

## IV. Degrees

VASSAR COLLEGE confers the degrees of Bachelor of Arts and Master of Arts. Since no special students are accepted, all candidates must qualify for one of these two degrees. As at present constituted, the college has no graduate school; it is equipped to offer graduate work in certain fields and to a limited number of students.

### DEGREE OF BACHELOR OF ARTS

#### TERM OF STUDY

The usual term of study required for the degree of Bachelor of Arts is four years. For the special privilege of graduation in a shorter term, petition must be made to the faculty through the Committee on Elections, Candidates for this degree are expected to spend at least two years in residence, and under no circumstances is a candidate admitted at the beginning of the senior year.

#### ACADEMIC STANDARDS

##### Hours

The minimum requirement for the degree is the completion of 120 semester hours. G

Every course elected must be completed even though the course be in excess of the minimum number of hours required for graduation.

##### Credits

A credit is the valuation of each semester hour of work according to the mark received. Each semester hour with a mark of *A* counts 4 credits; *B*, 3 credits; *C*, 2 credits; *D*, 1 credit.

##### Standing

*Standard Grade*—Standing in college and the requirement for graduation are determined by a dual standard, one of quantity and the other of quality of work completed. Quantity of work is measured by the number of semester hours in courses taken. Quality of work is determined by the credit ratio. The credit ratio is the ratio of the *total* number of credits to the *total* number of hours elected.

The standing of a student at any time is determined by the credit ratio of *all* the work she has taken up to that time. For graduation and for standard

INSTRUCTION

- 370b. *Roman Religion* (2 or 3)  
 Studies from various ancient sources, with constant readings from Ovid's *Fasti*. Assistant Professor RYBERG.  
 Prerequisite: 6 hours in grade I; 6 hours in grade II. *Unscheduled.*
- 380a. *Latin Epigraphy* (2)  
 A study of inscriptions illustrative of different periods; the technique of using inscriptions as historical source material. Assistant Professor RYBERG.  
 Permission required. Prerequisite: 6 hours in grade I; 6 hours in grade II. *Unscheduled.*
- 385b. *The Coinage of Rome* (2)  
 Introduction to the history of coinage in Italy; study of coin types illustrating Roman life and political history. Assistant Professor ARNOLD.  
 Permission required. Prerequisite: 6 hours in grade I; 6 hours in grade II. *Unscheduled.*
395. *Composition* (1)  
 Study of Latin style and of idiom; translation into Latin of passages from English authors; conversation and original compositions in Latin; exercises in writing Latin verse. Professor SAUNDERS.  
 Permission required. Prerequisite: 295. *Unscheduled.*
400. *Independent Study* (1 to 4)  
 Open to juniors. Permission required.
500. *Independent Study* (1 to 6)  
 Open to seniors. Permission required.

MATHEMATICS

MAJOR FIELD

*Consultation:* Professor Cummings and Professor Wells.  
*Minimum* in the major subject: 24 hours. Required in the minimum—135a and 240b, or 130b and 242a; 245a or b; 345b.  
*Correlative:* required—6 hours in physics or astronomy; suggested—Astronomy 230, 330a, 360b; Music 170b; Physics 105 or 110a, 230b, 240a, 250b, 310a; Philosophy 110, 205a; Chemistry 105, 110, 220a, 221a, 380, 385; Economics 170a, 360a; Zoology 110b, 112b.

I. INTRODUCTORY

- 110a. *Plane Trigonometry, with Logarithms* (3)  
 The DEPARTMENT.  
 Open to all classes. *Groups 1, 2, 5.*

[ 112 ]

Vassar 1934-1935  
 College

[1934-1935]

MATHEMATICS

- 120b. *Solid and Spherical Geometry* (3 or 4)  
 Elementary terms and principles of logic are employed in analyzing typical demonstrations. The DEPARTMENT.  
 Open to all classes. *Groups 1, 2, 5.*
- 130b. *Analysis* (3)  
 The elements of analytic geometry and the theory of limits; derivatives and integrals of the simpler algebraic functions. A brief introduction to modern mathematics with general notions concerning its practical applications. The DEPARTMENT.  
 Prerequisite: 110a. *Groups 1, 2, 5.*
- 135a. *Analytic Geometry* (3 or 4)  
 The definitions, equations, and simplest properties, chiefly metrical but partly projective, of the straight line and conic sections. Attention is given to plotting and numerical problems. Professor WELLS.  
 Not open to students who have taken 130b. Prerequisite: 110a or equivalent. *Groups 1, 6.*
177. *Elementary Structural Drawing* (1)  
 Mrs. HOPPER.  
 Not open to students who have had 110a, 120b or 130b. *Groups 7 (Tue.), 8 (Tue.).*
- 187b. *Introduction to Mechanical Drawing* (1)  
 Mrs. HOPPER.  
 Not open to students who have had 177.  
 Prerequisite: 110a. Corequisite: 120b or 130b. *Group 9 (Tue.).*

