UPPER DIVISION REQUIREMENTS IN LITERATURE I

French: 109A–109B (6); 112A–B (4); and one of the courses: 113A, 113B, 114A, 114B, 115A, 115B, 120A, 120B, 121A

German: 12 units chosen from the following: German 104A (6); 109A–B (6); 110A–B (2); 111A–B (4); 118A–B (6).

Italian: 103A–B (6); 109A–B (6).

Spanish: 107A–B (6); plus 6 units to be selected from the following: 103A–B (6); 105A–B (4); 110A–B (4).

Slavic: 103A–B (6); 104A–B (4); 199 (2). Recommended electives: Slavic 130, 131; History 149A–149B.

MATHEMATICS

Departmental Major. Adviser: Mr. IRWIN.

Preparation for the Major. Advisers: Mr. FOSTER, Mr. WONG. Before taking the upper division courses for the major, the student should have a basis of knowledge equivalent to courses C, E, 6, 8, 3A–3B, 4A–4B. It is desirable, therefore, that he should have completed in high school two years of algebra, plane and solid geometry, and trigonometry, in order to anticipate as much of this work as possible.

The Major.—In his 24 units of upper division work required for the major in mathematics, the student is supposed to acquire competence in algebra, analysis, and geometry. The courses designed for this purpose are 111A–111B, 112A–112B, 119A–119B.

Subject to this requirement of competence, and with the approval of the Adviser, the student is at liberty to take theoretical courses in physics, astronomy, or other sciences as part of his major in mathematics. Course 200 forms a desirable part of the program for senior students with facility for mathematics, as well as the courses listed in the upper division. Special attention is called to course 199.

MEDICAL SCIENCES

Candidates for the degree of A.B. in the College of Letters and Science who plan to pursue the five-year curriculum leading to the M.D. degree in the Medical School may reduce by one year the total time for attaining the two degrees, by offering the first year of the Medical School curriculum as the senior year of the College of Letters and Science. In order to do this the student should register as a premedical student on entering the College of Letters and Science. He should then fulfill the Junior Certificate requirements, comply with the requirements in American Institutions and Military Science, complete the premedical subjects required for admission to the Medical School, and attain full senior standing. Full senior standing for this purpose means the completion of at least 90 units toward the A.B. degree (at least 24 after receipt of the Junior Certificate), including at least 6 units of upper division courses (on the Letters and Science list) taken in the upper division.

A student who has attained full senior standing in the premedical curriculum has thereby compiled with the requirements for admission to the Medical School, and if he is admitted to the Medical School may register simultaneously as a senior in the College of Letters and Science. The curriculum of the first year of the Medical School will be accepted as the senior year (30

...ege of Letters and Science, and as fulfilling the major requirements of the A.B. degree.

...applicants admitted to the Medical School in any year is ...d selections are based on academic standing in the subjects of the premedical curriculum, particular emphasis being placed on the required subjects. It may therefore happen that a student who has completed the premedical curriculum and attained full senior standing in the College of Letters and Science is not admitted to the Medical School. In order to qualify for the A.B. degree, such a student must select some other major subject, and complete the requirements of its program and the other requirements for the degree. It may be impossible for such a student to complete his chosen major program in one year unless he has already partly fulfilled its requirements before entering the senior year. It is therefore desirable that each premedical student should plan his program with this contingency in mind, and undertake in his junior year the part of the major program of his alternative choice that will make it possible for him to complete the program for the A.B. degree in one year if he is not admitted to the Medical School. This can be done without in any way interfering with the completion of the premedical requirements.

An applicant for admission to the Medical School who in any year is unsuccessful in gaining admission to the School on account of an inferior scholarship record, may at once present a second application for admission, together with a detailed plan concerning studies to be undertaken in furtherance of his preparation for the work of the Medical School. If the plan receives the approval of the Committee on Admissions his name will be listed for admission the succeeding year, and his success in admission will depend on his scholarship rank as a member of the group of applicants for that year.

