

The University of Arizona Record

REVISIONS IN BIENNIAL CATALOGUE

1959-60, 1960-61

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STATEMENT OF MAILING PRIVILEGE

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REVISIONS — PAGES 1-276

(for supplement to catalogue)

Auditors (page 87, line 5).

Students registering for auditing only, or for a combination of courses for credit and audit, pay the same fees as students registering entirely for credit, including the nonresident tuition fee when applicable.

Requirements in Military Science (page 86).

Delete: "Lower division students excused from military training by reason of physical disability must enroll in the Department of Physical Education for Men when this is indicated by the University physician."

Dormitory Reservations (page 99, line 4).

The room deposit for out-of-state residents is \$25.00, of which \$15.00 is applied to rental. The deposit for Arizona residents is \$10.00, which does not apply to rental.

Housing Off the Campus (page 101).

Following lines 14 and 15 add: "Freshman men who arrange to live off the campus without this approval shall be subject to suspension from the University."

Tuition for Nonresident Students (page 102).

Every nonresident student carrying 12 or more units in day, late afternoon, and/or evening courses on campus, except graduate assistants, shall be required to pay a nonresident fee of \$250 per semester. Those carrying 7 through 11 units will pay a nonresident fee of \$21.00 per unit of work carried. This fee is in addition to other listed fees. The nonresident fee is waived for students carrying fewer than 7 units of work. Graduate assistants are exempt from the nonresident tuition fee and from laboratory or other fees applicable to courses in the student's major.

Registration Fee (page 103).

A registration fee of \$91.00 per semester is paid on the day of registration by each student registering for 7 or more units of work in day, late afternoon, and/or evening courses on campus. Upon payment of this fee the services and facilities of student activities, Student Union, Infirmary, Library, University Series, and Alumni Association are available to the student without additional charge, except where such an additional charge may be separately stated. Students registering for 6 or fewer units will pay a registration fee of \$11.25 per unit which will include the services of the University Infirmary.

Auditors (page 103).

Same as for page 87 (above) relative to Auditors.

Room (page 105).

The room deposit for out-of-state residents is \$25.00 of which \$15.00 is applied to rental. The deposit for Arizona residents is \$10.00 which does not apply to rental. Room deposits will not be refunded after August 1, preceding the opening of the first semester, unless notice of cancellation is received prior to August 1.

Dormitory Fees (page 106).	Semester Rate
Arizona, Cochise, East Stadium, Hopi, Papago, Pima, Yavapai	\$110 (per student in double room)
Maricopa, Navajo, Pinal	114 (per student in double room)
Gila, Yuma	124 (per student in double room)
Apache, Coconino, Graham, Greenlee, Huachuca, Kaibab, Manzanita, Mohave, Santa Cruz	142 (per student in double room)

Refunds: Registration, Course, Laboratory Fees (page 106).

Students who withdraw from the University during the seven-day period that starts with the first day of scheduled classes will be refunded their fees and tuition in full less a withdrawal charge of \$10; students withdrawing during the next following seven-day period will be entitled to an 80 per cent refund of fees and tuition; refunds for withdrawals during the subsequent periods will be in accordance with the present refund policy.

Tuition and Fees (page 109).

Graduate assistants are exempt from the nonresident tuition fee and from laboratory, music, and course fees applicable to courses in the students major.

Class Honors (page 129) change to:

UNIVERSITY SCHOLARSHIP HONORS

University scholarship honors are conferred annually for the purpose of encouraging sound scholarship. They are non-competitive and are awarded to every undergraduate student attaining required proficiency during one complete academic year.

To be eligible for University scholarship honors, students, other than those enrolled in the College of Law, must complete a minimum of 30 units of work during the two semesters of the regular academic year with a minimum grade average of 2.0000. Students in the College of Law must complete a minimum of 24 units with an average of 2.0000.

General Honors (page 129).

Delete GENERAL HONORS and its following paragraph.

Student Loan Funds (page 130).

The George F. Herrick Memorial Fund has been established by friends of the late Professor George Herrick, long-time Professor in the University. It is available to students in the College of Business and Public Administration upon application to the Dean of that College.

The Daniel C. Jackling Memorial Fund is established for the benefit of intelligent and worthy students enrolled in the Mining and Metallurgical Department of the University of Arizona.

Scholastic Honorary Societies (page 136).

Change Pi Eta Sigma to Phi Eta Sigma.

College of Business and Public Administration

Under the Accounting major (p. 164): Delete the * on Acctg. 241, Governmental and Institutional Acctg.

At the top of page 198, first listing: Change “B.A. 32, Accounting” to “Acctg. 251, Survey of Accounting.”

Change “Correctional Administration” (page 173-174) to:

Law Enforcement and Correctional Administration

This more specialized major is designed to fit students for staff skills and administrative responsibility in the nation’s complex structure of correctional institutions and law enforcement agencies. It offers ideal preparation for specialized graduate work in correctional, police, probation and parole administration.

Forty units from the following list are required, including courses preceded by an asterisk.

<i>Course</i>	<i>Units</i>
Acctg. 241	Govt. & Inst. Accounting 3
*Acctg. 251	Survey of Accounting 3
Home Ec. 91	Institution Food Management 3
Govt. 218	Political Aspects of Law Enforcement 3
*Govt. 261a	Intro. to Public Adm. 3
Govt. 261b	Intro. to Public Adm. 3
Psych. 216	Personality 3
*Psych. 218	Abnormal Psychology 3
Pub. Adm. 245a	Correctional Counseling 2
Pub. Adm. 265	Federal Police Systems 3
*Pub. Adm. 266	Police and Law Enforcement Adm. 3
Pub. Adm. 267	Public Personnel Adm. 3
Pub. Adm. 268	Criminal Investig. & Report. Prep. 3
Pub. Adm. 269	Traffic Administration 3
Pub. Adm. 270	Police Problems and Practices 3
Soc. 60	Methods of Social Research 4
*Soc. 138	Fields of Social Work 3
*Soc. 166a, b	Prin. of Prison Adm. 4
Soc. 253	Group Dynamics 3
Soc. 261	Introductory Social Statistics 3
*Soc. 241	Juvenile Delinquency 3
*Soc. 287	Criminal Psychopathology 2
*Soc. 288	Penology 3

College of Engineering

In Entrance Requirements (page 191).