II. INTERMEDIATE

- 210a. *Advanced Algebra* (3)  
 General properties of the polynomial; applications of the principle of undetermined coefficients, including partial fractions; permutations and combinations; elements of the theory of probability; mathematical induction; binomial theorem; determinants; convergence of series; the theory of irrational numbers; continued fractions. Assistant Professor G. SMITH.  
 Prerequisite or corequisite: 110a; 120b or 130b. *Group 4.*
220. *Geometry of the Circle and the Triangle* (3)  
 Properties of a triangle relating to bisection and perpendicularity; circum-circle, nine-point circle, the Simson line, theorems on transversals. Harmonic properties of circles; radical axes and centers, coaxal systems; inversion with

[ 113 ]

## INSTRUCTION

respect to a circle; orthogonal systems. Polarity with respect to a triangle. The problem of Apollonius. A course closely connected with topics in the elementary plane geometry of secondary schools. *Professor H. S. WHITE.*

Alternate years: offered in 1934-35.

Prerequisite: 110a; 120b or 130b. Group 10.

235b. *Synthetic Projective Geometry* (3)

Systematic development of the principal theorems on conic sections and ruled surfaces of the second degree. *Professor H. S. WHITE.*

A supplement to 110a, 135a, and 330a. Open to juniors and seniors. Prerequisite: 110a; 120b or 135a or 130b. Group 5.

240b. *Elementary Differential and Integral Calculus* (3 or 4)

The notions of derivative, differential, indefinite and definite integral. Formal differentiation and integration of the simplest functions, and numerical evaluation of certain definite integrals. Outline discussion of maxima and minima, and expansion in series. *Professor WELLS.*

See also 242a. Prerequisite: 110a; 130b or 135a. Groups 1, 6.

242a. *Differential and Integral Calculus* (3)

Derivatives of trigonometric, logarithmic, and circular functions and the inverse integrals. Application to the areas of plane figures, lengths of curves, volumes of solids. *Professor CUMMINGS, Assistant Professor G. SMITH.*

Not open to students who have taken 240b. Prerequisite: 110a; 130b or 135a. Groups 3, 7.

243a or b or ab. *Topics in Calculus* (1)

*Professor CUMMINGS, Assistant Professor G. SMITH.*

Corequisite: 242a or 245b. Group 10 (Wed.).

245a or b. *Integral Calculus* <sup>a</sup>(3 or 4) <sup>b</sup>(3)

Some review and further study of differential calculus, auxiliary methods of formal integration; multiple integrals, areas, volumes, lengths of curves, evolutes, and problems in mechanics. A continuation of 240b or 242a. <sup>a</sup>*Professor H. S. WHITE, <sup>a</sup>Mrs. HOPPER,* <sup>b</sup>*Professor CUMMINGS, <sup>b</sup>Assistant Professor G. SMITH.*

Prerequisite: 110a; 130b or 135a; 240b or 242a. Groups <sup>a</sup>1, <sup>b</sup>3, <sup>b</sup>7.

<sup>a</sup> First semester.  
<sup>b</sup> Second semester.

[ 114 ]

Vassar 1934-35  
College MATHEMATICS260a. *Curve Tracing* (3)

Lecture course with daily practice in graphing. *Assistant Professor G. SMITH.*

Prerequisite: 110a; 130b or 135a; 240b or 242a. Group 3.

270a or b or ab. *Mathematics of Finance* (3)

The mathematical theory of interest, refunding of debts, valuation of bonds, depreciation, loan associations; theory of probability and its application to simple problems in life annuities. Such elements of the technique of financial calculation as may be of value to the general student. *Professor CUMMINGS.*

Prerequisite: 110a; 120b or 130b. Group 2.

275. *Descriptive Geometry* (3)

The discussion of the theory of graphical representation of lines, surfaces, and solids, accompanied by practical mechanical drawing. *Mrs. HOPPER.*

Prerequisite: 110a; 120b or 130b. Group 10.

277a or b. *Introduction to Mechanical Drawing* (1)

*Mrs. HOPPER.*

Not open to students who have had 177 or 275. Prerequisite: 110a. Prerequisite or corequisite: 120b or 130b. Group 9 (Tue.).

287b. *Elementary Shades and Shadows* (1)

*Mrs. HOPPER.*

Not open to students who have had 177 or 275. Prerequisite: 110a; 120b or 130b; 187b or 277a. Group 8 (Wed.).

## III. ADVANCED

310b. *Theory of Equations* (3 or 4)

Dickson's *Theory of Equations*, supplemented by lectures on group theory and quintic equations. *Assistant Professor G. SMITH.*

Permission required for 4 hours. Prerequisite: 110a; 130b or 135a; 240b or 242a; 210a or equivalent. Group 3.

