

MINUTES  
ACADEMIC SENATE  
Friday, April 4, 1975

PRESENT: T. Alderman, R. Ameduri, J. Bakos, P. Baldino, F. Barger, D. Behen, P. Bellini, B. Brothers, R. Burkholder, I. Cohen, R. Crum, P. Dalbec, J. DeGarmo, T. Deiderick, L. DiRusso, T. Dobbelstein, J. Douglass, C. Dykema, Vice President Edgar, W. Eichenberger, E. Eminhizer, F. Feitler, I. Feldmiller, C. Freeman, W. Hulsopple, R. Jones, Vice President Krill, D. Luntz, H. Mettee, T. Miner, C. McBriarty, D. O'Neill, V. Phillips, L. Rand, W. Raridon, V. Richley, S. Roberts, K. Salaka, A. Scheetz, J. Scriven, R. Shuster, J. Simko, C. Singler, M. Slavin, T. Slawewski, J. Steele, E. Sturgeon, C. Sweeney, C. Vanaman, J. White, E. Yager, B. Yeaton, B. Yozwiak, M. Yozwiak, L. Zaccaro.

A quorum having assembled, the meeting was called to order at 4:04 p.m. in Schwebel Auditorium by Chairman, Clyde Vanaman, who then called for corrections, additions, or other changes in the published minutes from the meeting of Friday, March 7, 1975. There being no corrections, additions, or other changes, the minutes were declared approved as distributed.

#### COMMITTEE REPORTS

Charter and Bylaws Committee: Chairman, Stephen Hanzely, moved adoption of the proposed Bylaw 10, distributed with the agenda for the meeting of April 4. The motion was seconded by Dr. Jones. Mrs. Dykema moved that the proposed Bylaw 10 be given the number 7, and that the remaining Bylaws be renumbered editorially. This motion was seconded by Dr. Hanzely. The motion to change the number of the proposed new Bylaw from 10 to 7 was passed unanimously. The new Bylaw (7) was also unanimously adopted.

Dr. Hanzely urged all departmental representatives in Senate to personally solicit participation in the Charter and Bylaws election by all members of each department.

Executive Committee: There was no report from the Executive Committee.

Curriculum Committee: Chairman, Virginia Phillips, announced that the protest regarding Speech and Drama 603 had been resolved by making the following change in the course description:

A fundamental study of the voice mechanism, vocal sound, and elementary phonics. Includes a functional familiarization with the International Phonetic Alphabet.

She then moved Senate acceptance of this course. The motion was seconded by Dr. Shuster. The motion passed unanimously. Dean Scriven inquired

why prerequisites and credit hours were not included in the material circulated with Senate agenda. Mrs. Phillips replied that this information was, of course, in the catalog office and had been circulated previously to all department chairmen, academic deans, etc; in the interest of conserving paper, this material was omitted from the courtesy copies circulated with Senate materials. She concluded by stating that undoubtedly the credit hours could be included without using additional paper, and would henceforth be included.

Mr. Sturgeon asked that copies of curriculum materials also be sent to student government. Mrs. Phillips will add that name to the circulation list.

Academic Affairs Committee: Chairman, Henry Sheng, recommended that Senate approve a combined major in Physics and Astronomy. Dr. Jones moved the new major; the motion was seconded by Dr. Sweeney. Dr. Hanzely explained that of the 62 quarter hours in physics in the new combined major, only 47 were required hours in physics, and of the 15 remaining, 12 could be taken outside the physics area. The motion passed unanimously.

#### UNFINISHED BUSINESS

Mr. Sturgeon inquired whether or not the Ad Hoc Committee to study degree requirements in the College of Arts and Sciences had anything to report. The chairman of that committee, Dr. W. Miner, replied that it did not. Mr. Sturgeon then moved that the Ad Hoc Committee of the College of Arts and Sciences studying degree requirements for the B.S. and B.A. degrees report within a month to the Academic Affairs Committee of the Senate. The motion was seconded by Mr. Simko. The discussion which followed centered around three points:

1. The charge and purpose of the Ad Hoc Committee of the College of Arts and Sciences.
2. The authority of Senate in the matter.
3. The charge of the present Academic Affairs Committee.

