

1985

Colorado College

1985 Colorado College Catalog

degree requirements

ACADEMIC POLICIES

The Academic Honor System

Administered by the students themselves since 1948, the Academic Honor System is an essential part of the College program. Under the Honor System, students take examinations without proctors. The system is based on trust and maturity and is a reflection of the academic attitude of the Colorado College community. The purposes of the Honor System are to allow a more relaxed testing situation, to instill academic incentive and confidence and to promote individual responsibility.

Before entering the College, students commit themselves to uphold the Honor System. Occasional violations are handled by the Student Honor Council, a group of 13 students elected by the student body specifically to supervise the Honor System.

Degree Requirements for Students Enrolled Prior to June 1983

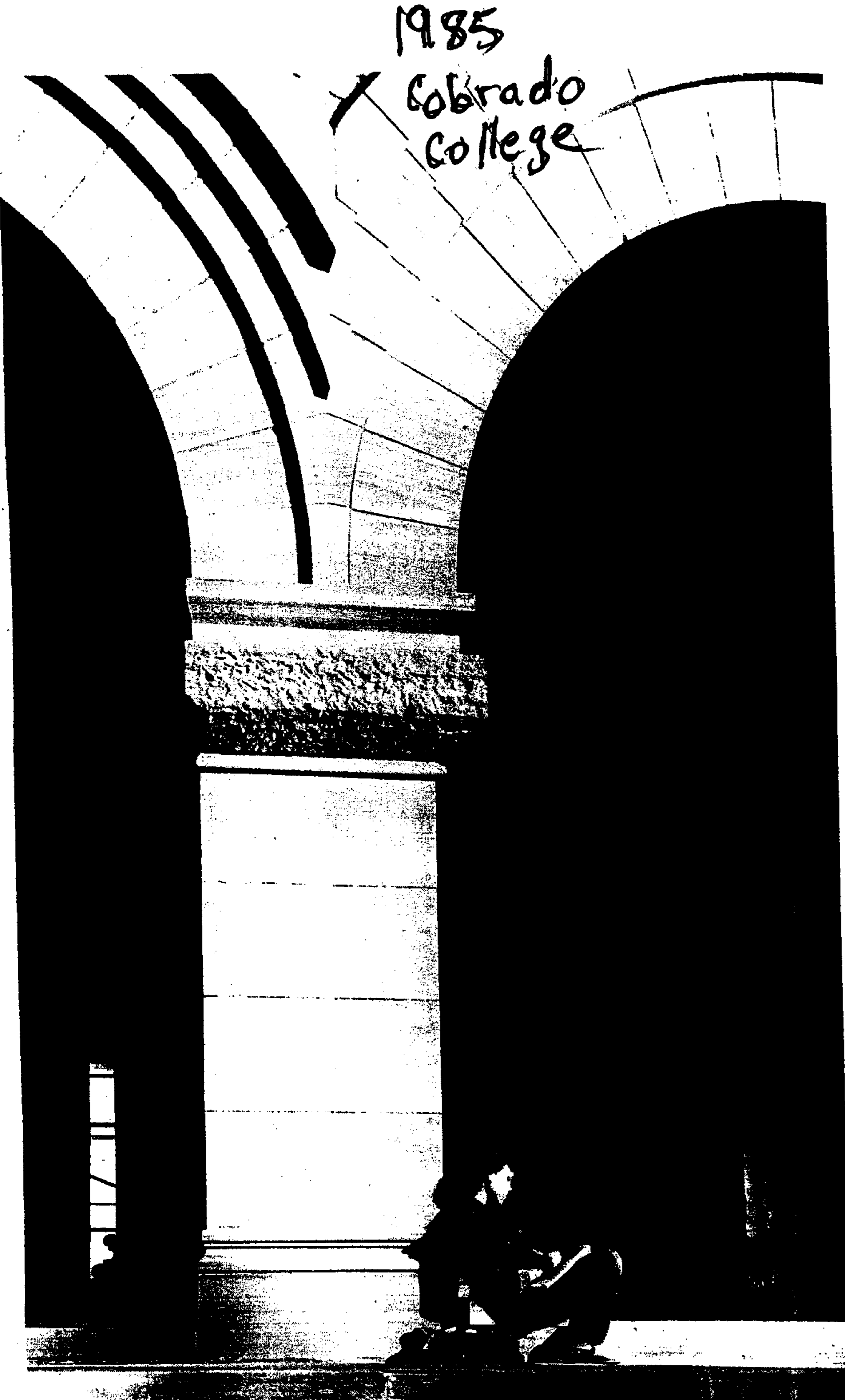
The following requirements will apply to all students enrolled before June 1983, except that they will not be interpreted in any way to change the requirements for students enrolled prior to September 1970.