While it is virtually essential that a student register in the premedical curriculum if he wishes to proceed to the A.B. and M.D. degrees in the shortest possible time, such registration is not required for admission to the Medical School. Certain medical schools require an A.B. degree for admission, and the holder of an A.B. degree who has not been in the premedical curriculum may apply for admission to the University of California Medical School, provided he has completed work in the specific subjects required for admission. The minimum requirements in these subjects in terms of courses offered at Berkeley are: English 1B–1A, Chemistry 1A–1B, 5, 8; Physics 2A–2B, 3A–3B; Zoölogy 1A–1B, 100, 100D; 10 units of French or German. Psychology 165 or 168 is strongly recommended.

Beginning with the academic year 1935–36, all applicants for admission to the Medical School will be required to take the Medical Aptitude Test of the Association of American Medical Colleges. This examination will be given at Berkeley some time in December, 1935, for all students applying for admission to a medical school in 1936.

For further information concerning the Medical School see the annual Announcement of the Medical School.

PREMEDICAL CURRICULUM

Advisers: Mr. LARKEY, Mr. S. P. LUCIA, Mr. LEGGE, Mr. GREENBERG, Mr. BLUM, Mr. INMAN.

In order that entrance to the Medical School and attainment of the A.B. and M.D. degrees may not be delayed, the student should make sure that his program is arranged so as to satisfy the Junior Certificate requirements by the end

Berkeley 1935-36 [handwritten]

MATHEMATICS

BENJAMIN A. BERNSTEIN, Ph.D., Professor of Mathematics.
THOMAS BUCK, Ph.D., Professor of Mathematics.
GRIFFITH C. EVANS, Ph.D., Professor of Mathematics (Chairman of the Department).
DERRICK N. LEHMER, Ph.D., Professor of Mathematics.
JOHN H. McDONALD, Ph.D., Professor of Mathematics.
CHARLES A. NOBLE, Ph.D., Professor of Mathematics.
THOMAS M. PUTNAM, Ph.D., Professor of Mathematics.
MELLEN W. HASKELL, Ph.D., Professor of Mathematics, Emeritus.
FRANK IRWIN, Ph.D., Associate Professor of Mathematics.
PAULINE SPERRY, Ph.D., Associate Professor of Mathematics.
ELMER C. GOLDSWORTHY, Ph.D., Assistant Professor of Mathematics.
SOPHIA H. LEVY, Ph.D., Assistant Professor of Mathematics.
CHARLES B. MORREY, JR., Ph.D., Assistant Professor of Mathematics.
RAYMOND H. SCIOBERETI, Ph.D., Assistant Professor of Mathematics.
ARTHUR R. WILLIAMS, Ph.D., Assistant Professor of Mathematics.
BING C. WONG, Ph.D., Assistant Professor of Mathematics.
ALFRED L. FOSTER, Ph.D., Instructor in Mathematics.
RALPH D. JAMES, Ph.D., Instructor in Mathematics.
LEE H. SWINFORD, Ph.D., Instructor in Mathematics.

HANS LEWY, Ph.D., Lecturer in Mathematics.

Letters and Science List.—All undergraduate courses in mathematics except course 2 are included in the Letters and Science List of Courses. For regulations governing this list see page 98.

College of Letters and Science.—For preparation and requirements for the major, see page 86.

College of Commerce.—Freshmen in this college are required to take course 2.

Colleges of Engineering and Chemistry.—The minimum requirements for admission to the freshman course (3A–3B, or 3AB) are one and one-half years of high school algebra or Mathematics 1, plane geometry, and plane trigonometry. Prospective engineering students are urged, however, to add another half-year of algebra, and solid geometry, to this minimum preparation.

LOWER DIVISION COURSES

C. Trigonometry. (3) I and II. Tu Th S, 8, 9, 10.
    Mr. IRWIN, Miss SPERRY, Mr. SWINFORD and Teaching Assistants
    Prerequisite: plane geometry; one and one-half years of high school algebra, or course 1.
    Course C includes plane trigonometry and spherical right triangles.

