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JAN 24 1984

OFFICE OF THE PROVOST

GILLIS, BERNARD T.

OFFICE OF THE PROVOST

TO: FULL-SERVICE FACULTY, ADMINISTRATORS, AND STUDENT GOVERNMENT/  
FROM: Cynthia Peterson, Secretary, Academic Senate  
RE: ACADEMIC SENATE MEETING  
1 February 1984, Arts/Sciences Auditorium, Room 132,  
Arts/Sciences Building  
4:00 p.m.

23 January 1984

AGENDA

1. Call to order.
2. Approval of Minutes of Meeting of Academic Senate, 11 January 1984.
3. Charter and By-Laws Committee, Report by William Jenkins.
4. Senate Executive Committee, Report by Larry Esterly.
5. Elections and Balloting Committee, (No Report).
6. Reports of Other Senate Committees:
  - 834-1 Curriculum Division, Academic Programs and Curriculum Committee, Report by L. Allen Viehmeyer;
  - 834-2 Programs Division, Academic Programs and Curriculum Committee, Report by Frank Castronovo;
  - 834-3 Academic Standards and Events Committee, "Proposal of Minimum General Requirements", Report by Peter von Ostwalden.\*
7. Unfinished Business.
8. New Business.
9. Adjournment.

\*Senate consideration of said proposal on 1 February 1984 to be restricted to discussion, with no final action to be taken until the Senate meeting of 7 March 1984.

COVER SHEET TO BE ATTACHED TO ALL REPORTS SUBMITTED TO THE ACADEMIC SENATE

Date 17 January 1984 Report Number (For Senate Use Only) 834-1

Name of Committee Submitting Report Academic Programs and Curriculum Committee,  
Curriculum Division  
Committee Status: (elected chartered, appointed chartered, ad hoc, etc.) \_\_\_\_\_

appointed chartered

Names of Committee members: M. Beaubien, T. Deiderick, L. Hopkins, D. Rost  
D. Scott, P. Tolliver, A. Viehmeyer (Chairperson), H. Yiannaki

Please write a brief summary of the report which the Committee is submitting to the  
Senate: (attach complete report)

The attached curriculum proposals have been passed by the UCD,  
circulated to the various departments, and are being presented to the  
University Senate for its information: 84-89 to 84-112, 84-115, 84-116.

Do you anticipate making a formal motion relative to the report? \_\_\_\_\_

If so, state the motion: \_\_\_\_\_

If there are substantive changes made from the floor in your committee recommendation,  
would the committee prefer that the matter be sent back to committee for further  
consideration? \_\_\_\_\_

Other relevant data: \_\_\_\_\_

*L. Allen Viehmeyer*  
Chairman

- 84-89 Nursing (addition)  
N640. Introduction to Nursing. The history, current practice and future trends of the nursing profession are discussed. The philosophy and conceptual framework of the department are presented. Introduction to interpersonal communication skills and the nursing process. Open to non-nursing majors. 3 q. h.
- 84-90 Nursing (addition)  
N641. Concepts and Theories I. Fundamental concepts and theories related to universal self-care demands are analyzed. Open to non-nursing majors. 2 q. h.
- 84-91 Nursing (addition)  
N642. Homeostasis. Focuses on alterations in biological processes which affect the body's dynamic equilibrium. Knowledge from basic and clinical sciences is utilized to explain the etiology of selected health-deviation self-care requirements. Prerequisite: Admission to Nursing Program. 4 q. h.
- 84-92 Nursing (addition)  
N643. Health Assessment. Interpersonal, communicative and psychomotor skills necessary to comprehensively assess self-care agency. Identification of self-care deficits and assets based upon collected data and methods of communicating findings to other professionals. Prerequisite: Admission to Nursing Program. To be taken concurrently with N643L. 3 q. h.
- 84-93 Nursing (addition)  
N643L. Health Assessment Lab. Selected learning experiences will be provided in a laboratory setting for the application of principles of self-assistive actions. Three hours of laboratory a week. Prerequisite: Admission to Nursing Program. To be taken concurrently with N643. 1 q. h.
- 84-94 Nursing (addition)  
N645. Fundamentals I. The fundamentals of nursing are applied to client's self-care deficits in a partially compensatory nursing system. Nursing assistive actions are aimed to move the client toward optimum wellness where maximal self-care is accomplished. Prerequisite: N642, N643, Psych. 613 (or concurrent). To be taken concurrently with N645L. 3 q. h.
- 84-95 Nursing (addition)  
N645L. Fundamentals Laboratory I. Selected clinical experiences provide opportunities to develop basic nursing assistive actions. To be taken concurrently with N645. Nine hours of laboratory a week. 3 q. h.
- 84-96 Nursing (addition)  
N740. Concepts and Theories II. Fundamental concepts and theories related to health-deviation self-care requirements are analyzed. To be taken concurrently with N741, N741L. Prerequisite: N641, N645, Psych. 614 (or concurrent). 2 q. h.