Each candidate for the bachelor's degree at Colorado College must fulfill the requirements listed below. In addition, each must meet specific requirements in the major field, enumerated under the appropriate titles in the section on Course Descriptions. Students are responsible for knowing and fulfilling these degree requirements.

GENERAL REQUIREMENTS

- I. A minimum of 34 units is required for graduation. (Each unit is equal to 3.5 semester hours.)
- II. Minimum requirements in each of the three divisions of the College are as follows. These requirements may be met any time prior to graduation.
 - A. *Humanities*: A minimum of three units in one or more courses, other than first-year foreign language courses, chosen from Art history and theory; Classics; designated courses in Drama; English; French; German; Music theory and history; Philosophy; Religion; Russian; Spanish; and designated freshman seminars and interdisciplinary courses.
 - B. *Social Sciences*: A minimum of three units in one or more courses chosen from Anthropology; Business Economics; Economics; History; Political Science; Sociology; and designated freshman seminars and interdisciplinary courses.
 - C. *Natural Sciences*: A minimum of three units in one or more courses chosen from Biology; Chemistry; Geology; Mathematics; Physics;

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The sunlit steps of Palmer Hall provide a warm, quiet place to read for this student.

designated courses in Psychology; freshman seminars and interdisciplinary courses.

- III. Each candidate must fulfill the requirements of his or her major field as determined by the relevant department or departments, and subject to the following general requirements:
- A. Each student must earn a minimum of nine units outside the division of the major. Courses listed as general studies may be counted as outside credit by all students unless otherwise indicated. Interdisciplinary courses may be counted by students enrolled in them as outside credit provided that the faculty has approved such courses with that understanding.
 - B. Each student must present for graduation not fewer than seven units in the major department and not more than 14 units in any single department.
- IV. During the last year of study for a bachelor's degree, candidates may be required, by their major departments, to take a departmental comprehensive examination and/or achieve a passing grade on the Graduate Record Advanced Test.
- V. Courses taken at other institutions shall be granted as much equivalent credit as deemed appropriate by the Registrar.
- VI. Students are required to take their final eight units at Colorado College. Exceptions to this rule will be made by the Advisory Committee to the Vice President for Student Life.
- VII. In each adjunct course students may earn one-quarter unit toward their degree requirement for each semester of work. Three adjunct courses per semester are the limit, unless the Registrar grants permission for an overload.
- VIII. All two-block designated writing courses (that is, those which include the phrase "with emphasis on writing" in the title of the course) carry no more than one unit of divisional credit unless otherwise specified, the second unit to count toward meeting the general 34-unit graduation requirement but not toward meeting any divisional requirement or outside the division requirement.
- IX. Students in financial arrears to the College will not be presented for graduation nor will a diploma be awarded nor will transcripts be issued until there is a written agreement to a payment plan acceptable to the College.

Degree Requirements for Students Enrolled After June 1983

The following requirements will apply to all entering students, except that they will not be interpreted in any way to change the requirements for students enrolled prior to June 1983.