The motion was amended to read that Senate request the Ad Hoc Committee of the College of Arts and Sciences to report to the Academic Affairs Committee within a month. There was further discussion as to what the Ad Hoc Committee should report if it did report. A final motion was put to the Senate by Mr. Sturgeon that Senate request the Ad Hoc Committee of the College of Arts and Sciences studying the foreign language requirements in the College of Arts and Sciences to report to the Academic Affairs Committee of the Senate within a month. That motion was seconded by Mr. Simko.

A ballot by hand vote was taken. The motion was defeated 32 to 19.

#### NEW BUSINESS

Dr. Hahn inquired as to the method used in selecting committee members, particularly to the Academic Affairs Committee. He pointed out that, for instance, all representatives from the College of Arts and Sciences were from the departments of natural sciences, and he wondered why the distribution of academic interest should not be considered when appointments to committees are made.

Dr. Jones replied that all committee appointments were arrived at by joint action of the Executive Committee and, further, that the Charter and Bylaws Committee is considering the question of the makeup of both the Curriculum Committee and the Academic Affairs Committee and is expected to report at a future date.

Dr. Vanaman announced that it was possible that the next meeting of Senate would be held April 25, instead of May 3. The organizational meeting for the new Senate is scheduled for May 16, but it may have to be delayed due to delays in balloting.

The meeting was adjourned at 5:10 p.m.

Respectfully submitted,

Caryl P. Freeman  
Secretary

REPORT OF THE CHARTER AND BYLAWS COMMITTEE

At the April 4, 1975, meeting of the Academic Senate, the Charter and Bylaws Committee will recommend the adoption of the following Bylaw Amendment:

BYLAW 10: Committee Meetings and Minutes

All Senate committees shall meet at least once during every quarter of the academic year, shall record minutes of their meetings, and shall distribute copies of their approved minutes to the Executive Committee, the University Librarian, and to any other persons designated by the Executive Committee.

The Committee will also recommend that present ByLAW 10 be renumbered as BYLAW 11.

Since Bylaw Amendments need only be approved by the Senate, you are encouraged to attend the April meeting of the Academic Senate if you wish to speak to the proposed modification.

REPORT OF THE ACADEMIC AFFAIRS COMMITTEE

The Academic Affairs Committee recommends to the Academic Senate a recently approved Combined Major in Physics and Astronomy as requested by the Department of Physics and Astronomy.

The following table shows the minimum requirement for this program in comparison with two other major and minor programs offered by the same Department.

Major:	Physics	Physics	Physics & Astronomy
Minor:	Mathematics	Astronomy	Mathematics
Physics	68 q.h.	68 q.h.	62 q.h.
Mathematics	26	26	26
Astronomy	Elective	22	25

The justifications for offering this combined major are:

- 1) To attract prospective Astronomy students from the community, many of whom are not aware that YSU offers courses in Astronomy.
- 2) To better prepare students for graduate work in Astronomy.

CURRICULUM CHANGES TO BE APPENDED TO SENATE MINUTES

(These courses have been circulated according to the procedures outlined in the Constitution and By-laws--no objections were received)

<u>Department and Catalog Number</u>	<u>Course Title</u>	<u>Description</u>
Home Economics 503 4 q.h. (c)	Clothing Selection and Construction	Designed to assist the student in analyzing personal and family resources and needs in the selection, purchase, use, and care of the wardrobe. Study and use of the commercial pattern and the fundamental processes and problems in the construction of simple garments. Two one-hour discussion and two three-hour laboratory periods a week.
Home Economics 601 4 q.h. (C)	Principies of Food Preparation	Study of physical and chemical properties of food. Basic principles and methods in the selection, purchase, and preparation of food. Two hours of lecture and six hours of laboratory per week.
Home Economics 604 4 q.h. (C)	Advanced Clothing Construction	To develop greater understanding and proficiency in the selection, fitting, and construction of garments to meet individual needs. Construction of garments requiring advanced techniques. Two one-hour lectures and two three-hour laboratory periods a week.
Home Economics 702 4 q.h. (c)	Design and Flat Pattern-Making	Planned to develop greater understanding and skill in the designing, fitting, and construction of garments. Making of a basic pattern and the creation of new designs by use of it. Two one-hour lectures and two three-hour laboratory periods a week.
Home Economics 750 3 q.h. (A)	Food Science	Scientific study of food; effect of processing on nutritional and organoleptic properties. Food additives, natural toxicants, food-drug interactions, new food sources, enrichment and fortification of foods, composition and nutrient values of special-purpose food products.