## LIST PREPARED BY THE CURRICULUM DIVISION

- 84-97            Nursing                                (addition)  
N741. Fundamentals II. The fundamentals of nursing are applied to client's self-care deficits in a partially and wholly compensatory nursing system. Nursing assistive actions are aimed to move the client toward optimum wellness where maximal self-care is accomplished. Prerequisite: N641, N645, Psych. 614 (or concurrent). To be taken concurrently with N740 and N741L. 3 q. h.
- 84-98            Nursing                                (addition)  
N741L. Fundamentals Laboratory II. Selected clinical experiences provide opportunities to develop basic nursing assistive actions. To be taken concurrently with N740, N741. Nine hours of laboratory a week. 3 q. h.
- 84-99            Nursing                                (addition)  
N742. Major Health Problems I. Principals of medical-surgical nursing for clients experiencing health-deviation of self-care requirements in mobility, urinary elimination, fluid electrolyte balance, nutrition and elimination, sensory perception, tissue perfusion and skin integrity. Prerequisite: Home Ec. 551, Psych. 755, Psych. 756, N741. To be taken concurrently with N742L and N743. 3 q. h.
- 84-100          Nursing                                (addition)  
N742L. Major Health Problems I Laboratory. Selected clinical experiences providing an opportunity to utilize the nursing process with clients experiencing an alteration of mobility, urinary elimination, fluid electrolyte balance, nutrition and elimination, sensory perception, tissue perfusion and skin integrity. To be taken concurrently with N742, N743. Nine hours of laboratory a week. 3 q. h.
- 84-101          Nursing                                (addition)  
N743. Leadership. Concepts, theories and strategies related to the professional nurses' leadership role are explored and analyzed. Prerequisite: Home Ec. 551, Psych. 755, Psych. 756, N741. To be taken concurrently with N742, N742L. 3 q. h.
- 84-102          Nursing                                (addition)  
N744. Parent-Child Health I. Theory and concepts of nursing through antepartum, intrapartum and postpartum phases. Prerequisite: N742, N743. To be taken concurrently with N744L. 3 q. h.
- 84-103          Nursing                                (addition)  
N744L. Parent-Child Health I Lab. Selected clinical experiences provide opportunities to practice nursing through antepartal, intrapartal and postpartal phases. To be taken concurrently with N744. Nine hours of laboratory a week. 3 q. h.
- 84-104          Nursing                                (addition)  
N745. Parent-Child Health II. Theory and concepts of nursing of children. Educative-supportive health issues and the impact of illness on children emphasized. Prerequisite: N742, N743. To be taken concurrently with N745L. 3 q. h.