Each candidate for the bachelor's degree at Colorado College must fulfill the requirements listed below. In addition, each must meet specific requirements in the major field, enumerated under the appropriate titles in the section on Course Descriptions. Students are responsible for knowing and fulfilling these degree requirements. An explanation of General Education requirements follows this subsection.

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GENERAL REQUIREMENTS

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- I. A minimum of 34 units is required for graduation. (Each unit is equal to 3.5 semester hours.)
- II. Students shall complete a four-unit program in "Alternative Perspectives," consisting of a two-block course or two-block sequence examining significant elements of the Western experience from antiquity to modern times; two units drawn from one or two of the following categories—area studies of geographical regions other than Europe, the United States and Canada; studies of the experience of ethnic minorities within the United States or elsewhere; women's studies.
- III. Students shall complete three units of natural science, including at least one laboratory or field course.
- IV. Students shall take a five-unit thematic minor, composed of courses outside their major which are closely related through the examination of an issue, an area of the world, or a time period.
- V. Each candidate must fulfill the requirements of his or her major field as determined by the relevant department or departments, and each student must present for graduation not fewer than seven units in the major department and not more than 14 units in any single department.
- VI. During the last year of study for a bachelor's degree, candidates may be required, by their major departments, to take a departmental comprehensive examination and/or achieve a passing grade on the Graduate Record Advanced Test.
- VII. Courses taken at other institutions shall be granted as much equivalent credit as deemed appropriate by the Registrar.
- VIII. Students are required to take their final eight units at Colorado College. Exceptions to this rule will be made by the Advisory Committee to the Vice President for Student Life.
- IX. In each adjunct course students may earn one-quarter unit toward their degree requirement for each semester of work. Three adjunct courses per semester are the limit, unless the Registrar grants permission for an overload.
- X. Students in financial arrears to the College will not be presented for graduation nor will a diploma be awarded nor will transcripts be issued until there is a written agreement to a payment plan acceptable to the College.

General Education Requirements

General Education requirements apply only to students enrolling after June 1983 and fall into three categories: Studies in Alternative Perspectives; Studies in the Natural Sciences; the Thematic Minor. Courses that meet these first two requirements are found in two places in the Description of Courses section of this catalog: 1) in individual course descriptions within department listings; 2) by category under the subsection Courses Fulfilling the General Education Requirements.

STUDIES IN ALTERNATIVE PERSPECTIVES

The College believes that one of its most important functions is to help students broaden their historical and cultural perspectives, break out of the provincialism of the here and now. To achieve this, students should



Participating in discussion is an essential part of all Colorado College classes.

some knowledge of the historical development of the Western tradition, the ideas and events that brought us to where we are now. At the same time, students should acquire insight into cultures outside the mainstream of the Western tradition—non-Western cultures, or the cultures of ethnic minorities or women. These goals reinforce each other: studying our own past, while also learning about people who are different from us, can give us a sense of what makes human cultures distinctive and of what they have in common. The Alternative Perspectives requirement, therefore, consists of two separate but complementary parts:

A) Before the end of the sophomore year, students must complete one two-block course which examines significant elements of the Western experience from antiquity to modern times. (This requirement may also be satisfied by certain designated two-block sequences; the courses which form these sequences must be taken in proper order and within the same academic year, and no more than two blocks may intervene between the first and second course.) These courses are taught in many different departments, or are interdisciplinary in nature, but whatever their subject matter they all provide a broad chronological perspective. They are designated Alternative Perspectives: A.

B) Before graduation, students must complete two units of study in cultures outside the mainstream of the West. These units may deal with any of the following: Africa, Asia, Latin America, the Middle East; ethnic minorities within the United States (Black, Chicano, Native American); other minority peoples; women. Courses that satisfy this requirement are designated Alternative Perspectives: B.

