

The Weather Center, lecture rooms and laboratory/research laboratories are all housed in Higgins Hall.

Renovation requests of existing facilities specifically for this program have already been approved and require no additional funding during the first three years of the program.

10. CATALOG AND PUBLICATION (SEE 10-330-20)

LIST AND SUBMIT COPIES OF ANY CATALOG(S), BROCHURE(S), OR OTHER PUBLICATIONS IN WHICH THE PROGRAM IS LISTED OR DESCRIBED OR WILL BE LISTED OR DESCRIBED.

Enclosed is the most recent undergraduate catalog (1987-88). When the program has received state approval, it will be listed and described in the catalog.

11. CERTIFICATION

1. PROVIDE CERTIFICATION THAT PROGRAM AND INSTITUTIONAL HIRING AND ADMISSION PRACTICES ARE IN COMPLIANCE WITH ALL APPLICABLE STATE AND FEDERAL LAWS, REGULATIONS, AND ORDERS, AND THAT THE INSTITUTION WILL OPERATE UNDER THE PROVISIONS OF APPROVED NONDISCRIMINATION PLANS INCLUDING CONSIDERATION FOR WOMEN AND MINORITIES AND ACCESSIBILITY FOR THE HANDICAPPED.

The following statement appears in the Western Connecticut State University undergraduate catalog on page one.

"Western Connecticut State University provides equal opportunity in its educational programs, activities, and employment without discrimination because of racial origin, color, religious beliefs or association, sex, age, native origin, disability, or marital status."

## 12. TIME SCHEDULE AND AUTHORIZATIONS

- a) INDICATE ANY SPECIALIZED APPROVAL, LICENSURE OR ACCREDITATION, BY ANY AGENCY OTHER THAN THE BOARD OF HIGHER EDUCATION, TO THE EXTENT THAT IT IS RELATED TO THIS PROGRAM.

None.

- b) INDICATE THE EARLIEST DATE ON WHICH STUDENTS MAY BE EXPECTED TO COMPLETE THE PROGRAM.

January 1990.

## 13. EDUCATIONAL PLANNING STATEMENT

THE BOARD WILL TAKE INTO ACCOUNT THAT THERE MAY BE A DIFFERENCE IN THE TYPES OF DATA AND JUSTIFICATION FOR DIFFERENT LEVELS OF PROGRAMS. PROVIDE THE FOLLOWING INFORMATION:

- a) THE RELATIONSHIP OF THE PROPOSED PROGRAM TO OTHER PROGRAM AND RESOURCES IN THE INSTITUTION, AND ANY INSTITUTION, AND ANY INSTITUTIONAL PLAN.

As stated in section 1b, in the long range planning for Western Connecticut State University, the bachelor's degree in meteorology has high priority.

The program is very specific within the physical science



and builds upon a basic core of mathematics, physics, chemistry and computer science. As such, the meteorology major might well provide synthesis of the mathematics and science core for students from other disciplines who desire an applied science major.

- b) DATA AND COMMENTARY TO INDICATE WHAT CONSIDERATION HAS BEEN GIVEN TO SIMILAR PROGRAMS IN THE GEOGRAPHIC AREA TO BE SERVED BY THE PROPOSED PROGRAM. IDENTIFY ANY SIMILAR EXISTING OR PROPOSED ACADEMIC PROGRAMS OR DEGREES IN CONNECTICUT IN PUBLIC, INDEPENDENT OR PROPRIETARY INSTITUTION.

There is currently no Bachelor of Arts or Bachelor of Science Degree with a major in meteorology in the entire state of Connecticut.

- c) DATA AND COMMENTARY REGARDING THE RELATIONSHIP OF THE PROGRAM TO FURTHER EDUCATIONAL OPPORTUNITIES AND CURRENT EMPLOYMENT TRENDS.

The available data and current employment trends were summarized in section 1(C). Most important would be that the knowledge be communicated to students and their parents that graduates might have to seek and obtain employment outside of Connecticut. Job opportunities nationwide seem stable and able to support our proposed program.

- d) A DESCRIPTION OF ANY EFFORTS MADE TO IDENTIFY STUDENT DEMAND FOR THE PROGRAM AND AN ESTIMATE OF ENROLLMENTS FOR THE FIRST FIVE YEARS.

In the spring of 1985 high school guidance counselors were contacted statewide and surveyed about the need for, and support of, a degree program in meteorology at Western

Connecticut State University. A total of over 60 juniors or seniors were identified as interested in meteorology, almost all of whom were considered by the respondents to be capable of handling the college work.

Some indication of the demand for such a program is that 12 students (spring 1988) are currently enrolled in the concentration in meteorology under a Bachelor of Arts: Earth Science/Physics major.

- e) A DESCRIPTION OF PROGRAM AND CAREER ARTICULATION NOTING CAREER OPPORTUNITIES AS APPLICABLE (LOCAL, REGIONAL, STATE AND/OR NATIONAL ESTIMATES), ACCORDING TO THE NATURE AND GOALS OF THE PROGRAM.

All of the career articulation within the state and nationwide indicates a very stable career opportunity for graduates of this program. Also, the broad undergraduate background in mathematics, chemistry, physics and computer science prepares the student to enter a number of high technology positions within the state. The student must expect normally to seek employment outside of Connecticut if interested in only certain narrow aspects of meteorology.



**Connecticut  
State  
University**

Central • Eastern • Southern • Western

P.O. Box 2008, New Britain, Connecticut 06050  
(203) 827-7700

June 27, 1988

Dr. Mark Johnson  
Assistant Commissioner  
Department of Higher Education  
61 Woodland Street  
Hartford, CT 06105

Dear Dr. Johnson:

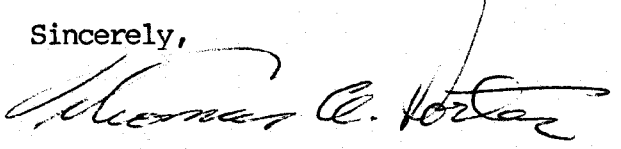
I am pleased to forward to you a proposal for a B.A. degree in Meteorology to be presented at Western Connecticut State University.

As you will recall, the Weather Center at Western was the recipient of the first Fund for Excellence grant in Connecticut State University. The proposal for a Meteorology major emerges from that Center and the Department of Physics and Astronomy. It is the result of long planning and preparation.

Enclosed you will find the following documents.

- 1. Application for a B.A. major in Meteorology
- 2. Application summary
- 3. Trustees resolution authorizing the application.

Please let me know if additional information is needed.

Sincerely,  
  
 Thomas A. Porter  
 Vice President for Academic  
 Affairs and Research

cc: Dr. Beal  
Dr. Feldman