- Change: English4 units
- To: English, or English (3 units) and 1 foreign language (2 units).....4 or 5 units
- Change: History1 unit
- To: American History and Social Studies2 units
- Change: Electives6 units
- To: Electives (depending upon English option)4 or 5 units

AERO-SPACE ENGINEERING (page 193):

(a) Remove the following courses from the required list

M.E. 262a-262b	Aero-Space Dynamics	3, 3
M.E. 241	Thermodynamics	3

In their place insert:

Technical Electives	10
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(b) Delete the sentence:

“For further details refer to the Mechanical Engineering curriculum shown on page 198.”

Replace it with the following:

“The 10 units of technical electives may be chosen from upper division courses in engineering, mathematics, and physics with the approval of the department head. Appropriate Aero-Space courses are listed on pages 377-380. The Mechanical Engineering curriculum is given on page 198.”

MECHANICAL ENGINEERING DEPARTMENT (page 198).

In the junior year schedule, semester I, Phys. 130a (Structure of Matter I) is a 3 unit course, NOT 1 unit.

College of Fine Arts

ARCHITECTURE (page 204)

Omit Art 4a (Perspective) as a requirement in the freshman year.

DEPARTMENT OF ART (page 206)

After outline of Bachelor of Fine Arts degree, Major in Art Education, and before Department of Drama insert:

Bachelor of Arts in Education Degree

MAJOR IN ART EDUCATION

(First two years in the College of Fine Arts)

FRESHMAN YEAR	Units per semester	
Art 3a-3b (Design I)	2	2
Art 6a-6b (Drawing)	2	2
Art 7a-7b (Survey of World Art)	3	3
English 1a-1b (Composition)	3	3
Foreign Language	4	4
Physical Education; and for men, Military Science 1a-1b	1-2	1-2
	<hr/>	<hr/>
Total	15-16	15-16

SOPHOMORE YEAR	Units per semester	
Art 45a-45b (Figure Drawing I)	2	2
Art 60a-60b (Lettering)	2	2
Science* or foreign language	4	4
Health 71 and Psychology 1a	3	3
Humanities	4	4
Physical Education (women); Military Science (men)	1	1
Total	16	16

Students will transfer to the College of Education at the beginning of the junior year to complete the requirements for this degree. See page 179.

** If a second year of language is necessary to meet attainment at the sophomore level, science should be scheduled in the junior year.*

Bachelor of Arts in Art Degree

MAJOR IN ART OR ART HISTORY

For students whose interest in art is essentially cultural.

Art Major: 34 units, including Art 3a-3b, 6a-6b, 40, 41, 45a-45b, 55a-55b, and 14 units in upper-division art courses, to include 6 units in art history.

Art History Major: 34 units, including Art 3a-3b and 24 units in art history.

Minor Requirements: The supporting minor consists of 20 units in not more than two fields, except that a Fine Arts minor may consist of 20 units taken in drama, music and speech.

FRESHMAN YEAR	Units per semester	
Art 3a-3b (Design I)	2	2
Art 6a-6b (Drawing); or Art 7a-7b (Survey of World Art)	2-3	2-3
English 1a-1b (Composition)	3	3
Foreign Language	4	4
Social Science	3	3
Physical Education; and for men, Military Science 1a-1b	1-2	1-2
Total	15-17	15-17

SOPHOMORE YEAR	Units per semester	
Art Electives	3	3
Science	4	4
Humanities	4	4
Foreign Language	4	4
Physical Education (women); Military Science (men)	1	1
Total	16	16

Junior and senior years are used to complete the group requirements for the Bachelor of Arts in Art degree (see page 203), the major, minor and electives.

College of Mines

CHEMICAL ENGINEERING

Add footnote at end of senior year section (page 235):

“Students majoring in Chemical Engineering may substitute Phys. 11 for C.E. 5 and Phys. 15 for E.E. 80.”

MINING AND METALLURGICAL ENGINEERING

Insert after senior year curriculum (page 241):

“Physics 11 may be substituted for C.E. 5, Physics 15 may be substituted for E.E. 80, and Physics 232a, b may be substituted for Physics 130a, b.”

Page 242, insert same material as above, at bottom of page, following senior year curriculum.

Pharmacy College

Page 245, in outline of second year, the first semester offering of “Chemistry 260a (Biochemistry) . . . 3” is to be replaced by “Pharm. 100 (Inorganic) . . . 3,” and in the second semester, “Pharm. 100 (Inorganic) . . . 3” is to be replaced by “Chem. 160 (Intro. to Biochem.) . . . 3.”

Page 245, in outline of the Fourth Year, reduce the units for Pharm. 110a and 110b to 3 each semester and add a new listing in first semester of “Pharm. 170a (Commercial Pharmacy) . . . 1” and in second semester of “Pharm. 170b (Commercial Pharmacy) . . . 1.”

The Graduate College

Page 246, to indicate that the degree of Doctor of Philosophy (Ph.D.) is to be offered in the fields of economics, history, and Spanish beginning in 1960-61, an asterisk (*) should precede the listings of economics and history under Social Sciences and Spanish under Humanities.

School of Military Science and Tactics (page 264).

Change the paragraph under the heading **ROTC Organization** to read: “The Cadet Corps consists of an Army ROTC Brigade and a Band, and an Air Force Wing and a Band.”

Physical Education for Men (page 266).

Name of Department changed to:

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION, AND RECREATION FOR MEN.

REVISIONS — COURSES OF INSTRUCTION

(Pages 277-440)

Accounting (pages 277-79).