STUDIES IN THE NATURAL SCIENCES

The College believes that an understanding of the natural sciences should be an integral component of a liberal arts education. The methods of inquiry central to natural science constitute a distinctive element of the intellectual experience; science is also the basis of most present and future technology and a principal source of social change. The College also believes that the natural sciences have certain elements best learned by participating in the process in the field or laboratory. Therefore, students are required, before graduation, to complete three units of natural science, including at least one unit in laboratory or field work.

THE THEMATIC MINOR

All students take at least 20 units, often more, outside their major field of study. The College believes that students should have a wide latitude of choice among these 20-plus units; they should be able to choose many of them freely, even eccentrically. At the same time, students should be encouraged to bring focus and coherence to some of the work they do outside of the major. It seems especially important, considering the complexity of the world students will confront after graduation, that they gain some experience in connecting ideas and approaches across disciplines, in seeing how different subjects relate to one another.

To this end, students must, by the end of the sophomore year, choose a thematic minor, which consists of at least five units closely related through the examination of an issue or theme, a cultural group or area of the world, or a time period.

At least two departments must be represented in the minor, and none of the five units may be in the department of the student's major. Some of the work in the minor must be beyond the introductory level. Each minor must also include some kind of integrative experience toward the end. This integrative experience, in which students bring together much of what they have learned from all their work in the minor, may be different for different minors: it could consist of a paper, a creative project, a block of independent study, a special seminar shared by all participants in the minor, etc.

A listing and description of thematic minors presently approved by the faculty can be found under the subsection Courses Fulfilling the General Education Requirements. In very special cases, students may design their own thematic minors, according to the guidelines explained above and subject to approval by the General Education Committee.

Students with an interdepartmental major involving three or more departments may use courses from one of those departments as part of their thematic minor.

Courses which belong to a thematic minor or to a student's major may also be used, when appropriate, to fulfill the Alternative Perspectives: A, Alternative Perspectives: B, or natural science requirements.

in the other department. Independent study or research courses may both be used to fulfill this requirement. In addition the student must take History/Political Science 425, and at least one course in the Humanities Division specifically related to the area of concentration. A written and oral comprehensive examination is administered by faculty members from both departments and must be scheduled by the student, in consultation with departmental advisers, during the senior year. *In lieu* of this examination, and upon the recommendation of the departmental advisers, a student may research and write a thesis by which the student may receive the A.B. degree "with distinction in History/Political Science." Proposals for such theses must be approved before the end of Block I of the student's senior year. While they are not required, the departments strongly recommend: competency in a foreign language appropriate to the student's area of concentration; History/Political Science 303, The Uses of the Past; and History 215, The Historical Essay.



A Peace Corps representative discusses career options with students in Rastall center.

Liberal Arts and Sciences

Vice President for Student Life TAYLOR, Adviser.

Students who wish a major other than those provided by the departments may choose to major in Liberal Arts and Sciences. This option permits students with the help of three faculty advisers to design special concentrations according to particular interests and needs. It is assumed that the Liberal Arts and Sciences major is at least as rigorous as any departmental major, and requires considerable initiative and self-discipline from students who elect it. 1. Students selecting the Liberal Arts and Sciences major must fulfill the appropriate College degree requirements as listed in this bulletin. A minimum of nine units or a maximum of fourteen units may be counted toward this major. 2. At least six of the units, designated as constituting this major, must be above the 100-course number level. One or two of these units may be General Studies 400 (Senior Thesis I) and General Studies 401 (Senior Thesis II). 3. Courses which constitute the major in Liberal Arts and Sciences are designated on the transcript by an asterisk. The Registrar designates on the transcript in an appropriate way a description of the program. 4. A student must submit the application for a Liberal Arts and Sciences major to the Advisory Committee to the Vice President during the second semester of the sophomore year. A student wishing to apply for this major after the sophomore year, or to change from another major to the major in Liberal Arts