## LIST PREPARED BY THE CURRICULUM DIVISION

- 84-105 Nursing (addition)  
N745L. Parent-Child Health II Lab. Selected clinical experiences provide opportunities to apply principles of nursing of children. To be taken concurrently with N745. Nine hours of laboratory a week. 3 q. h.
- 84-106 Nursing (addition)  
N840. Major Health Problems II. Principles of medical-surgical nursing for clients experiencing health-deviation self-care requirements in airway clearance, breathing patterns and gas exchange, cardiac output and tissue perfusion, thought processes and memory deficits, cellular function, endocrine and metabolic functions. Prerequisite: N744, N745. To be taken concurrently with N840L and N841. 3 q. h.
- 84-107 Nursing (addition)  
N840L. Major Health Problems II Lab. Selected clinical experiences providing an opportunity to utilize the nursing process with clients experiencing alterations in airway clearance, breathing patterns and gas exchange, cardiac output and tissue perfusion, thought processes and memory deficits, cellular function, endocrine and metabolic functions. To be taken concurrently with N840, N841. Nine hours of laboratory a week. 3 q. h.
- 84-108 Nursing (addition)  
N841. Nursing Research I. Methods and techniques of research in the solution of nursing problems are explored. Included are steps in the research process, levels of research, measurement and design issues, data collection techniques and data analysis. Emphasis on developing an informed research consumer. To be taken concurrently with N840, N840L. Prerequisite: N744, N745. 3 q. h.
- 84-109 Nursing (addition)  
N842. Psychiatric/Mental Health Nursing. Concepts, theories and interventions related to nursing care of individuals and groups experiencing therapeutic self-care requirements in the psychiatric/mental health area are explored. Care of the family is continued. Prerequisite: N840, N841. To be taken concurrently with N842L, N843, N843L. 3 q. h.
- 84-110 Nursing (addition)  
N842L. Psychiatric/Mental Health Nursing Lab. Nursing care of individuals and groups experiencing therapeutic self-care requirements in the area of psychiatric/mental health are explored through selected clinical experiences. Nursing care of the family is continued. To be taken concurrently with N842, N843, N843L. Nine hours of laboratory a week. 3 q. h.
- 84-111 Nursing (addition)  
N843. Chronic Rehabilitative Nursing. The range of experiences associated with chronic illness and nursing assistive actions appropriate to the care of clients with chronic self-care deficits. Focus is on self-care agency of the client. Prerequisite: N840, N841. To be taken concurrently with N843L, N842, N842L. 3 q. h.

84-112 Nursing (addition)  
N843L. Chronic Rehabilitative Nursing Laboratory. Selected clinical experiences providing opportunity to utilize nursing assistive actions in the care of clients with chronic self-care deficits. Focus is on the self-care assets and maximizing the self-care agency of the client. To be taken concurrently with N842, N842L, N843. Nine hours of laboratory a week. 3 q. h.

84-115 Nursing (addition)  
N845. Professional Issues. Contemporary issues relating to the practice of professional nursing and the emerging role of the nurse are analyzed. Prerequisite: N843, N841, N842, N843. To be taken concurrently with N844, N844L. 2 q. h.

84-116 Nursing (addition)  
N846. Nursing Research II. Research reports are analyzed, and students prepare a research proposal followed by implementation of the research project. Emphasis is on applying knowledge of the research process. Prerequisite: N841. 4 q. h.

COVER SHEET TO BE ATTACHED TO ALL REPORTS SUBMITTED TO THE ACADEMIC SENATE

Date Jan. 13, 1984 Report Number (For Senate Use Only) 834-2

Name of Committee Submitting Report Programs Division, Academic Programs & Curriculum Comm.

Committee Status: (elected chartered, appointed chartered, ad hoc, etc.) \_\_\_\_\_

**Appointed chartered**

Names of Committee members: Frank Castronovo, Bari Lateef, Gratia Murphy, Juanita Roderick, Matthew Siman, Miriam Weinstein, William Mc Graw

Please write a brief summary of the report which the Committee is submitting to the Senate: (attach complete report)

For the information of the Senate: The Programs Division has reviewed the proposed BSN (Generic) program and supports the proposal. (See attached proposed Curriculum)

Do you anticipate making a formal motion relative to the report? Yes

If so, state the motion: To move Senate approval of the Bachelor of Science in Nursing (BSN) program.