Curriculum Changes

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Home Economics 810 3 q.h. (C)	Experimental Food Studies	Application of scientific principles and experimental procedures to cooking processes. Two lecture hours and one three-hour laboratory period a week.
Home Economics 875 2-3 q.h. (A)	Directed Individual Study	Individual study or research of a special problem or issue related to Home Economics or Nutrition. Application must be made to the department prior to registration.
Phys. & Ast. 501L (A) 1 q.h.	Fundamentals of Physics Laboratory I	Required for students admitted to NOUCOM-YSU program. Experimental work designed to accompany the corresponding lecture courses. Two hours per week.
Phys. & Ast. 502L 503L 1 + 1 q.h. (C)	Fundamentals of Physics Laboratory II, III	Experimental work designed to accompany the corresponding lecture courses. Two hours per week.
Marketing 846 2 q.h. (A)	Commodity Marketing	A critical analysis of commodity buying in both the domestic and international markets. The universal role of futures trading and its relation to the local industrial and consumer markets. A simple description of marketing routes, hedging, speculation, price movements, the use of brokers and commission houses in Commodity Futures Trading by the Industrial businessman.
Criminal Justice 613 3 q.h. (C)	Criminal Investigation	Legal and practical aspects of rules of evidence, physical evidence, interviews, surveillance, confidential informants, crime scene search, sources of information, and testifying and presentation of evidence in court.
Criminal Justice 613L 1 q.h. (C)	Criminal Investigation Practicum	Demonstrations of crime scene investigation techniques such as: latent print development, photography, sketching, physical matching, and special emphasis on interviewing and interrogation. One three hour lab a week. Concurrently with 613.
Criminal Justice 614L 1 q.h. (C)	Criminal Identification	Laboratory demonstration of the examination of trace evidence such as body fluids, elementary toxicology,

		dangerous drugs, hairs, fibers, hand-writing and number restoration, introduction to scientific instruments used in police work. Intended to acquaint students with the best utilization of the crime laboratory in criminal investigation. One three-hour lab a week.
Criminal Justice 646 4 q.h. (c)	Law Enforcement Techniques I	Legal and practical aspects of line-ups and eyewitness identification, techniques and mechanics of arrest, report writing, testifying techniques, defensive tactics, police communications. Firearms training and use of chemical and non-lethal weapons. 3 hours of lecture and 3 hours of laboratory per week.
Speech & Drama 590 Revised 4 q.h. (A)	History of the Motion Picture	The history of the motion picture from its beginning to the present. Emphasis upon the milestones of the film as a performing art. Screening of significant films from various periods and countries.
Speech & Drama 690 Revised 4 q.h. (A)	Artistic Aspects of Motion Picture Production	An analysis of the structure of the motion picture, the development of the script, the function of editing, the approach to acting, and the problems faced by a director in film production. Criteria of artistic film making will be studied. Examples from motion pictures will be screened and discussed.
Speech & Drama 790' Revised 4 q.h. (A)	Creative Motion Picture Artists	In-depth analysis of significant motion picture creative artists and their contributions to the history of motion picture art. Screenings and discussions of selected motion pictures.
Speech & Drama 897 3-4 q.h. (c)	Seminar in Telecommunication	Contemporary problems in radio and television. May be repeated for credit as long as specific seminar subjects are not repeated*.
Greek 501,2,3 3+3+3 (C)	Elementary Greek I, II, III	Grammar, syntax, and simple composition; reading selections from various Greek writers and the New Testament. Introduction to Greek literature, history, and civilization; attention to the Greek element in the English Language.