31b. Delete.

32. Delete.

341. Change I to II and change prerequisite from 331b to: 331b or CR.

Agricultural Economics (pages 284-86).

201. Change II to I.

Agricultural Education (pages 284-86).

Add the new course:

330. The Role of Agricultural Extension Specialists (2) I. Boone
Organization, status, and duties of specialists in Agricultural Extension. Relationships of specialists to extension, teaching, and research personnel in the land-grant college system. The significance of major social and technological changes to extension specialists. Designed to assist the specialist as a leader in his field. Prerequisite, Extension experience and 16 credits in the student's area of specialization.

Agricultural Engineering (pages 286-87).

211. Change II to I.

Animal Pathology (page 289).

203. Delete alternate year indication. To be given every year.

Anthropology (pages 291-95).

1a-1b. Delete: Yr. At end of course description, add: Both 1a and 1b are offered each semester.

Architecture (pages 295-96).

10a-10b. Change: (1-2) to (2-2).

Art (pages 296-99).

4a-4b. Perspective (1-1), change to:

40. Perspective (2) I.

60a-60b. Change title and description to:

Layout and Lettering (2-2) Yr. Voris
Introductory study of the principles, techniques, and tools of advertising layout, construction, and lettering. 6L. Fee \$1.00 each semester.

265a-265b. Change to:

Commercial Design I (2-2) Yr. Voris
Advanced studies in visual design applied to commercial art, with emphasis upon the appropriate tools and techniques. 6L. P, 60b. Fee \$2.00 each semester.

266a-266b. Change title and description to:

Commercial Design II (2-2) Yr. Fabe
The practical and economical preparation of finished art work for newspaper, letterpress, and offset lithography. Stress upon the use of the mechanical, type-face specification, overlap for color separation, and paste-up. 6L. P, 265b. Fee \$2.00 each semester.

399. Change title to read "Seminar" and add:

A. History of Art (2-4) II. Quinn
B. Art (2) I, II. Andersen

Astronomy (page 299-300).

First paragraph, beginning "The Major": add "210" at end of first sentence to read:

Physics 210, 220.

Delete paragraph in italics preceding listing of courses.

101. Delete.

110. Change number to 210; change I to II; change prerequisite to Math. 79b, Physics 2b or 20, and 6 units of Astronomy. Delete sentence: "This is the normal second course for students who have completed a year of astronomy."

120. Delete alternate year indication. To be given every year.

202, 203. Delete: "(See note above)."

205. Change course description to:

The two- and three-body problems in the solar system; theory of perturbations. P, Math. 180, Physics 210.

Add the new courses:

212. Photoelectric photometry (2) IFitch
Electronic circuitry for photoelectric photometers; instrumentation; atmospheric extinction; observational techniques. P, Astron. 202, Math. 79b, and Physics 215b.

215. The Galaxies (2) ICarpenter
P, Astron. 1b or 100b, Math. 79b, Physics 20.

230. Topics in Astrophysics (2) I, II ...Staff and Visiting Astronomers
In any given semester three or four topics will be chosen from a list about like the one below. Prerequisites will vary according to subject matter but will include as a minimum a year of calculus and physics through optics. Some topics will require differential equations, atomic physics, spectroscopy, and a year of astronomy. The course may ordinarily be repeated for credit.

- | | |
|---|---------------------------------|
| a. The solar spectrum | e. Spectral classification |
| b. Eclipsing stars | f. Cosmic abundance of elements |
| c. Stellar magnetic fields | g. Stellar evolution |
| d. Variable stars and the cosmic distance scale | |

249. Delete.

260. Add to prerequisite: Physics 130b or 232b.

Add the new course:

310. The Hertzsprung-Russell Diagram (3) IJohnson
Determination of the physical parameters of stars; classification; population types; the solar neighborhood; star clusters; some aspects of stellar evolution. P, 1b or 100b, 210; Math. 180; Physics 220, 232b.

325. The Interstellar Medium (3) IIJohnson
P, Astron. 1b or 100b, Math. 180, Physics 130b or 232b.

335. Stellar Interiors (3) IIWeymann
P, Math. 180, Physics 130b or 232b, 225.

340a-340b. Delete.

345. Stellar Atmospheres (3) IWeymann
P, Astron. 1b or 100b, Math. 180, Physics 130b or 232b, and
225.

Bacteriology (pages 301-2).

Add the new course:

217a-217b. Applied Microbiology (4-4) Yr.Evenson

A study of some of the micro-organisms that are important in
agriculture and in the dairy, food, fermentation, and textile indus-
tries. 2R, 6L. P, 117b. Fee \$10.00.

377. Change 1959-60 to 1960-61.

387. Delete 1959-60. To be offered every year.

Botany (pages 303-4).

303. Delete \$5.00 fee.

Add new course:

336. Advanced Ecology (2) IILowe, Turner, Martin
(Identical with Zoology 336 and Geochronology 336.)

Business Administration (pages 305-9).

It will be noted that a number of courses formerly taught under the Department of Business Administration are hereafter to be taught by the new Department of Finance, Insurance, and Real Estate.

80. Change to: Finance, Insurance, and Real Estate 180.

81. Change to: Finance, Insurance, and Real Estate 181.

151. Change to: Finance, Insurance, and Real Estate 151.

203. Delete.

241. Change to: Finance, Insurance, and Real Estate 241.

242. Change to: Finance, Insurance, and Real Estate 242.

250. Change to: Finance, Insurance, and Real Estate 250.

251. Change to: Finance, Insurance, and Real Estate 351.

255. Delete.

257. Change to: Finance, Insurance, and Real Estate 257.

258. Change to: Finance, Insurance, and Real Estate 258.

279. Change to:

279a-279b. Urban Planning and Land Utilization

(3-3) Yr.Wilson, Denton

279a: History and objectives of land planning. Problems of planning—social, political, financial, the economics of city development. General plans.