and Sciences, must present persuasive evidence that such a proposal is educationally advisable and that circumstances make it possible to achieve a satisfactory major. 5. In order to be accepted as a major in Liberal Arts and Sciences, a student must obtain the approval of three faculty advisers for a tentative program of courses for the final two years. Each faculty adviser is expected to write a letter of support for the student's proposed program. Faculty advisers should also indicate in their letters their evaluation of the student's past academic performance and comment on the student's ability to carry out a program with an unusual amount of independence and responsibility. 6. The program of courses should be accompanied by a typewritten description of the concentration proposed in the major—that is, a rationale demonstrating the cohesiveness of the proposed program of courses. Each course in the proposed program should be listed by course number and title, along with a statement as to how it relates to the written description of the major. The original application for the major should contain some indication of what this final project or thesis will be, and what the exam will consist of. The student must also submit a written statement explaining why the proposed goals of the major cannot be achieved through a departmental major or through outside courses taken in addition to the requirements of a departmental major. 7. The description and explanation of the major and the listed courses must be accompanied by an application form for declaring the major, available in the Registrar's Office. The completed application is presented to the Advisory Committee to the Vice President for its approval. 8. Among the three faculty advisers, one should be designated as the principal adviser, but all three will be responsible for approving any later changes in the major. It is expected that the students will meet periodically with all three advisers, during the junior and senior years, to discuss progress of the major. At the end of the senior year, the faculty advisers will submit a report to the Advisory Committee to the Vice President evaluating what the student has accomplished in the major. 9. Each Liberal Arts and Sciences major will be required, near the end of the senior year, to submit a substantive thesis or project and to take an examination covering important aspects of the major. Administration and evaluation rests with the three faculty advisers. 10. A student wishing to change from a major in Liberal Arts and Sciences to another major program may do so with the consent of the new major department.

Mathematics

Professors ROEDER, G. SIMMONS; Associate Professors JANKE (Chairman), PAINE, TINSLEY; Assistant Professors ANDERSON, HENDERSON, JANEBA, MERRILL, SIEGEL, WATKINS; Instructor BEARD; Visiting Professor WILSON.

To be eligible to major in mathematics a student should complete 200 and 205. Majors in mathematics are required to take 305, 321, and at least three other mathematics courses numbered 300 or above, excluding 430.

110—Introduction to Number Theory. An introduction to mathematical thinking through elementary number theory, with emphasis on the historical development. Topics include prime numbers, perfect numbers, polygonal numbers and congruences. Several old problems and conjectures (some of them unsolved today) will be discussed. (Offered in 1984-85 and alternate years.) 1 unit—Roeder.

112—Finite Mathematics. An introduction to mathematical thinking with an emphasis on problem solving. Topics to be chosen from linear programming, game theory and graph theory. Applications are made to problems in economics and the life sciences. 1 unit—Beard, Wilson.

117—Probability and Statistics. An introduction to the ideas of probability, including counting techniques, random variables and distributions. Elementary parametric and non-parametric statistical tests with examples drawn from the social sciences and life sciences. (No credit if taken after Biology 220 or Economics 215.) 1 unit—Beard, Janke, Siegel, Tinsley.

121—Introduction to Digital Computing. Introduction to the use of computers in problem solving. Students learn a programming language and various programming techniques. 1 unit—Department.

123, 124—Programming Languages. 123: Basic. 124: Fortran. These are adjunct courses for students wishing to learn how to use an elementary computer language. Students who wish to be familiar with the language BASIC are encouraged to take the adjunct course 123 instead of the full block course 121. (Credit is not given for 123 after 121.) Prerequisite: Instructor's consent. 1/4 unit—123: Janke, 124: Keller.

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125—**Pre-Calculus and Calculus.** The same calculus as 126 together with materials from algebra, trigonometry, analytic geometry and the study of functions. Intended solely for students not sufficiently prepared for 126. (Fulfills one unit of the divisional requirement in the natural sciences.) *Prerequisite:* Instructor's consent. 2 units—Henderson, Janeba, Merrill.

126—**Calculus 1.** Differential and integral calculus of algebraic functions with topics from analytic geometry and applications. Students normally begin the calculus sequence with this course. 1 unit—Department.