E. Solid Geometry. (2) I and II. Tu Th, 9. Mr. SCIOBERETI, Mr. BERNSTEIN

1. Intermediate Algebra. (3) I and II. Tu Th S, 9, 10, 11.
    Mr. EVANS, Mr. SCIOBERETI, Miss SPERRY, and Teaching Assistants
    Prerequisite: one year of high school algebra. Not open to students who have received credit for two years of high school algebra, or course 3A or 8.
    Exponents and logarithms; progressions; quadratic equations; the binomial theorem.

2. Mathematics of Finance. (3) I and II. Tu Th S, 8, 9, 10.
    Mr. LEHMER, Mr. IRWIN, Miss LEVY, Mr. SCIOBERETI, Miss SPERRY, and Teaching Assistants
    Prerequisite: two years of high school algebra or course 1. Prescribed in the College of Commerce. Not open to students who have completed or are taking Mechanical Engineering 120.

3A–3B. Plane Analytic Geometry and Calculus. (3–3) Yr. Beginning either semester. M W F, 9, 10, 11; Tu Th S, 8, 9.
    Mr. BERNSTEIN, Mr. EVANS, Mr. FOSTER, Mr. GOLDSWORTHY, Mr. IRWIN, Mr. NOBLE, Mr. PUTNAM, Mr. SWINFORD, Mr. WILLIAMS, Mr. WONG
    Prerequisite: one and one-half years of high school algebra or course 1; plane geometry; plane trigonometry.
    Includes conic sections, general equations of the second degree, elements of calculus with applications to geometry and mechanics.

3AH–3BH. Plane Analytic Geometry and Calculus. (3–3) Yr. M W F, 9, 10.
    Mr. JAMES, Mr. MORREY
    Course substantially the same as 3A–3B, but designed for students with special facility for mathematics. Students admitted only by special permission.

3AB. Plane Analytic Geometry and Calculus. (6) II. Daily, 9. Mr. NOBLE
    Prerequisite: same as for 3A–3B. For freshmen entering in January only.

4A–4B. Solid Analytic Geometry and Calculus. (3–3) Yr. Beginning either semester. M W F, 8, 9, 10, 11.
    Mr. GOLDSWORTHY, Mr. JAMES, Mr. LEWY, Mr. IRWIN, Mr. MORREY, Mr. SCIOBERETI, Mr. SWINFORD, Mr. WILLIAMS
    Prerequisite: course 3A–3B
    Continues the development and application of the calculus; includes quadric surfaces, partial derivatives, multiple integrals and infinite series.

4AH–4BH. Solid Analytic Geometry and Calculus. (3–3) Yr. M W F, 9, 10.
    Mr. FOSTER, Mr. WONG
    Course substantially the same as 4A–4B, but designed for students with special facility for mathematics. Students admitted only by special permission.

4AB. Solid Analytic Geometry and Calculus. (6) II. Daily, 10. Mr. SCIOBERETI
    Prerequisite: same as for 4A–4B.

6. Introduction to Projective Geometry. (3) I and II. M W F, 1.
 Prerequisite: plane and solid geometry.   Mr. LEHMER, Miss SPERRY
 A synthetic treatment of projective geometry.

8. College Algebra. (3) I and II. Tu Th S, 10.   Mr. McDONALD, Mr. EVANS
 Prerequisite: two years of algebra in the high school (or course 1) and course 3A.
 Determinants, equations of third and fourth degrees, theory of equations.

11A–11B. Analytic Geometry and Calculus. (3–3) Yr. M W F, 8.
 Prerequisite: same as for 3A–3B.   Mr. LEHMER
 The elements of analytic geometry and of differential and integral calculus. Required of students in the curriculum in architecture.

14A–14B. Solid Analytic Geometry. Calculus and Differential Equations.
 (5–5) Yr. M Tu W Th F, 8, 10.   Mr. BUCK, Miss LEVY
 This course is a consolidation of courses 4A–4B and 110A–110B, and is prescribed for sophomores in mechanical and electrical engineering.

UPPER DIVISION COURSES

101A–101B. Elementary Mathematics for Advanced Students. (3–3) Yr. M W F, 10.
                                     Mr. NOBLE
 Prerequisite: courses 4A–4B, 6, 8.
 Selected topics in algebra and geometry with particular emphasis on historical development. Designed for students who are preparing to teach mathematics in secondary schools.