Muᡥic 020 1 q.h. (A)	Dana Chamber Orchestra	The Dana Chamber Orchestra is primarily for string performers and will perform literature drawn essentially from the Baroque, Classical and 20th-Century Style Periods. 2 hours per week.
Music 869 3 q.h. (C)	Organ Literature	A study of the organ and its literature from the earliest times to the present day.
Marketing 726 4 q.h. (c)	Effective Consumer Motivation	Acquaints students with individual and group behavior as it relates to marketing consumer behavior, considered both from the standpoint of the marketing manager and from that of the individual as a consumer. The behavioral sciences serve as a background to provide standards for the social and human evaluation of current marketing activities. Topics covered include: the buyer as a problem solver; buying decision processes and models; measurement of promotional effectiveness and life style analysis.
Biology 825 4 q.h. (c)	Radioisotopes in Biology	Application of radioactive isotopes as tracers of vital substances within biological systems. Students will apply autoradiography, liquid scintillation, and gas flow techniques to study of uptake, movement, and biosynthesis of substances in biological systems. Two hours of lecture and four hours of laboratory per week.
Chem. Ed. 740 2 q.h. (C)	Mechanical Working and Its Effect on Materials	General discussion of the different types of mechanical working processes: rolling, forging, pressing, extrusion, wire drawing, etc., their effects on material properties, fracture mechanics, effect of strain rate and temperature on materials properties.
Chem. Engr. 782 3 q.h. (C)	Phase Diagrams	Discussions and interpretation of phase diagrams of multi-component systems.
Chem. Engr. 783 3 q.h. (C)	Ferrous and Non-Ferrous Alloys	Basic scientific principles and theories applied to the design and heat treatment of alloys. Constitution, microstructure, heat treatment, phase distribution, and properties of ferrous and non-ferrous alloys



<p>Chem. Engr. 820,21 4+4 q. h. (A)</p>	<p>Principles of Extractive Metallurgy I, II</p>	<p>Unit operations approach to pyrometallurgical, hydrometallurgical, and electrometallurgical processes used to produce ferrous and non-ferrous metallic materials. Mass and thermal balances are used to analyze the various stages of the above processes. Included in these analyses will be primary and secondary treatments of ores, primary reduction methods, and refining techniques. Computer methods are used in the analyses.</p>
<p>Chem. Engr. 630, 31,32 3+3+3 (D)</p>	<p>Principles of Extractive Metallurgy I,II,III</p>	<p>Fundamentals of extractive metallurgy and metallurgical processes, general classification of ores and principles of ore dressing, treatment of concentrates, hydrometallurgical and pyrometallurgical processes, fluxes and slags, production of metal, refining of crude metal, ferrous production metallurgy, concentration of ores, charge calculation, blast furnace-- its operations, chemistry of the process, open hearth processes, electric smelting of ores, casting of ingots, non-ferrous production metallurgy, mineral beneficiation smelting refining, and casting of non-ferrous metals.</p>
<p>Chem. Engr. 730, 31,32 2+2+2 (C)</p>	<p>Metallography, Heat Treat- ment &amp; Pyrometry I,II,III</p>	<p>Laboratory experiments to determine the effects of heat treatment on the structure, physical, and mechanical properties of ferrous and non-ferrous alloys. (1 hour lecture + 3 hours laboratory.)</p>
<p>Chem. Engr. 780 3 q.h. (C)</p>	<p>Casting, Welding and Solidification</p>	<p>General discussion of the engineering aspects of welding and solidification of ferrous and non-ferrous alloys.</p>
<p>Chem. Engr. 781 3 q.h. (C)</p>	<p>Powder Metallurgy</p>	<p>Scope of powder metallurgy, production of powders, sintering of powders, diffusion bonding, basic theories, application.</p>
<p>Chem. Engr. 791R 92R,93R 4+4+4 (C)</p>	<p>Physical Metallurgy I,II,III</p>	<p>Review of atomic and nuclear structure of materials. Band theory of solids; advanced discussion on electrical conductivity, magnetic properties and thermal properties of materials,</p>

different types of solids. Elastic and plastic properties of materials; modes of plastic deformation; slip and twinning; quantitative discussion on deformation mechanism; dislocation theories and their application. Phase diagrams and kinetics of phase transformation. Diffusion controlled and diffusionless phase transformation; theoretical treatment of nucleation and growth processes; diffusion. Three hours of lecture and a three-hour laboratory with tutorials and computations.