279b. Land usage, zoning, and metropolitan planning. Urban renewal. Statutory regulations, court procedures, appeals. Eight field trips. Fee \$3.00.

279a is not prerequisite to 279b. (Identical with Pub. Adm. 279a, b).

281. Change to: Finance, Insurance, and Real Estate 281. Change P, to 220a or CR.

Add II to title, so it will read: "Real Estate Law (3) I, IIDenton."

- 282. Change to: Finance, Insurance, and Real Estate 282. Change P, to BA 180 or 181.
- 283. Change to: Finance, Insurance, and Real Estate 283.
- 301. Delete.
- 349. Change to: Finance, Insurance, and Real Estate 349.
- 353. Change to: Finance, Insurance, and Real Estate 353.
- 356. Delete.
- 358. Delete.
- 372. Change title and description to:
 - 372. Advanced Problems in Production Management (3) II.....Gill
The application of scientific management in the control of industrial operations presented by the case method. Reports and outside readings.
- 374. Change number, title, and description to:
 - 276. Techniques of Supervision and Executive Control (3) I, II...Gill
Functions and responsibilities of the supervisor. A practical analysis of successful supervisory behavior in dealing with men and women. P, 272.
- 393. Change number, title, and description to:
 - 293. Business-Economic Investigations and Reports (2) I, II.....Staff
Methods of locating, classifying, and evaluating information; preparation, form, and mechanics of writing a report on the findings. The report must be prepared in accordance with the manual published by the University of Arizona bookstore. Open to seniors graduating within two semesters.

Chemical Engineering (pages 309-11).

- 350. Change II to I.
- 371. Change II to I.

Civil Engineering (pages 315-19).

Add the new courses:

- 262. Highway Engineering Laboratory (1) I, IIHall
Laboratory tests on asphalts and aggregates to determine suitability for use in paving mixtures. Design of asphaltic mixtures, including proportioning and preparation of specimens for tests to determine stability and durability. P, 260 or CR. Fee \$5.00.
- 399. Seminar (1-3) I, IIStaff

Drama (pages 323-25).

Paragraph 3 of printed material preceding courses: "The teaching minor: 16 units . . ." should be changed to read: The teaching minor: 18 units . . ."

- 25. Change title to: Acting I (2) I, IIMarroney

Economics (pages 325-27).

Revise paragraph beginning "Graduate Program:" to:

Graduate Program: The Department of Economics offers the Master of Arts degree and the Doctor of Philosophy Degree. For details, see the Graduate Catalogue.

245. Add after description: (Identical with Finance, Insurance, and Real Estate 245).

Add the new course:

250. Macroeconomics (3) I, IIStaff
The national income approach to economic analysis. P, 248.

306. Change I to II.

309. Change to:

Evolution of the Labor Movement (3) ILeonard
A critical and intensive survey of the development of the American labor movement. Individual readings and reports will be required.

Add the new course:

347. Fiscal Policy (2) IMarshall
Critical appraisal of the tools and problems of fiscal policy, including debt management policy, treated in combination with monetary policy; direct wage and price controls; economic stabilization as an objective of national policy. P, 245, 248.

391. Change to read:

391a-391b. Advanced Economic Theory (2-2) Yr.Boland
Production and exchange theory. Classical and general equilibrium analysis. Partial analysis: Marshall and the Cambridge school. Real cost analysis and the choice criterion: Hicks and the London school. Profit maximization vs. risk-evasion; game theory. P, graduate standing.

392. Delete.

399. Change to:

399. Seminar (1-3) I, IIStaff
Carried in the following fields:
A. Modern EconomicsBoland
B. Labor EconomicsLeonard, Young
C. Public Utilities and TransportationGifford
D. Public FinanceHudson
E. Money and BankingBrown, Fink, Marshall

Add the new course:

420. Dissertation (1-9) I, II.

Education (pages 328-34).

Add the new courses:

281. Principles of Rehabilitation (3) IIStaff
Principles underlying rehabilitation programs and interdisciplinary relationships of agencies engaged in rehabilitation services.

P, Psych. 1a and Psych. 1b, or Educ. 151 and 12 hours in one or more of the following: Psychology, Sociology, Education, Nursing, Home Economics, or Anthropology.

- 282. Organization, Structure, and Functions of Rehabilitation Agencies (3) IISmith
- 283. Case Practices and Procedures in Rehabilitation and Related Agency Services (3) I, IIHaberland
Intensive study of case procedures and techniques and their application to the functions of rehabilitation and related agencies.
- 297. Educational Sociology (2) IIHambenne
The school as a social institution. The social functions of the school. The social processes, socialization, and stratification in education. The informal and formal systems, and the bureaucratic structure of the school. P, Soc. 1 or 2.
- 353. Advanced Educational Psychology: Creativity (3) IIRhodes
The concept of creativity from a variety of approaches. Criteria for recognizing the process of creativity. Teaching so as to cultivate creativity.

Finance, Insurance and Real Estate (a new department)

Professor Chace (Head of Department), Strickler
Associate Professors Denton, Kirk, Roos
Assistant Professor Hooper
Lecturers Monroe, O'Neill

Undergraduate majors in the College of Business and Public Administration in finance, insurance, and real estate are described on pages 166, 167, and 169, respectively.

The Graduate College offers the degree Master of Science in finance. See the description of the M.S. degree in the Graduate College announcement.

The following courses, most of which are carried in the biennial catalogue under other departments, will hereafter be designated as Finance, Insurance and Real Estate.

- 140. Consumer Finance (3) I, IIO'Neill
History, scope, operation, and regulations of the several types of financial institutions providing financing for consumers, not including real estate financing. Emphasis on managerial and competitive problems. P, Econ. 1b or 2b. (A new course.)
- 151. Insurance Principles and Practices (formerly BA 151).
- 180. Fundamentals of Real Estate (formerly BA 80).
- 181. Real Estate Practice (3) I, IIChace
Organization and conduct of real estate brokerage, management of property, and salesmanship as practical aspects of the real estate business (formerly BA 81).