330a. *Analytic Geometry of Three Dimensions* (3)

The geometry of planes and quadric surfaces with a brief study of twisted curves of the third and fourth orders. *Assistant Professor G. SMITH.*

Prerequisite: 110a, 120b; 130b or 135a; 240b or 242a. Group 3.

335. *Analytic Statics* (3 or 4)

The elements of statics, applications to practical problems, the fundamental

[ 115 ]

# Vassar 1934-35 College

## INSTRUCTION

principles of mechanics, and the elements of the theory of fields of force.  
*Professor H. S. WHITE.*

Offered only in the second semester in 1934-35.

Prerequisite: 110a; 130b or 135a; 240b or 242a; 245a or b. Corequisite by permission: 245b. *Group 3.*

340b. *Calculus of Finite Differences* (3 or 4)

Detailed consideration of the mathematical theory of interpolation. This is essential in the use of tables of numerical values, calculated or empirical, depending upon one or upon several independent variables (astronomy; geodesy; chemical, physical, and other statistics). *Professor CUMMINGS.*

Permission required for 4 hours. Prerequisite: 110a; 130b or 135a; 240b or 242a; 245a or b. *Group 6.*

345. *Advanced Integral Calculus, and Differential Equations* (3 or 4)  
*Professor WELLS.*

Open to juniors and seniors. Permission required for 4 hours. Prerequisite: 110a; 130b or 135a; 240b or 242a; 245a or b. The second semester may be taken without the first. *Groups<sup>a</sup> 5, <sup>b</sup> 4.*

[347a. *Partial Differential Equations*] (3 or 4)

A brief study of the four noted equations of Legendre, Bessel, Riccati, and Gauss; some of the topics of partial differential equations, with special reference to the potential. *Professor WELLS.*

Not offered in 1934-35.

Permission required for 4 hours. Prerequisite: 110a; 130b or 135a; 240b or 242a; 245a or b; 345b. *Group 7.*

350b. *Theory of Functions of a Complex Variable* (3 or 4)

The fundamental ideas of the algebra and calculus of complex numbers; their geometric representation; introduction to the theory of power series and the properties of analytic functions. *Professor WELLS.*

Open to juniors and seniors. Permission required for 4 hours. Prerequisite: 110a; 130b or 135a; 240b or 242a; 245a or b. *Group 10.*

370a. *Theory of Mortality, Investments, and Insurance* (3)

Processes of calculation of constant use in life insurance, and of value in related topics. *Professor CUMMINGS.*

Permission required for 4 hours. Prerequisite: 110a; 130b or 135a; 240b or 242a; 245a or b. *Group 6.*

<sup>a</sup> First semester.  
<sup>b</sup> Second semester.

## MUSIC

375a. *Shades, Shadows, and Perspective* (2 or 3)

Application of the methods and constructions of descriptive geometry to the study of shades, shadows, and perspective. Largely but not exclusively practical. *Mrs. HOPPER.*

Prerequisite: 110a; 120b or 130b; 275. *Group 11 (Mon. Thu.).*

380a. *Development of European Mathematics since 1500 A.D.* (2 or 3)

Lectures summarizing the rapid development of old and new mathematical theories accompanying the modern revival and immense extension of natural science. Collateral reading, chiefly biographical and historical. *Professor H. S. WHITE.*

Prerequisite: 110a; 130b or 135a; 240b or 242a; 1 year in physics or astronomy. *Unscheduled.*

400. *Independent Study* (1 to 4)

Open to juniors. Permission required.

500. *Independent Study* (1 to 6)

Open to seniors. Permission required.

## MUSIC

Courses in music deal with the following aspects of the subject: theory and writing—105, 210, 230a, 235b, 310, 410; literature and history—140, 250a, 260b, 340; criticism and aesthetics, 450a; musicology, 455b; acoustics—170b; applied music and interpretation.

## MAJOR FIELD

*Consultation:* Professor Dickinson.

*Minimum* in the major subject: 24 hours. Required in the minimum—6 hours each in theory and history, 2 hours in applied music, 6 hours in grade III. Uncredited in the minimum—170b.

*Correlative:* aesthetics, art, bibliography, education, history, literature, physics, psychology, to the extent of at least 15 hours in three different fields including some work in grade II or III.

*Recommendation:* reading knowledge of modern foreign languages.

## I. INTRODUCTORY

105. *Introduction to Theoretical Music* <sup>a</sup>(3) <sup>b</sup>(3 or 4)

The materials of music and the underlying principles of design and expression. Four-part writing in periodic form, with a tonal diatonic vocabulary

<sup>a</sup> First semester.  
<sup>b</sup> Second semester.