NOTE:

- A Addition
- C Change
- D Deletion

Chem. Engr. 817 1 q.h. (C)	Management of Nuclear By-products	Sources and characteristics of radioactive material, principles and determination of tolerance; standards and regulations; protection from side effects.
Chem. Engr. 830, 31,35 3+3+3 q.h. (C)	Introduction to Nuclear Materials I, II, III	Nuclear materials-their fission and fusion; classification of reactors; general theory, design, and control of reactors; control systems; instrumentation. Kinetics and dynamic behavior of nuclear reactors; comprehensive theory and design; reactor stability under operating conditions; neutron kinetics and perturbation theory; nuclear heat generation and removal; selection of materials; production and processing of nuclear materials.
Chem. Engr. 886 4 q.h. (C)	Nuclear Reactor Design	The steady state reactor core; four-factor equation, resonance escape probability, neutron flux distribution in various geometrics, two-group and multigroup theories. Transient reactor behavior and control; effect of delayed neutrons, fission product poisoning, nuclear fuels, nuclear heat transfer and burnout problems, reactor economy; fuel burnup and power cost. Thermal breeder and fast reactors. Neutron flux distribution measurements. Radiation detection and monitoring,
Military Science 602R 1 or 3 q.h. (C)	Map Reading and Land Navigation	A comprehensive study of the technique of land navigating by the use of maps and terrain analysis. An introduction and practical exercise in the use of the compass and aerial photographs. One hour lecture per week for each credit hour taken; and one hour leadership lab per week. Course includes one 3-hour field exercise during quarter. One credit hour course for Westminster College students.
History 802 4 q.h. (A)	History of Ideas in Western Europe Since 1500	The impact of new ideas on the various social classes in Western Europe and Great Britain through the Age of Science, the Enlightenment, the Darwinian Revolution and the Age of Anxiety.


TO: **Caryl** Freeman, Secretary of the Senate

FROM: Jane **Maruskin**, Student **Government**

DATE: April 22, 1975

SUBJECT: Ad-Hoc Calendar Committee of Senate **Executive** Committee

I was appointed to the Ad-Hoc Calendar **Committee** but will be unable to serve due to school and work **committments**. However, the following student has expressed an interest in the **matter** of **semesters** and has agreed to take my place **on the** committee. He is Mark **Dilley** and resides at **765 Crestview** Drive, Youngstown **44512**; phone **758-2583**. Please place **his** name **on** the roster and **remove mine**.

  
Jane Maruskin, Student Government  
8450 Market Street  
Youngstown, OH **44512**  
Phone **758-3136**

DATE: April 7, 1975

TO: Caryl P. Freeman, Secretary of Academic Senate

FROM: Jane Maruskin, Student Member of Academic Senate

SUBJECT: Academic Affairs Committee

Last fall I submitted an application to become a member of the Academic Affairs Committee. Because of a Student Council clerical error, Bill Roni was placed on Academic Affairs. Student Council nominating chairperson Toni DiSalvo has corrected this error. Bill has agreed to allow me to take his place on Academic Affairs and remove me from Academic Affairs.

copy sent to Dr. Jones, Ex. Committee



SENATE MEETING  
YOUNGSTOWN STATE UNIVERSITY

IN ATTENDANCE: 4/4/75

● P. J. Ikema	✓	J. E. Emery	✓
E. T. Deideriak	✓	D. O'Neill	✓
Ralph Burkholder	✓	T. H. Flaweck	✓
Floyd Barger	✓	Ayle Vanaman	✓
Virginia Thompson	✓	Caryl Freeman	✓
R. Shuster	✓		
J. H. Steele	✓		
J. Behen	✓		
Paul Roberts	✓		
R. W. Jones	✓		
Barbara Brothers	✓		
M. Marvin	✓		
● Mark Goryniak	✓		
Luigi Zaccaro	✓		
Bob Ameluri	✓		
Peter Baldino	✓		
Kathy A. Salaka	✓		
Joe Simko	✓		
Ernie Yager	✓		
Stelene Lustig	✓		
Jack O. Behos	✓		
Fred Feitler	✓		
JAMES DOUGLASS	✓		
Lawrence DiRusso	✓		
E. F. Sturgeon	✓		
● Bill Gatson	✓		
Paul Collins	✓		

CURRICULUM CHANGES FOR SENATE CONSIDERATION

(These courses have been circulated according to the procedures outlined in the Constitution & By-Laws--objections were received and a recommendation has been made by the Curriculum Committee to the University senate)

<u>Department and Catalog Number</u>	<u>Course</u>	<u>Prereq.</u>	<u>Description</u>
Speech & Drama 603 2 cr hrs	Physical Aspects of Speech	none	A fundamental study of the voice mechanism, the physics of sound, and elementary <b>phonetics</b> . Includes a functional familiarization with the International Phonetic Alphabet.