- 241. Business Finance (formerly BA 241).
- 242. Investments (formerly BA 242).
- 245. Public Finance (3) I, IIHudson
(Identical with Econ. 245.)
- 250. Life Insurance (formerly BA 250).
- 254a-254b. (formerly BA 254) is changed to:
 - 254a-254b. Employee Security Programs (2-2)McCoy, Roos
 - 254a. Social insurance; economic and social background of group insurance; analysis of the Federal Social Security Act and state temporary disability laws; supplemental unemployment compensation; employee medical plans; proposals for compulsory health insurance.
 - 254b. Pension plans; group insurance. (254a is not prerequisite to 254b.)
P, Econ. 1b or 2b, Acctg. 1b.
- 257. Property Insurance (formerly BA 257) (3) IRoos
Various fire and allied lines; policy provisions and forms, their interpretation, application, and rating. P, 151.
- 258. Casualty Insurance (formerly BA 258) (3) IIRoos
Various casualty contracts, their interpretation, application, and rating. P, 257.
- 281. Real Estate Law (formerly BA 281) (3) I, IIDenton
The principal areas of the law affecting real estate. P, 220a or CR.
- 282. Real Estate Appraisals (formerly BA 282).
- 283. Institutional Investment and Lending Policies (formerly BA 283).
- 349. Bank Organization and Management (formerly BA 349).
- 351. Advanced Life Insurance (3) IIRoos
Application of life insurance to business needs, and introduction to basic principles of estate planning from the point of view of life insurance. P, 250. (Formerly BA 251.)
- 353. Advanced Property and Casualty Insurance (3) IIRoos
Analysis of current trends and problems in the property and casualty insurance field. P, 257 and 258. (Formerly BA 353.)
- 399. Seminar (2-4) I, IIStaff

INDIVIDUAL STUDIES

The department makes available to qualified students opportunity to work individually through the following:

- 196. Independent Study (2-4) I, II
- 198a-198b. Honors (2-2) Yr.
- 299. Special Problems (1-5) I, II
- 400. Research (2-4) I, II
- 410. Thesis (4) I, II Maximum total credit permitted, 4 units.

Geochronology (pages 345-47).

Add the new course:

336. Advanced Ecology (2) IILowe, Turner, Martin
(Identical with Botany 336 and Zoology 336.)

Geology (pages 347-52).

Add the new course:

7. Introduction to Crystallography and
Mineralogy (3) I, IIAnthony, McCullough
Introduction to the study of morphological crystallography;
recognition of selected minerals in hand specimen; relation of prop-
erties of minerals to their internal structures; mineral genesis. 2R,
3L. P, Chem. 2a-2b. Fee, \$4. Deposit, \$4. (Open only to majors
in metallurgical engineering. Classes meet at same time as Geol. 9,
but student does not attend Friday lecture, and attends only one
laboratory session per week.)

8. Change title and description to:

- Introduction to Crystallography and
Mineralogy (4) I, IIAnthony, McCullough
Introduction to the study of morphological crystallography;
recognition of selected minerals in hand specimen; relation of prop-
erties of minerals to their internal structures; mineral genesis. 2R,
6L. P, Chem. 2a-2b. Fee, \$4. Deposit, \$5. (Open only to majors
in mining engineering. Classes meet at same time as Geology 9,
but student does not attend Friday lecture or Wednesday labora-
tory.)

9. Change to:

- Introduction to Crystallography and
Mineralogy (6) I, IIAnthony, McCullough
Introduction to the study of morphological crystallography;
recognition of selected minerals in hand specimen; relation of prop-
erties of minerals to their internal structures; mineral genesis. 3R,
9L. P, Chem. 2a-2b. Fee, \$5. Deposit, \$5.

Add the new course:

16. Hand Specimen Petrology (1) I, IIAnthony, McCullough
Characteristics of the more common rocks and their field iden-
tification. 3L. P, 8 or 9. Fee, \$2.

103. Change I to II.

221. Change to:

- Intermediate Structural Geology (3) IMayo
A continuation of Geol. 121, with emphasis on the metamorphic and
igneous rocks, the larger structures of the earth, and tectonic theories.
Practice in three dimensional visualization with the aid of descriptive
geometry. 2R, 3L, which include 2 field trips. P, 16, 121. Fee, \$4.

Add the new course:

223. Petroleum Exploration and Production (3) IPye
Guides to the occurrence of petroleum; surface, subsurface,

geophysical and geochemical exploration methods; exploratory drilling and formation testing; bore-hole logging techniques; well completion methods; practical problems. P, 222 or CR. Fee, \$4. (Identical with Min. Engr. 223.)

Add the new course:

224. Oil Field Evaluation and Development (3) IIPye
Core analysis and quantitative bore-hole log interpretation; oil and gas pool development and management; primary and secondary recovery; property evaluation; leases, minerals and royalty; evaluation problems. P, 222. Fee, \$4. (Identical with Min. Engr. 224.)

228. Change title and description to read:

Ore Finding (3) I, IILacy, Mitcham
Guides, techniques, and philosophies leading to location and delimitation of ore bodies. Two field trips. P, 103. Fee, \$4.

238. Delete: Prerequisite 222.

308. Change to:

Advanced Structural Geology (3) IIMayo
A consideration of physical principles applied to basement tectonics and its influence on deformations in the cover. Three dimensional representation and review of fault problems. 2R, 3L, which include 2 field trips. P, 221; 313 is recommended. Fee, \$4.

312. Change to:

Sedimentary Petrography (3) ISchreiber
Rock weathering; composition, texture, and classification of sedimentary rocks in hand specimens, detrital grains, and thin sections. 1R, 6L, which include 2 field trips. P, 312, CR. Math. 191. Fee, \$5.

314. Change 2R, 3L to 1R, 6L.

History (pages 359-62).

