

CHEMISTRY, GEOLOGY AND MINERALOGY.

I. *Inorganic Chemistry.* The metallic and non-metallic elements of General Chemistry are taught by lectures, recitations and laboratory work. Special attention is given to the underlying principles of Chemistry; to the writing of reactions and their real significance; and to the working of chemical problems. The lectures are illustrated as far as possible by experiments.

In the laboratory the student performs experiments planned to supplement the subject and principles discussed in the lecture.

II. *Qualitative Analysis.* By a thorough study of the characteristic properties of the elements, the student is enabled not only to detect the presence of the elements, but also to effect the separation of one from others.

A definite number of analyses of unknown substances will be required.

In this work special attention will be given to the symbolic representation of the chemical processes which occur.

III. *Quantitative Analysis.* This consists of lectures on the different methods of analysis, both in gravimetric and volumetric work. In the laboratory the student will first work with substances of known percentage composition, and after having attained a sufficient degree of efficiency and accuracy, he will then take up the analysis of materials whose composition is unknown. This course is open only to those having a good knowledge of qualitative analysis.

IV. *Assaying.* This course includes lectures on the methods of assaying ores of gold, silver, lead, copper, etc.,

and students taking the work are given thorough instruction in the manipulation of assay furnaces, both coke and gasolene furnaces being used. If desired by a sufficient number of students, this course will be expanded to meet the requirements of elementary metallurgy. This course is also open only to students who have satisfactorily finished the work offered in qualitative analysis.

V. *Photography.* The chemical principles involved in photography, and directions for using the camera, and the development and finishing of the picture, will constitute the basis of the lectures. Students taking this course will be required to complete a certain number of satisfactory pictures.

ASTRONOMY.

As will be seen from the courses, Descriptive Astronomy is taken by the Scientific and Engineering students during the winter term of the Junior year; and Practical Astronomy and Navigation by the Scientific and Civil Engineering students in the fall term of the Senior year.

PHYSICS.

The work in Physics is taken up during the year following the winter term of the Sophomore year. To quite an extent text book work is supplemented with lecture and laboratory work. The physical laboratory is well supplied with instruments for illustrating the various physical phenomena.

HISTORY.

History is taken by all Sophomores in the spring session. The text book used is Myer's Mediæval History, and the

object of the work during this session is to give the student a general idea of the movements of nations during this period.

PHONOGRAPHY AND TYPEWRITING.

Phonography, or what is commonly known as shorthand, is recognized as one of the greatest labor saving agencies in the business world. It is invaluable to the person whose business requires a constant use of the pen, as it provides an art by which it is possible to write at the rate of at least six times that of the average writer of long-hand. The present course is offered with the view of giving students an opportunity of acquiring a rapid system of writing, which will be helpful to them in the lecture room, laboratory and class room. While the aim is to give such instruction and practice as will be helpful to the student in his regular work, still a foundation will be laid broad and deep enough for any degree of proficiency, in view of the fact that this art opens up to the young man and young woman one of the most profitable and pleasant vocations. This course extends through two years; one year same as second preparatory; the other with Freshman studies; the work of the first including a study of the theory, with exercises in reading and writing from dictation; of the second, an application of the theory in speed practice, requiring no outside preparation. It is almost entirely a *practicum* exercise. The department is furnished with ten typewriters—five Remingtons and five Smith Premiers, latest improvements. Transcription on the typewriter of all notes made in class will be an essential part of the work during the entire course.

PHILOSOPHY.

This department includes Constitutional Law, Political Economy, International Law, and Mental and Moral Science.

Constitutional Law is pursued in the fall session of the Senior year. A careful study is made of the most prominent features in the United States constitution, and that of State of Washington. The object being to inform and interest the student in questions of government and administration. Cooley's text book is followed in class, while frequent reference is made to the Federalist and other standard works in constitutional literature.

Political Economy is studied in the winter session; text book, *Walker's Science of Wealth*. The subject is considered historically and in its bearings upon questions of the present time—such as proper distribution of wealth, finances, false and sound currency, the importance of a friendly relation between capital and labor, and the extent to which government may safely regulate the industrial activities of a people.

Mental Science—Text book, Sully. The course embraces a clear presentation of the mental faculties, their care and proper development, and a discussion of the fundamental principles upon which teaching processes are based and the science of education founded.

Moral Philosophy—Text book, Hickok's. This subject is considered in its relation to the individual, or the duty of the individual to himself, to society, to government, and to God.