Speech & Drama 605 (D)	Voice and Diction	A fundamental study of the voice mechanism; breath control, enunciation, articulation, vocal variety.
Speech & Drama 662 (A)	Practicum in Technical Theatre	Practical application of technical theatre skills in University theatre productions through classroom and laboratory participation. May be repeated twice for credit.
Speech & Drama 705 (c)	Speech Problems of Children	A consideration of speech improvement for all pupils and of speech correction for pupils with speech and/or hearing problems on the kindergarten, primary, and intermediate levels. Types of difficulties, techniques, and materials for development and continued use of good voice and acceptable speech. Required of all elementary teachers.
Speech & Drama 751 (c)	Classical Rhetoric	Survey of effective persuasion as taught in the ancient world from pre-Aristotelian Greece to the Rome of St. Augustine. Speech-making practices of present-day America are traced to their ancient sources.
Speech & Drama 852 (c)	Group Communication	A descriptive study of communication variables in the small-group setting, together with a survey of literature dealing with small-group communication.
Speech & Drama 861 (D)	History of the Theatre	A history of the physical theatre and the written drama from antiquity to the present. Emphasis on theatre architecture and stagecraft, including scenery, costumes and lighting.
Speech & Drama 891 (A)	History of the Theatre I	A history of the physical theatre and the written drama from antiquity through the Renaissance. Emphasis on theatre architecture and stagecraft, including scenery, costumes and lighting.
Speech & Drama 892 (A)	History of the Theatre II	A history of the physical theatre and the written drama from the post-Renaissance period to the present. Emphasis on theatre architecture and stagecraft, including scenery, costumes and lighting.



Chemistry 699 (A)	Medical Applications Seminar	Applications of biological and chemical concepts in the practice of medicine. May be repeated to a total of three hours credit.
Chemistry 722 (C)	Organic Chemistry IV	Additional laboratory preparations and techniques. This course is required for all candidates for the B.S. degree with a major in chemistry. One hour of lecture and three hours of laboratory.
Chemistry 739,40,41 (C)	Physical Chemistry I, II, III	Principles and applications of physical chemistry. Three hours of lecture and a three-hour laboratory.
Chemistry 801 (C)	Elements of Physical Chemistry	An introduction to thermodynamics, chemical structure, reaction rates, and other physical properties of chemical systems. Applications in biology and health-related fields are emphasized. Four hours of lecture.
Chemistry 805 (C)	Applied Spectroscopy	A study of infrared, ultraviolet, nuclear magnetic resonance, electron spin resonance, mass spectrometry, and other methods of current interest as applied to chemical systems. Three hours of lecture.
Chemistry 821 (C)	Intermediate Organic Chemistry	An introduction to advanced study in organic reactions and theories. Three hours of lecture.
Chemistry 822 (C)	Organic Analysis	Qualitative and functional group analysis of organic compounds. Laboratory exercises and discussion of underlying principles. One hour of lecture and six hours of laboratory with discussion.
Chemistry 823 (C)	Organic Synthesis	Preparations of organic compounds and applicable instrumental techniques. One hour of lecture and six hours of laboratory with discussion.
Chemistry 841,42,43 (C)	Principles of Biochemistry I, II, III	The study of chemical structures, functions and transformations which occur within living cells. Topics include the chemistry and metabolism of carbohydrates, lipids, proteins, nucleic acids, enzymes, hormones, biochemical genetics, and metabolic control mechanisms.

Biology 834 (c)	Vetebrate Physiology I	Study of structure and function at the cellular and subcellular level of nervous, muscular, and endocrine systems. Three hours of lecture and two hours of laboratory per week.
Biology 835 (c)	Vetebrate Physiology II	Physiology of circulatory, respiratory, digestive and excretory systems. Three hours of lectures and two hours of laboratory per week.
Biology 836 (c)	Molecular-Cellular II	Physical limits, relationship of cell morphology to function, cell organization and structure, the physiochemical environment, bioenergetics, metabolism and membrane transport systems. Two hours of lecture and four hours of laboratory per week.
Chemistry 591,92 (c)	Principles of Chemistry I,II	Fundamental principles of chemistry and introduction to inorganic chemistry, Three hours of lecture.
Chemistry 593,94 (c)	Principles of Chemistry Laboratory I,II	Introduction to laboratory techniques, including inorganic chemistry and qualitative and quantitative analysis. Three hours of laboratory including discussion.
Chemistry 603,04 (c)	Quantitative Analysis I,II	A study of chemical equilibrium, stoichiometry, theory of errors, volumetric and gravimetric procedures as applied to quantitative determinations. Electroanalytical and cholorimetric methods are introduced. The development of technique is emphasized in the laboratory, three hours of lecture and six hours of laboratory each week.
Chemistry 691 (A)	Introduction to Physical Chemistry	Elements of thermodynamics, equilibria, states of matter, kinetics, and spectroscopy. Three hours of lecture.
Chemistry 692 (A)	Instrumental Techniques	The application of instrumentation in the study of chemical systems, including spectrometric, electrometric, chromatographic, and thermometric methods. Six hours of laboratory including discussion.