If there are substantive changes made from the floor in your committee recommendation, would the committee prefer that the matter be sent back to committee for further consideration? \_\_\_\_\_

Other relevant data: \_\_\_\_\_

*Francis J. ...*  
Chairman

Submitted by Programs Division,  
Academic Programs and Curriculum Committee

PROPOSED NURSING ACADEMIC  
PLAN

Academic Year	Associate Degree Nursing Program (ADN)			Bachelor of Science in Nursing Program (BSN)	
	Fall	Winter	Spring	BSN-C <sup>1</sup>	BSN-G <sup>2</sup>
1983 - 1984	Admit One Class	Admit One Class	No Admission	Admit One Fall Class	No Admission
1984 - 1985	Admit One Class	Reduced Class	*	Admit One Fall Class	Admit One Fall Class
1985 - 1986	Admit One Class	*	*	Admit One Class <sup>3</sup>	Admit One Fall Class
1986 - 1987	Admit One Class			Phase Into BSN-G	Admit One Fall Class
1987 - 1988	Admit One Class				Admit One Fall Class
1988 - 1989	Admit One Class				Admit One Fall Class
1989 - 1990	Admit One Class			End of BSN Completion Program	Admit One Fall Class
1990 - 1991	Admit One Class				Admit One Fall Class

<sup>1</sup>BSN-C - Bachelor of Science in Nursing, Completion Program  
(deleted after Spring, 1989).

<sup>2</sup>BSN-G - Bachelor of Science in Nursing, four year basic program (begins Fall, 1984).

<sup>3</sup>Graduation requirements for BSN-C must be completed within three (3) years.

\* Admission to the Associate Degree Nursing Program is limited to 50 students each Fall Quarter only.

Cordially,

*Magdalen Stafford*

Magdalen Stafford, R.N., PhD  
Chairman, Nursing Department

*V. A. Richley*

V. A. Richley  
Dean, College of Applied Science  
and Technology



VII. PROPOSED CURRICULUM

General Curriculum Plan

First Year: First Quarter  
(Prenursing)

	<u>Q.H. Credit</u>
Biology 506, 507	4
Chemistry 502	4
English 550	4
Sociology 500	4
	<hr/>
	16

First Year: Second Quarter  
(Prenursing)

Biology 506, 507	4
Chemistry 503	4
English 551	4
Health & Physical Education Activities	3
	<hr/>
	15

First Year: Third Quarter  
(Prenursing)

Biology 710 (Anatomy)	4
Biology 702 or 787/787L (Microbiology)	4
Psychology 560	4
Philosophy 600	4
	<hr/>
	16

Second Year: First Quarter  
(Prenursing)

	<u>Q.H. Credit</u>
Home Economics 551 (Nutrition)	4
Biology 792 (Physiology)	5
Psychology 755	4
Introduction to Nursing (N640)	3
Concepts/Theory I (N641)	2
	<hr/>
	18

Second Year: Second Quarter  
(Nursing Major)

Psychology 756	4
Homeostasis (N642)	4
Health Assessment/Lab (N643/N643L)	3/1*
	<hr/>
	12

Second Year: Third Quarter  
(Nursing Major)

Psychology 757	4
Speech 550	4
Fundamentals I/Lab (N645/N645L)	3/3*
Psychology 613 (Stats I)	3
	<hr/>
	17

\* One credit hour of lab equals three clinical hours per week

‡ Clinical facilities include: Youngstown Hospital Association (YHA)  
St. Elizabeth Hospital Medical Center (SEHMC)  
St. Joseph Riverside Hospital (SJRH)  
Warren General Hospital (WGH)