International Law is not included in all the technical courses, but is a useful and practical study found in general scientific and agricultural courses. The text book used is Woolsey's; only selections from it being studied. Perhaps no other subject is so well calculated to broaden the horizon of the student; to assist him in comprehending the brotherhood of the human race, and the unity of interests nations possess in all matters of public welfare.

In all these subjects students are required to write and present for discussion results of original research and study.

II.—COURSE IN AGRICULTURE.

(Figures indicate hours of class exercises per week.)

	FALL SESSION.	WINTER SESSION.	SPRING SESSION.
FRESHMAN YEAR.	Rhetoric..... 4	Geometry..... 5	Advanced Algebra... 5
	Geometry..... 5	General Chemistry... 5	General Chemistry... 5
	German..... 5	German..... 5	Botany..... 5
	<i>Practicum.</i>	<i>Practicum.</i>	<i>Practicum.</i>
Woodwork.....10	Mechan. Drawing...10	Forging.....10	
SOPHOMORE YEAR.	Plane Trigonometry..... 5	Agriculture..... 5	Agriculture..... 5
	Botany..... 5	French 5	General History..... 5
	French 5	Physics..... 5	Physics..... 5
	<i>Practicum.</i>	<i>Practicum.</i>	<i>Practicum.</i>
	Surveying.....10	Botany and Physics.....10	Physics, Laboratory.....10
JUNIOR YEAR.	Physics..... 4	Zoölogy..... 5	Geology..... 3
	Zoölogy..... 5	Horticulture..... 5	Logic..... 4
	Agriculture..... 3	Agricultural Chemistry..... 5	Entomology 3
	Horticulture..... 3	<i>Practicum.</i>	Agri. Experiments and Horticulture... 5
	<i>Practicum.</i>	Chemistry and Zoölogy.....10	<i>Practicum.</i>
Chemistry and Physics.....10		Chemistry and Field work.....10	
SENIOR YEAR.	Constitutional Law.. 4	Political Economy... 4	Moral Science..... 5
	Geology..... 4	Mental Science..... 4	International Law... 4
	Forestry..... 4	Advanced French and German..... 5	Advanced French and German..... 5
	Veterinary Science... 4	<i>Practicum.</i>	<i>Practicum.</i>
	<i>Practicum.</i>	Thesis work.	Thesis work.
	Meteorology and Forestry.....10		

EXPLANATORY REMARKS.

This course, beginning the second term of the Sophomore year, is intended primarily for those who expect to follow agriculture, in its general bearings, as a life work. The aim will be to give the student a thorough training in the approved principles of agricultural science. At the same time, all branches of modern agricultural manipulation will be practically illustrated in the field, laboratory, barn and shops, so far as present equipment will permit.

FIRST TERM.

Lectures and References.—Plant life on the farm. Soils, in their relation to crops; how plants feed and grow; drainage and its effects on soils; methods of open and blind drainage; irrigation and its effects on different soils; methods of irrigation; fertilizers, how to use and save.

Practical field work. Use and care of small tools.

References: Masters' Plant Life on the Farm; Storer's Agriculture; Johnson's How Crops Grow and Feed; Waring's Drainage.

SECOND TERM.

Lectures and References.—Farm crops. The principles and practices of crop growing; rotation; the seed bed and seeding; soil tillage, different methods of tilling various crops; weeds and weed killing; harvesting, storing and marketing crops.

Practical field work. Seeding, cultivating and harvesting crops. Use and care of machinery.

References: Storer's Agriculture.

THIRD TERM.

Lectures and References.—Stock breeding, feeding and management; laws of breeding; principles of feeding for meat, muscle or milk; forage crops, their relative values for this state; best methods of growing, curing and feeding.

Practical work in the dairy and feeding stables. Use and care of special machinery.

References: Mile's Stock Breeding; Armsby's Cattle Feeding; — Dairying.

FOURTH TERM.

Lectures and References.—Rural economy; farm plans, buildings, planning, constructing and furnishing; farm sanitation; the construction, use and care of machinery; the keeping of accounts and records; farm waste, and general principles of the employment of labor.

Practical work in drafting plans and estimating cost of construction and repair of fences, roads, bridges, buildings, wells, etc.

References: Thomas' Farm Machinery; Atwood's Farm Buildings.

FIFTH TERM.

Lectures and References.—Agricultural experimentation; the principles, conditions and practices of experimentation in agricultural research, including actual practical experimentation by each student, in plant or animal nutrition, as he may elect; crops, plant growing and feeding in field and laboratory; stock feeding, butter making and egg production, together with the testing, weighing and meas-



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