128—**Calculus 2.** A continuation of Calculus 1. The calculus of transcendental functions; methods and applications of integration; the analytic geometry and calculus associated with conic sections and polar coordinates. *Prerequisite:* 125 or 126. 1 unit—Department.

130—**Calculus 3.** A continuation of Calculus 2. Vectors in two and three dimensions and the calculus of functions of several variables. *Prerequisite:* 128. 1 unit—Anderson, Henderson, Siegel.

200—**Number Theory.** A careful study of major topics in elementary number theory, including divisibility, factorization, prime numbers, perfect numbers, congruences, Diophantine equations and primitive roots. *Prerequisite:* 130 or 128 and instructor's consent. 1 unit—Anderson, Roeder.

205—**Calculus 4.** A continuation of Calculus 3. Series; introduction to complex numbers and functions; introduction to differential equations. *Prerequisite:* 130. 1 unit—Henderson, Merrill, Watkins.

221—**Computer Science I.** Discrete computational structures including graphs, trees, linked lists and files. A mathematical analysis of standard algorithms for searching, sorting and string processing. *Prerequisite:* 121 or instructor's consent. 1 unit—Roeder.

222—**Computer Science II.** Design and analysis of algorithms including an introduction to complexity theory, error analysis, simulation and elementary artificial intelligence techniques. *Prerequisite:* 221. 1 unit—Janke.

223, 224—**Programming Languages: ALGOL, COBOL, PL1, PASCAL,** or other special language. These are adjunct courses in advanced languages requiring some prior computing experience. *Prerequisite:* Instructor's consent. (Students are limited to four mathematics adjunct courses toward the degree.) (Offered 1985-86: LISP) 1/4 unit—Keller.

225—**Graph Theory.** An introduction to discrete mathematics and its applications to business economics, and computing with an emphasis on mathematical development through proof. *Prerequisite:* One previous mathematics course or instructor's consent. 1 unit—Anderson.

240—**Topics in Mathematics.** Special topics in mathematics not offered on a regular basis. These courses have few or no prerequisites. Offered in 1985-86: 1) Assembly language. *Prerequisite:* 121 or instructor's consent. 2) Linear statistical models. *Prerequisite:* 117 and 126. 1 unit—Paine, Tinsley.

300—**Geometry.** Some current topics in advanced and modern geometry. Topics drawn from linear geometry, affine, inversive and projective geometries, foundations and axiomatics, transformation groups, geometry of complex numbers. *Prerequisite:* 200. (Offered 1985-86 and alternate years.) 1 unit—Anderson.

305—**Introduction to Mathematical Analysis.** An introduction to the theoretical basis for the calculus. Topology of the real line; definitions of limit, continuity, compactness; rigorous treatment of derivatives and integrals. *Prerequisite:* 205 and 200. 1 unit—Tinsley.

308—**Theory of Computation.** Topics drawn from automata theory, complexity theory, graph theory and artificial intelligence. *Prerequisite:* 222. (Offered 1985-86 and alternate years.) 1 unit—Janke.

310, 311—**Topics in Advanced Calculus.** Classical advanced calculus and its applications. 310: Vector Analysis and Differential Geometry. Vector functions, divergence and curl, Green's and Stokes' Theorems, curves and surfaces in 3-dimensional space. 311: Fourier analysis. Boundary value problems, Fourier series and integrals and their convergence properties. *Prerequisite for each:* 205. (311 offered 1985-86 and alternate years.) 1 unit each—Janeba (311), Simmons (310).

313—**Probability.** Probability spaces, discrete and continuous random variables, independence, expectation, distribution functions. *Prerequisite:* 205. 1 unit—Janke, Tinsley.

315—**Differential Equations.** An active study of differential equations arising from classical scientific problems. Review of first order equations, series solutions, oscillation theory, special functions, systems of equations, and existence and uniqueness theorems. *Prerequisite:* 205. 1 unit—Merrill.