(CONTINUED)

Submitted by Programs Division  
Academic Programs and Curriculum  
Committee

PROPOSED CURRICULUM (CONT'D)

Third Year: First Quarter  
(Nursing Major)

	<u>Q.H. Credit</u>
Business Education and Technology (Data Processing)	3
Psychology 614 (Stats II)	4
Concepts/Theory II (N740)	2
Fundamentals II/Lab (N741/N741L)	<u>3/3 *i</u>
	15

Third Year: Second Quarter  
(Nursing Major)

Electives	4
Major Health Problems I/Lab(N742/ Leadership (N743) 742L)	<u>3/3 *i</u>
Biology 721 (Genetics)	<u>3</u>
	4
	17

Third Year: Third Quarter  
(Nursing Major)

Philosophy 725	4
Parent Child Health I Lab(N744/N744L)	3/3 *ç
Parent Child Health II/Lab (N745/ N745L)	<u>3/3 *£</u>
	16

Total Nursing Quarter Hours	77
Total Elective Quarter Hours	20
Other (Science, Mathematics, Social Sciences, Statistics etc.)	<u>90</u>
	187

Fourth Year: First Quarter  
(Nursing Major)

	<u>Q.H. Credit</u>
Electives	8
Major Health Problems II/Lab(N840/N840L)	3/3 *[]
Nursing Research I (N841)	<u>3</u>
	17

Fourth Year: Second Quarter  
(Nursing Major)

Nursing Research II (N846)	4
Psychiatric/Mental Health Nursing /Lab (N842/N842L)	3/3*o
Chronic Rehabilitative Nursing/Lab (N843/N843L)	<u>3/3*[]</u>
	16

Fourth Year: Third Quarter  
(Nursing Major)

Community Health/Lab (N844/N844L)	3/3*+
Professional Issues (N845)	2
Elective	<u>4</u>
	12

\* One credit hour of lab equals three clinical hours per week  
 i Clinical facilities include: YHA, SEHMC, SJRH, and WGH  
 ç Clinical facilities include: YHA, SEHMC, and SJRH  
 £ Clinical facilities include: YHA, SEHMC, SJRH and WGH  
 o Clinical facilities include: YHA, SEHMC, SJRH and WGH  
 [] Clinical facilities include: Hillside Hospital and SEHMC  
 + Clinical facilities include: Visiting Nurses Association

COVER SHEET TO BE ATTACHED TO ALL REPORTS SUBMITTED TO THE ACADEMIC SENATE

Date January 20, 1984 Report Number (For Senate Use Only) 834-3

Name of Committee Submitting Report Academic Standards and Events Committee

Committee Status: (elected chartered, appointed chartered, ad hoc, etc.) \_\_\_\_\_

Appointed chartered

Names of Committee members: M. Braden, H. Earnhart, S. Guzell, J. Hassell, D. Henneman,  
P. Munro, D. Rost (ex-officio), Wm. McGraw, J. Scriven, A. Stocks, C. Duff, P. Sorenson  
and P. von Ostwalden (chairman)

Please write a brief summary of the report which the Committee is submitting to the  
Senate: (attach complete report) Report attached.

Do you anticipate making a formal motion relative to the report? Yes

If so, state the motion: I move Senate adoption of the attached report which contains  
the proposal of minimum general requirements for the Baccalaureate Degree at  
Youngstown State University.