In the introductory section, add: The department also offers the Doctor of Philosophy degree.

Add the new courses:

259a-259b. The Expansion of Europe (3-3) Yr.Silberman
Historical analysis of European exploration and colonization and their relation to the rise of the modern state system and capitalism; comparison of experiences in America and Africa with those in Asia. 259a: to the industrial revolution. 259b: from the industrial revolution.

420. Dissertation (1-9) I, II

Marketing (pages 371-72).

165. Delete.

Add the new course:

165a-165b. Advertising Media—Layout, Design, Color (3-3) Yr..Cabat
Workshop in advertising in all current media; actual practice, criticism, comparison; field trips, designed to introduce students,

including those currently employed, to present-day advertising practices.

266. Change to:

Problems in Advertising Strategy (2) II 1960-61Staff
Problems and cases in management of advertising. P, 265.

Add the new course:

271. Marketing by Manufacturers (3) IIDavis
Organization and management of the marketing function beginning with manufacturers, through wholesalers, or dealers, or direct to customers. Multi-product problems, profit determination, product planning and change. P, 261.

356. Delete.

Mathematics (pages 373-77).

181. Delete alternate year indication. To be given each semester.

201. Add: I. To be given each semester.

202. Add: I. To be given each semester.

230. Add: I. To be given each semester.

350a-350b. Delete alternate year indication. To be given every year.

Mechanical Engineering (pages 377-80).

Add the new courses:

131. Applied Fluid Mechanics (3) IStaff
Fundamentals of fluid mechanics covering properties of fluids, fluid statics and dynamics, concepts, and definitions. This course is not available for credit for students in the College of Engineering. P, Phys. 11 or CE 5, Math. 79b.

242. Intermediate Heat Transfer (3) IUlrich
Additional studies in heat transfer including boundary value, unsteady state conduction, methods for determining convection coefficients and further radiation problems. Current topics. P, 142.

274. Delete.

275. Delete.

399. Seminar (1-3) I, IIH. D. Christensen
Graduate Seminar in various fields of study in Aero-Space and Mechanical Engineering. P, graduate standing.

Mining and Metallurgical Engineering (pages 383-88).

METALLURGICAL ENGINEERING

116. Delete.

131. Change number, title, description to:

231. Fundamentals of Materials for Engineers
(3) I, IIMurphy, Anthony
The scientific principles which underlie and relate the behavior

and properties of materials to their engineering applications. P, EE 80 or Physics 15, Chem. 2b, CE 6.

- 131L. Change number to 231L. Change prerequisites to: P, 231 or CR.
132. Change number, title, and description to:
232. Physical Metallurgy (3) IIMurphy
Study of the structure of metals and correlation with their observed behavior in alloying, deformation, heat treatment, and related metallurgical phenomena. P, 231.
- 132L. Change number to 232L. Change prerequisites to: P, 231L and 232 or CR.
212. Change to:
- Extractive Metallurgy I (4) IIMorris
Unit processes employed in extractive metallurgy. 3R, 3L. P, 221. One field trip to a smelter is required. Fee, \$8.
221. Change to:
- Metallurgical Thermodynamics I (3) IMorris
The fundamental principles of thermodynamics, with emphasis upon the operation of these principles in pyrometallurgical processes are covered. Combustion of fuels, thermochemistry, thermophysics, entropy, free energy and thermodynamic equilibrium are the main subjects considered. 2R, 3L. P, 61, Math. 79b.
228. Change in number, title, description. See Met. Engr. 310a below.
231. Change number to 236. Change prerequisite to: P, 232.
232. Change to read as follows:
233. Advanced Physical Metallurgy (2) IMurphy
Supplementary and advanced treatment of topics introduced in 231 and 232. 1R, 3L. P, 232, 232L. Fee, \$6.
- Add the new course:
234. Metallurgy of Nuclear Materials (2) IIMurphy
Special requirements and behavior of nuclear materials, their position in the overall field of metallurgy and the current status of their development. P, 232.
235. Change prerequisites to: P, 232 and 232L.
238. Change to:
- Forming and Fabrication of Metals (3) IIWalker
The principles of melting, casting, rolling, shaping, and joining of metals and alloys. 2R, 3L. P, 232 and 232L. Fee, \$6.
- 310a. Change from 228 and to:
- Mineral Dressing Plant Design (2) IRoseveare, Stubbs
The experimental determination of a flowsheet required to process a mineral deposit. 1R, 3L. P, 215. Fee, \$8.
- Add the new course:
- 310b. Mineral Dressing Plant Design (2) IIRoseveare, Stubbs
This course is concerned with the economic study of the Mineral Dressing flowsheet developed in Met. Engr. 310a. 1R, 3L. P, 310a.

331. Change prerequisites to: P, 232, Math. 180, Phys. 232b.
332. Change to:
333. Imperfections in Metals(3) IDemer
 The nature and effect of imperfections in the crystal structures of metals; theories concerning lattice vacancies and dislocations; correlation with deformation, diffusion, and other phenomena. 3R. P, 232, Math. 180. Fee, \$2, including one field trip.
333. Change to:
332. X-ray Diffraction in Metals (3) IIDemer
 Uses of x-rays in determining phase diagrams, preferred orientation, residual stress, and related behavior in metals and alloys. 2R, 3L. P, Math. 180, Met. Engr. 232, Geol. 225. Fee, \$6.
334. Change prerequisite to: P, 233.
336. Change number to 337. Change semester from II to I. Change instructor to Demer. Change prerequisites to read: P, 232, Math. 180.
338. Change units from 2 to 3. Change instructor from Staff to Demer. Change prerequisites to: P, 232, Math. 180, Phys. 232b.

MINING ENGINEERING

Add the new courses:

223. Petroleum Exploration and Production (3) IPye
 (Identical with Geology 223.)
224. Oil Field Evaluation and Development (3) IIPye
 (Identical with Geology 224.)

Music (pages 388-93).