<u>Department and Catalog Number</u>	<u>Course Title</u>	<u>Description</u>
History 704 (C)	The Age of Jefferson and Jackson	An intensive study of the Age of Jefferson and Jackson covering the period 1789 to 1840.
History 706 (C)	America Before the Civil War, 1840-1860	An intensive study of the deepening sectionalism of the country culminating in the outbreak of the Civil War.
History 794 (A)	History of Leisure in Modern England	A study of the growth of leisure activities in England from the 18th century to the present, with emphasis on the transition from rural to urban-centered activities, the impact of technology, and the emergence of mass spectator sports.
History 811 (C)	Mexico and the Caribbean	Emphasis is upon Mexico, Colombia, Venezuela and the Central American republics. Special consideration is given to 20th century Mexico.
History 812 (C)	History of South America	The Spanish American republics and Brazil are considered.
Economics 622H (C)	Principles of Economics 3 Honors	An honors course in Principles 3 emphasizing additional reading and independent research on economic problems.
Economics 622 (C)	Principles of Economics 3	Economic problems in labor, agriculture, competition and monopoly, social welfare, urban environment, growth international trade and finance, under-developed countries, poverty and comparative economic systems.
Physics and Astronomy 805 (A)	Research in Astronomy	Individual investigation performed with faculty guidance.
Math 760 (C)	Numerical Analysis	The theory and techniques of numerical computation. The solution of an equation or a system of equations, the methods of finite differences, interpolation methods, numerical differentiation and integration, least squares techniques.
Eng. Tech 610 (c)	Mechanical Equipment	The study of common mechanical equipment such as heat exchangers, refrigerators, pumps, and internal combustion engines.

Psychology 780 (A) Psychological Aspects of Disease and Death	A survey of the primary factors affecting an individual's attitudes toward illness, bereavement, and mortality, an examination of appropriate counseling methods and of the psychological adjustments necessitated by physical illness or bereavement. Applicable to the psychology major.
Soc & An 719 (A) Health Care Systems	A sociological analysis of the role of the physician, the nurse, the social worker, and para-medical personnel in a variety of settings including private practice, the hospital and public agencies. Some attention to federal programs as related to local systems. Lectures and field work.
Biology 599 (A) Orientation to Medicine	An introduction to the philosophy of medicine through examination of ideas from the ancients to the modern. The Hippocratic Ideal, the Oath of Maimonides, the meaning of knowledge, humanism in medicine, independent thought in medicine, and the teaching of the uncertainty factor.
Biology 663 (A) Animal Structure and Function	Introduction to cellular basis of life and the biology of animals; energy metabolism, ultrastructure and function of cells; concept of tissues and organs, comparative description of anatomical and physiological adaptations of organ systems of animals to their environment. Intended for biology majors. Students who have received credit for Biol. 553 may not receive credit for Biol. 663. Three hours of lecture and one three-hour lab discussion period per week.
Biology 699 (A) Medical Applications Seminar	Applications of biological and chemical concepts in the practice of medicine. May be repeated up to three credit hours.
Biology 721 (c) Genetics	Genetic material, reproductive cycles, sex determination, mitosis, meiosis, Mendelism probability, linkage, genes in populations, mutation, evolution. Four hours of lecture per week.
Biology 808 (c) Embryology	Identification of mechanisms; analysis of control of developmental events and processes. Interaction of egg and sperm, penetration and activation of the egg, theories of induction, models of tissue interaction, gene action and the fate of informational molecules during development. Two hours of lecture and four hours of laboratory per week.