107. The Teaching of Mathematics in Secondary Schools. (2) I. M W, 3.
                                     Miss LEVY
 Critical inquiry into present day tendencies in the teaching of mathematics. For seniors and graduate students. This course will be accepted in partial satisfaction of the requirement in education for the certificate of completion of the teacher-training curriculum.

110A–110B. Advanced Calculus. (2–2) Yr. Tu Th, 8, 9.
               Mr. BUCK, Mr. GOLDSWORTHY, Mr. SCIOBERETI
 Prerequisite: course 4A–4B. Primarily for students in engineering.
 Conjugate functions, hyperbolic functions, Fourier series, differential equations.

111A–111B. Algebra. (3–3) Yr. M W F, 2.   Mr. McDONALD
 Beginning either semester.
 Prerequisite: courses 4A–4B, 8.
 General theory of algebraic equations, groups, linear dependence, matrices.

112A–112B. Introduction to Higher Geometry. (3–3) Yr. M W F, 11.
 Beginning either semester.   Mr. WILLIAMS
 Prerequisite: course 4A–4B, 8.
 Modern methods in analytic and synthetic geometry, higher plane curves, curves and surfaces in three dimensional space.

115. The Theory of Numbers. (3) I. M W F, 2.   Mr. LEHMER
 The classical theory of divisibility, congruences, quadratic residues, binary quadratic forms and continued fractions, with special application to the problem of factorization.

119A–119B. Advanced Calculus. (3–3) Yr. M W F, 8, 9.
                    Mr. LEWY, Mr. PUTNAM, Mr. SWINFORD
 Prerequisite: course 4A–4B.
 Differential equations and analysis. This course covers more systematically the subject matter of 110A–110B.

120A–120B. Probability and Statistics. (3–3) Yr. M W F, 8.   Mr. IRWIN
 Prerequisite: course 4A–4B.
 Elements of probability, the probability curve, correlation, random sampling, curve fitting, Pearson's and Charlier's curves.

121. Mathematical Introduction to Economics. (3) I. Tu Th S, 9. Mr. EVANS
 Prerequisite: course 4A–4B.
 Monopoly, competition, theory of dimension, taxation, utility, economic dynamics.

127A–127B. Foundations of Mathematics. (3–3) Yr. M W F, 9.
                                     Mr. BERNSTEIN
 Mathematical development of logic, and the logic of algebra and geometry.

199. Special Study for Advanced Undergraduates. (1–5) I and II.
                              Mr. NOBLE in charge
 Investigation of special problems under the direction of members of the department. In particular, this course offers an opportunity to students with facility for mathematics to anticipate some of the advanced courses by individual study.

GRADUATE COURSES

200A–200B. Theory of Functions of a Complex Variable. (3–3) Yr. Tu Th, S, 9.
                                     Mr. NOBLE
 Theories of Cauchy, Riemann, Weierstrass; analytic functions, Riemann surfaces; applications to doubly periodic functions, asymptotic integrals, elliptic integrals.
 Students with facility for mathematics may well take this course in the senior, undergraduate year.

210A–210B. Theory of Functions of a Real Variable. (3–3) Yr. M W F, 9.
                                     Mr. MORREY
 Point sets, Lebesque integral, additive functions of point sets, primitives; Fourier series, calculus of variations or other applications.

220A–220B. Differential Equations. (3–3) Yr. M W F, 10.   Mr. BUCK
 General theories, topics in ordinary and partial differential equations, boundary value problems. This course presupposes some knowledge of complex and real variable theory.

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*230A–230B. Algebraic Geometry. (3–3) Yr.

N- dimensional geometry, theory of varieties, line geometry, enumerative geometry, theory of correspondences, geometric transformations.

240A–240B. Differential Geometry. (3–3) Yr. Tu, 3; Th, 2–4.   Miss SPERRY

Fundamental properties of curves and surfaces, including some account of the algebra of vectors, the mapping of surfaces and the absolute geometry on a surface; projective differential geometry, Riemannian geometry, geometric transformations, or other applications.