If there are substantive changes made from the floor in your committee recommendation,  
would the committee prefer that the matter be sent back to committee for further  
consideration? Yes

Other relevant data: \_\_\_\_\_

Peter W. von Ostwalden,  
Chairman

Youngstown State University  
 MINIMUM GENERAL REQUIREMENTS FOR THE BACCALAUREATE DEGREE

As proposed by

THE ACADEMIC STANDARDS & EVENTS COMMITTEE  
 February 1, 1984

AREA	YSU PRESENT MINIMUM REQUIREMENT	PROPOSED MINIMUM REQUIREMENT
ENGLISH/COMMUNICATIONS	8 q.h.	11-12 q.h. --incl. 3-4 q.h. in speech communication
HEALTH AND PHYSICAL EDUCATION	6 q.h.	4 q.h. --incl. 1 activity and 1 non-activity health course
HUMANITIES	8 q.h.	12 q.h.
SOCIAL STUDIES	16 q.h.	12 q.h.
SCIENCE/MATHEMATICS	12 q.h.	12 q.h. --incl. 4 q.h. Math (excl. 500, 501, 502, 502I) and 4 q.h. in a laboratory science
TOTAL	50 q.h.	51-52 q.h.

Youngstown State University

MINIMUM GENERAL REQUIREMENTS FOR THE BACCALAUREATE DEGREE

submitted to the Academic Senate by  
THE ACADEMIC STANDARDS & EVENTS COMMITTEE  
February 1, 1984

*includes children  
etc.*

English Composition. The candidate must show satisfactory proficiency in the use of written English by completing eight quarter hours of English, including English 551. This requirement is normally met by taking English 550 and 551. A student is not permitted to take any University courses at the 700- level or above until English 551 has been successfully completed and a proficiency examination has been passed. (The English Department will determine and administer this exam.) Students are to be tested by the English Department to assess their skill in written communication prior to their entrance into the English sequence and are to be given recommendations for their placement into prerequisite courses, English 550, or English 551.

*F.L. Dept  
Inclusion  
700  
level*

Humanities. The candidate must have completed at least twelve quarter hours including one course in literature (600-level or above), offered by the English Department. The remaining hours must be taken from the following areas: courses in literature in a foreign language; courses in philosophy and/or religious studies; history and/or appreciation courses in the Department of Art, the Department of Speech Communication and Theatre or the Dana School of Music; Black Studies 601.

Information on the policies and procedures for testing will be available from the English Department.

Speech. The candidate must show satisfactory proficiency in the use of spoken English. This requirement is met by successfully completing a three or four quarter hour speech skills course in the Department of Speech Communication and Theatre. Courses which will meet this requirement are Speech Communication 550, 554 and 652.

*need  
Faculty*

Health and Physical Education. Each candidate must take four quarter hours of credit in Health and Physical Education. At least one course shall be an activity course and one course shall be a non-activity health course. The candidate who completed the two year course in Military Science has met these requirements. Other substitutions of academic courses, or of training received in active military service, must have the approval of the Provost, in conformity with guidelines established by the faculty and normally administered by the Director of Admissions.

Social Sciences. Each candidate must complete a minimum of twelve quarter hours in three of the following social sciences disciplines: Economics, Geography, History, Political Science (excluding Social Science 501, 502 and 503), Psychology, Sociology, Anthropology (excluding Anthropology 782, 783 and 784) and Black Studies 600.

Science/Mathematics. The minimum requirement in this area is twelve quarter hours. This shall include a minimum of four quarter hours in math (excluding Math 500, 501, 502 and 502I) and four quarter hours in a laboratory science course. The Science area includes courses in the Departments of Biological Sciences, Chemistry, Geology, Physics and Astronomy and Anthropology courses 782, 783 and 784.

\*No course may be used more than once to satisfy these requirements.

*Why if highly math proficient?*

*or imposes large burden on science labs?*

*Social work included?*



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JAN 31 1984

OFFICE OF THE PROVOST

## YOUNGSTOWN STATE UNIVERSITY

YOUNGSTOWN, OHIO 44555

January 31, 1984

Dear Senator:

The Department of Health and Physical Education is expressing opposition to the "Minimum General Requirements for the Baccalaureate Degree" as presented by the Academic Standards and Events Committee. We recommend that this proposal be rejected for the following reasons.