Add the new courses:

101. Studies in Music Literature (3) IFruchtman
 An introduction to music literature for the nonmusic major who desires broader cultural background or additional study in music to supplement other professional training.
206. Music of the Americas (3) IJohnson
 An historical survey of the music of North and South America.

Nuclear Engineering (pages 393-94).

210. Delete.

211. Delete.

Add the new courses:

344. Advanced Reactor Theory (3) I, IIChapman
 This course covers techniques for analysis in neutron chain reactor physics. It includes application of Monte Carlo techniques, neutron transport theory, perturbation theory, multi-group calculations and machine computations. P, 340.

350. Delete.

352. Delete.

Add the new courses:

382. Nuclear Instrumentation Systems (3) I, IIWilde
 A study of electronic techniques peculiar to nuclear instrumentation, nuclear instrumentation systems, handling of nuclear data, and statistical design and analysis of experiments. P, NE 280.

384. Simulation and Control of Nuclear Systems (3) I, IIWeaver
Nuclear reactor kinetics, stability, steady state and transient analysis techniques, temperature effects, analog and digital methods of analysis of nuclear systems. P, 240, 280.
390. Fusion Reactor Theory (3) I, IIKeller
This course introduces the important theories of containing, heating, and randomizing the motion of ions making up a high temperature and high density plasma. P, 240.
392. Fusion Reactor Theory II (3) I, IIKeller
Continuation of NE 390 to include topics of advanced plasma dynamics, magnetohydrodynamics as derived from Boltzmann Transport Theory, waves in a plasma bremsstrahlung and cyclotron radiation from a plasma, and plasma diagnosis.

Oriental Studies (pages 397-99).

Add the new course:

- 121a-121b. Intermediate Japanese (4-4) Yr.Staff
Advanced grammar and reading with an introduction to literary Japanese. P, 120b or equivalent.

Pharmacy (pages 399-402).

100. Change II to I.

110a-110b. Reduce unit value from (4-4) to (3-3). Delete second sentence of description and change arrangement of class meeting to 2R, 3L.

Add the new course:

- 170a-170b. Commercial Pharmacy (1-1) Yr.Simonian
A laboratory study of New and Nonofficial Drugs, products of recognized manufacturers, and problems involved in their ethical distribution. 3L. P, 106, 207b, 221b.

400. Add \$10 fee.

Philosophy and Psychology (pages 402-6).

PHILOSOPHY

220. Change I to II.

PSYCHOLOGY

22. Delete.

23. Change II to I.

Add the new course:

40. The Normal Personality (3) IIKauffman
The practical implications of psychology for normal personality growth and development. P, 1a-1b.

103. Change II to I.

310. Delete.

Add the new courses:

347. Theory of Psychotherapy (3) IMeadow
Analysis of the major theoretical approaches to the prevention and therapy of behavioral disorders. Individual, group, and community approaches will be studied. P, permission of instructor.

348. Neurological and Psychological Behavioral

Disorders (3) IBeaton, Estes

Theory of neurological and psychological behavioral disorders. The course will include several clinical demonstrations of cases. P, permission of instructor.

395. Increase unit value from (2) to (3).

Physical Education for Men (pages 407-9).

(Note: Effective September 1960 the Department of Athletics and Physical Education for Men will be called the Department of Health, Physical Education and Recreation.)

Revise introductory material (page 407) to:

HEALTH

The Major: 32 units including Health 42, 264, 265, 266, 271, 272; Bacteriology 157; Chemistry lab; Education 250; Home Economics 2; Physical Education 70 or 170; Sociology 10 and Zoology 57.

The Minor: 18 units including Health 42, 71, 264, 268, 271; Bacteriology 157, and Home Economics 2.

PHYSICAL EDUCATION

The Major: A minimum of 24 units in Physical Education courses numbered 55 or above and including 55, 56a-b, 162, 190, 285, 287, 297; six units selected from courses 191, 195, 196, 198; and including Mathematics 11 or 20, and Zoology courses 1a, 40 or 41 and 57.

The Minor: 18 units including 56a-b, 66a-b, 70 or 162, 282; six units selected from courses 191, 195, 196, 198 and additional courses chosen with the advice of the major professor.

RECREATION

The Major: A minimum of 24 units in Recreation and related subjects including: Art 2, Drama 111a-b, Music 271, Speech 2, Recreation 171, 275, 283, and including Mathematics 11 or 20, and additional upper division courses chosen with the advice of the major professor.

The Minor: 18 units including Art 2, Drama 111a-b, Music 271, Recreation 171, 275 and additional units selected with the advice of the major professor.

Delete short one line paragraph, third from top, making reference to Health Education major and minor.

Fifth paragraph: change course fee from \$2.00 to \$2.50, each semester.

Delete short 8th and 9th paragraphs.

Courses 39, and 40 are being deleted from the catalogue, therefore drop them from the listings in the 10th paragraph.

- 21. Delete.
- 22. Delete.
- 23. Delete.
- 24. Delete.
- 25. Delete.
- 26. Delete.
- 27. Delete.
- 29. Delete.
- 30. Delete.
- 31. Delete.
- 32. Delete.

- 39, 40. Delete.
55. Change title to "Orientation in Health, Physical Education, and Recreation."
- 56a-56b. Change unit value from (2-2) to (1-1).
62. Delete.
- 66a-66b. Change unit value from (2-2) to (1-1).
69. Delete.
- 160a-160b. Change unit value from (3-3) to (2-2).
162. Change title to "Life Saving and Aquatic Programs."
192. Delete.
196. Change unit value from (3) to (2).
282. Change prerequisites to: 6 units P.E., 6 units in Education.
287. Change prerequisites to: 9 units Physical Education, Zoology 1, 40, 57.
293. Change unit value from (3) to (2).
- Add the new course:
294. Foundations of Physical Fitness (2) IIRoby
 Scientific basis for physical fitness. Analysis of fitness programs, and of fitness tests, literature, and research. P, Zoology 57, 6 units in Physical Education, and 6 units in Education.
297. Change unit value from (3) to (2).
- Page 357-358. Delete "Health Education." Courses to be listed under "HEALTH" in "Health, Physical Education, and Recreation."