317—**Mathematical Statistics.** Brief introduction of probability, descriptive statistics, classical and Bayesian statistical inference, including point and interval estimation, hypothesis tests and decision theory. *Prerequisite:* 313 or instructor's consent. (Offered 1984-85 and alternate years.) 1 unit—Tinsley.

320—**Linear Algebra.** Topics from the theory of vector spaces and linear transformations. Matrix manipulations with applications. Introduction to orthogonal geometry and eigenvalue problems. *Prerequisite:* 305 or 321. (Offered 1984-85 and alternate years.) 1 unit—Roeder.

321—**Abstract Algebra.** Elementary number theory and group theory. A brief introduction to rings and fields. *Prerequisite:* 200. 1 unit—Janke, Watkins.

400—**Topology.** An introduction to the study of point-set, geometric and algebraic topology. Topics covered may include fixed points of mappings, extensions of mappings, vector fields, fundamental theorem of algebra. *Prerequisite:* 305. (Offered 1984-85 and alternate years.) 1 unit—Tinsley.

405—**Real Analysis.** A continuation of 305. Topics may include uniform convergence, Weierstrass approximation, measure theory and integration. *Prerequisite:* 305 (Not offered 1985-86.) 1 unit—Roeder.

410—**Complex Analysis.** The calculus of functions of a complex variable. Differentiation, contour integration, power-series, residue theory and applications, conformal mapping and applications. *Prerequisite:* 305 or instructor's consent. (Offered 1985-86 and alternate years.) 1 unit—Janeba.

420—**Special Topics.** Given on demand for a group of students interested in a topic not included in the regular curriculum. Offered in 1985-86: Numerical Analysis. *Prerequisite:* Instructor's consent. 1 unit—Siegel.

421—**Advanced Abstract Algebra.** Polynomial rings, fields, and an introduction to Galois theory. *Prerequisite:* 321. (Offered 1985-86 and alternate years.) 1 unit—Anderson.

430—**Independent Study.** *Prerequisite:* Instructor's consent. 1 unit—Department.

Medical Technology

Professor HITCHCOCK, Adviser.

The curriculum leading to the bachelor's degree in medical technology prepares those wishing to serve as registered medical technologists in hospitals, clinics and physicians' offices. This is a four-year curriculum, the first three at Colorado College and the final year at a hospital school of medical technology which has been approved by the Council on Medical Education and Hospitals of the American Medical Association. Transfer students with satisfactory records may be admitted to the program if they spend the third year in residence at Colorado College.

The program requires the successful completion of at least 26 units of work at Colorado College. Of the 26 units, at least seven units must be taken outside the Division of Natural Sciences. There are no specialized medical technology courses at Colorado College, but the student is required to take a minimum number of courses in biology, chemistry, physics and mathematics which will provide a basic preparation in the natural sciences for the medical technologist. The following courses are required: Biology 109, 210, 360, and at least two of the following electives—203, 214, 220, 301, 308 and 351; Chemistry 105 or 106, 151, 241, 251 and at least one of the following electives—242, 351, 382; Physics 141 and 142; Mathematics 125 or 126 and 128 or another two-course sequence of appropriate mathematics courses approved by the adviser.

The hospital or clinical year of training consists of a twelve-month academic curriculum which includes lectures, examinations and laboratory work and is more than just an on-the-job training program. Any approved hospital school of medical technology is satisfactory for the hospital year of training. Upon receipt of certification of satisfactory completion of this year of hospital training, the student's name is added to the next graduation list. Students should indicate their intention to pursue this curriculum as soon as possible so that they may be assigned to an appropriate adviser.

Through the College's cooperative program with Rush University in Chicago, a student may transfer into the Rush medical technology program after two years at Colorado College. Two more years at Rush completes the program and the degree in Medical Technology is granted by Rush University. For further information, contact the adviser to the Rush cooperative health programs. Professor Ronald Hathaway.