1) The proposed requirements do not seem to strengthen the overall academic preparation for each student at Youngstown State University. The areas of science and social science have not received emphasis although national trends indicate weaknesses in these areas. The new admission requirements adopted by the Senate last year strengthened the English and fine arts background of entering students. Therefore, it does not seem appropriate to place additional emphasis on communications and fine arts at the expense of health, physical education, science and social science.

2) Do we, or will we, have the number of faculty, the laboratory space and faculty work load hours in English and the laboratory sciences to assure that these changes can be implemented?

3) The total credits for graduation at colleges and universities employing the quarter system generally consist of 180 quarter hours. When Youngstown State University converted to the quarter system, the graduation requirements were determined to be 180 q.h. plus 6 q.h. in health and physical education; thereby totaling 186 q.h. If the health and physical education credit hours are to be reduced, then the total hours for graduation should be reduced to 184 q.h. This would cause a loss of tuition revenue to the University.

4) Currently the health and physical education University requirements of 6 quarter hours include one 3 q.h. health course and three 1 q.h. activity classes. The committee is proposing that the total hours be dropped to 4 q.h. - one activity class and one health class. Although we are a combined department, each faculty member's expertise is not necessarily in both fields. This proposal will cause inequities in faculty load and a need for reduction of faculty. It will also necessitate a general curriculum revision.

5) The proposed changes in the social science requirements will increase the total hours for graduation for elementary and secondary education majors. For state certification, two psychology courses are required; with the proposed change in social sciences students will have to take an additional two courses from other disciplines in social science for a total of 16 quarter hours.

6) The higher education program that is truly concerned with the education of the whole person must provide for more than intellectual development. The proposed requirements do not address the whole individual. The provision of one course in physical education does not provide adequate opportunity to contribute to neuromuscular development, physical fitness, stress management, and lifetime sports skills. It also does not provide opportunities for the enhancement of self-esteem and competitiveness through movement activities.

For the reasons stated above the faculty of the Health and Physical Education Department requests the support of our professional colleagues and student representatives in defeating this motion.

Health and Physical Education Department

CURRENT COURSE LISTINGS AMONG NATURAL SCIENCE DISCIPLINES  
WITHOUT LABORATORY SESSIONS.

BIOLOGY 504  
BIOLOGY 505  
BIOLOGY 565  
BIOLOGY 661

HUMAN EVOLUTION AND GENETICS  
BIOLOGY AND/THE MODERN WORLD  
INTRODUCTORY FORESTRY  
ECONOMIC BOTANY

CHEMISTRY 500  
CHEMISTRY 501

INTRODUCTION TO CHEMISTRY  
SURVEY OF CHEMISTRY I

GEOLOGY 505  
GEOLOGY 506  
GEOLOGY 508

PHYSICAL GEOLOGY  
HISTORICAL GEOLOGY  
GEOLOGY OF GEM STONES AND  
ALLIED MATERIALS  
GEOLOGY OF NATIONAL PARKS  
INTRODUCTION TO OCEANOGRAPHY

GEOLOGY 510  
GEOLOGY 602

PHYSICS 500  
PHYSICS 505  
PHYSICS 507  
PHYSICS 509

PHYSICS AND MAN  
PHYSICS IN SCIENCE FICTION  
THE PHYSICS OF ENERGY  
CONTEMPORARY PHYSICS

ASTRONOMY 504  
ASTRONOMY 608

DESCRIPTIVE ASTRONOMY  
MOON AND PLANETS

CURRENT COURSES LISTED AS REQUIRED OR ELECTIVES FOR AN EARTH  
SCIENCE MAJOR, WITHOUT LABORATORY SESSIONS.

REQUIRED

ASTRONOMY 504  
ASTRONOMY 608  
GEOGRAPHY 630 (Weather)  
GEOLOGY 505  
GEOLOGY 506  
GEOLOGY 602

SCIENCE ELECTIVE

GEOGRAPHY 603 --(CONSERVATION OF NATURAL RESOURCES)