Physical Education for Women (pages 410-13).

Add the new courses:

- 118a-h. Advanced Swimming and Diving (1) I, IIStaff
 Perfection of fundamental swimming and diving techniques.
266. Scientific Foundations of Physical Education (3) IIStaff
 An integration of subject matter concerned with understanding of the mechanics and physiology of human motion. Application of knowledge to problems of physical growth and development, motor learning, and human performance. 2R, 1L. P, Zoo. 1a, 40, 57 and Psych. 1a. Open to men and women.
295. Current Trends and Problems in Physical Education (3) II
 Designed to aid the mature student in identifying, analyzing, and evaluating recent developments in physical education and basic problems facing the profession. Open to men and women. P, Ed. 139, Ed. 197n, and P.E. 276.

Physics (pages 413-15).

- 290a-290b. Add fee of \$5 for each semester.
- 291a-291b. Add fee of \$5 for each semester.

Public Administration (pages 420-21).

245. Change to read:
 245a-245b. Correctional Counseling (2-2) Yr.Rowen
 The basic concepts and principles of counseling, interviewing, and case work as carried on in correctional settings.
266. Change title of course to read:
 Police and Law Enforcement Administration (3) IIShoultz

Add the new courses:

- 268. Criminal Investigation and Report Preparation (3) I, II ..Shoulds
Criminal investigation and crime detection methods, techniques and procedures, police record systems, standards and objectives of report preparation, use of reports by non-police agencies. P, 265, 266.
- 269. Traffic Administration (3) IIGarmire
A study of highway traffic administration and accident prevention, and the responsibility of law enforcement agencies in traffic administration. P, 266.
- 270. Police Problems and Practices (3) I, IIShoulds
Critical review and analysis of major substantive and administrative police problems. Interrelationships with other governmental and private agencies will be stressed. P, 266.
- 279. Change to:
 - 279a-279b. Urban Planning and Land Utilization
(3-3) Yr.Wilson, Denton
(Identical with B.A. 279a-b.)
 - 337a-b. Delete 337b and change to:
 - 337. Fiscal and Budgetary Administration of Public Agencies (2) IBingham
Analysis of the internal fiscal operation and the budgetary cycle of public and non-profit agencies. Individual reports will be assigned.

Romance Languages (pages 422-25).

FRENCH

- 1a-1b. Elementary French, add fee of \$1.00 each semester.
- 3a-3b. Intermediate French, add fee of \$1.00 each semester.

SPANISH

Add: Beginning in 1960-61, the department will offer the Ph.D. degree in Spanish.

- 1a-1b. Elementary Spanish, add fee of \$1.00 each semester.
- 3a-3b. Intermediate Spanish, add fee of \$1.00 each semester.

Add the new courses:

- 211a-211b. Spanish Civilization (3-3)Chambers
Conducted in Spanish. 211a is not prerequisite to 211b. P, 104a-104b.
- 301a-301b. Bibliography and Paleography (2-2) Yr.Rosaldo
Bibliographical methods and principal bibliographies will be discussed in 301a. Reading in Spanish manuscripts of different types will be taken up in 301b. Required of all doctoral candidates.
- 420. Dissertation (1-9) I, II.

Secretarial Studies (pages 426-27).

Add the new course:

- Briefhand II (2)Kidwell
Fundamentals of rapid notetaking using abbreviated longhand. Designed for personal use or for minimum employment dictation standards.

- 273. Change title and description to:
Communication Techniques and Procedures in
Office Administration (2) I, IIStaff

External and internal written, oral, and mechanical office communication; the composition of business manuals, office directives, and the development of procedures; the application of electronic equipment, its cost and necessity in office automation. P, Sec. Stud. 272 or 9 units of secretarial studies or business administration courses.

280. Change course to:

280a-280b. Executive Secretarial Training (3-3) Yr. Toland

280a: Effective secretarial procedures in handling duties and responsibilities in an office with emphasis upon preparation for advancement to executive positions. Class participation, lectures, and outside assignments. P, ability to take dictation at 100 words per minute.

280b: Advanced dictation and transcription with emphasis on high goals of achievement. P, 174b or ability to take dictation at 100 words per minute for five minutes. Fee, \$5.

Sociology (pages 427-30).

260a-260b. Re-number and change to:

60. Methods of Social Research (4) I, II Lawton

Introduction to theories and methods of research in the social sciences. Nature of science and scientific methods; exploratory surveys and investigations; formulation of problems; role of theory in research; acquisition, interpretation, evaluation and analysis of data; analytical inference; historiography; interviewing; questionnaire construction. Required for advanced courses in sociology. P, introductory course in a social science.

316. Delete.

341. Delete.

387. Delete.

Add the new course:

399. Seminar (1-3) I, II Staff

Carried in the following fields:

A. Advanced Sociological Theories

B. Theory of Juvenile Delinquency

C. Theory of Criminology

D. Methodology

E. Community Research Problems

F. Differential Sociological Problems

Speech (pages 430-33).

Add the new course:

287. Practicum in Public Speech Therapy (3) I, II Shogren

Public school experience in speech and hearing therapy. Program to be conducted in concert with Amphitheatre Public Schools. P, Senior standing required.

Zoology (pages 436-40).

212. Change II to I.

219. Add: 1R, 3L.

243. Change credit value to 4 units from 5 and change 3R to 2R.

257. Change II to I.

257R. Change II to I.

336. Advanced Ecology (2) II. 1960-61 Lowe, Turner, Martin

Environmental analysis, productivity theory, population fluctuations, paleoecology and related subjects. P, Bot. 66, or Zoo. 238, or graduate standing in biological science. (Identical with Botany 336 and Geochronology 336).