250A–250B. Algebra. (3–3) Yr. M W F, 11.   Mr. FOSTER, Mr. IRWIN

Invariants, groups, Galois theory, fields, modern algebraic theory.

290. Seminars. (2–3) I and II.   The STAFF (Mr. EVANS in charge)

Topics in foundations of mathematics, theory of numbers, numerical calculation, analysis, geometry, and algebra, and in their applications, by means of lectures, and informal conferences with members of the staff; work based largely on original memoirs.

During 1935–36 there will be lecture seminars on the following subjects, in charge of the persons indicated:

(a) Foundations of Mathematics, Mr. BERNSTEIN and Mr. FOSTER; (b) Theory of Numbers, Mr. JAMES and Mr. LEHMER; (c) Complex Variable, Mr. McDONALD; (d) Numerical Calculation (second semester), Miss LEVY; (e) Algebraic Geometry, Mr. WONG; (f) Differential Equations of Quantum Theory, Mr. LEWY.

Mathematical Colloquium. Tu, 2.   The STAFF (Mr. WONG in charge)

Meetings for the presentation of original work by members of the staff and graduate students.

* Not to be given, 1935–36.

MECHANICAL ENGINEERING

CHARLES DERLETH, JR., C.E., LL.D., Professor of Civil Engineering and Dean of the College of Engineering.

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LLEWELLYN M. K. BOELTER, M.S., Professor of Mechanical Engineering.
[1]JOSEPH N. LeCONTE, M.M.E., Professor of Mechanical Engineering.
BENEDICT F. RABER, B.S., Professor of Mechanical Engineering.
BALDWIN M. WOODS, Ph.D., Professor of Mechanical Engineering (Chairman of the Department).
*JOHN E. YOUNGER, Ph.D., Professor of Mechanical Engineering.
FLOYD H. CHERRY, B.S., Associate Professor of Mechanical Engineering.
[2]HERBERT B. LANGILLE, A.B., Associate Professor of Mechanical Engineering.
MORROUGH P. O'BRIEN, B.S., Associate Professor of Mechanical Engineering.
CLYNE F. GARLAND, M.S., Assistant Professor of Mechanical Engineering.
EVERETT D. HOWE, M.S., Assistant Professor of Mechanical Engineering.
CARL J. VOGT, M.S., Assistant Professor of Mechanical Engineering.
NAIRNE F. WARD, M.M.E., Assistant Professor of Mechanical Engineering.
MORRIS ASIMOW, Ph.D., Instructor in Mechanical Engineering.
VIRGIL H. CHERRY, Ph.D., Instructor in Mechanical Engineering.
CHARLES R. DODSON, M.S., Instructor in Mechanical Engineering.
RICHARD G. FOLSOM, Ph.D., Instructor in Mechanical Engineering.
RUDOLF G. MINARIK, Ph.D., Instructor in Mechanical Engineering.
EMIL E. WEIBEL, Ph.D., Instructor in Mechanical Engineering.
CARL W. HORACK, Associate in Mechanical Engineering.

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Laboratory Fees.—Mechanical Engineering 2, 6, 106, fee for drafting machines (optional) $2 per semester for each course; 10A–10B, $10 per semester; 110, $5 per semester; 107, 131A–131B, $15 per semester. These fees cover the cost of materials and equipment used by the careful student. The cost of materials and equipment used in excess of the estimated amount will be charged to the individual student.

Engineering Service Fee $10.00 to $25.00. This fee covers special laboratory arrangements and study facilities for advanced students. Payment is required when, in the judgment of the department, such facilities must be provided. The amount of the fee is determined by the individual requirements.

Honors.—Students will be recommended for honors on the basis of the quality of the work done in the regular curriculum of the senior year, or of a thesis showing ability to do original work or of distinction in the advanced work of any department as attested by the recommendation of that department.

* Absent on leave, 1935–36; [1] in residence first semester only; [2] in residence second semester only, 1935–36.