

PRACTICAL CHEMISTRY

DR. F. W. TRAPHAGEN

A preliminary course in laboratory practice is given the student to familiarize him with the preparation and properties of the more common reagents before any actual work in chemical analysis is begun. The entire course is steadily progressive, the student proving, so far as possible, the truth of each fact as he masters it.

QUALITATIVE ANALYSIS

The elements are separated into groups by the student and their action with various reagents carefully studied. Tables of resemblance are prepared and the reactions taking place in every test are expected to be fully understood and noted by the proper symbols. After a similar study of the acids the student determines the metal and acid of unknown salts and when proficient in this proceeds to the separation and identification of the constituents of unknown complex mixtures.

QUANTITATIVE ANALYSIS

Salts of known composition are first analysed and after accuracy is established, more complex natural and artificial compounds are submitted. The samples are chosen with especial reference to the requirements of the students in the various courses, the Agricultural students devoting themselves to the analysis of soils, fertilizers, grains, milk, butter, fodder, etc.; while the students in Applied Science analyse ores, furnace products, etc. While accuracy is the principal object and gravimetric methods generally used, whenever speed can be attained without impairing the results, shorter methods will be given. Colorimetric and volumetric methods will be carefully taught and the student thoroughly grounded in the underlying principles of each method.

ASSAYING

DR. F. W. TRAPHAGEN

The situation of our College makes a thorough course in Assaying one of the most important needs and to meet it we have secured a set of samples and apparatus and have outlined a course of work which will fully meet all requirements. We shall be able to reproduce all the conditions of the mill or commercial assay office and to give a thoroughly practical course. Before completing the course the student is given a practical series of samples, representing the daily work of the assayer of a mill or smelter, and required to return accurate results within the time usually occupied by the commercial assayer.

METALLURGY

Current American and foreign methods for the economic production of the metals, either by smelting, lixiviation, electrolysis, or other methods, will be the subject of a series of lectures and recitations during which will be considered also refractory materials, furnaces, effects of impurities and methods of eliminating the same.

Special attention will be given to the different methods for calculating furnace charges for the production of slags with definite chemical compositions, and many variations of ore will be assumed.

MINERALOGY

Lectures upon Mineralogy are given and the attention of the student is drawn to the characteristics of each of the minerals whose identification is required, its resemblances to other minerals and its differences. These lectures deal with all those properties which can be distinguished without apparatus, the chemical composition and tests being only incidentally treated.

Later, in Determinative Mineralogy, the unknown mineral is given and by the application of the chemical tests of blowpipe analysis and his knowledge of theoretical Mineralogy and of Crystallography, the student determines the minerals.

The specimens used in this course consist of a large collection illustrating the minerals of economic importance and their associates. The students also have access to the very extensive private collections of the Professor of Mineralogy.

CRYSTALLOGRAPHY

Crystallography is taught by aid of a set of models which illustrate the more important crystalline forms and their modifications. They cover all the forms of which a knowledge is necessary for the student of Mineralogy and the student becomes thoroughly familiar with each of them.

BLOWPIPE ANALYSIS

As a means of determining the composition of minerals and as a convenient method of analysing, Blowpipe Analysis receives close attention. Bead, flame, coal and special reactions are carefully taught so that with his blowpipe and small set of reagents the student is able to determine the composition of any compound.

PHYSICS

The possible applications of a knowledge of Physics are so varied and its principles are so generally used in every department of scientific research that every effort will be made to impart to the students as thorough an understanding of the subject as is possible in the time which can be given to it.

It is our aim so far as is practicable to illustrate the principles by laboratory experiments.

GEOLOGY

PROF. *

Lectures in connection with Le Conte's Elements of Geology occupy the entire year. The work is divided into Physical, Structural and Historical Geology and includes practice in the identification of the age of rocks by fossils, stratigraphical work in the field and identification of the crystalline rocks by microscopic examination.

ENGLISH

PROF. B. F. MAIDEN

Students in the course of Applied Science will be required to take a course of study in English which will extend throughout the Freshman year.

MATHEMATICS

PROF. R. E. CHANDLER

Students in the course of Applied Science must be prepared to commence the study of Plane and Spherical Trigonometry. Mensuration and Analytical Geometry will be completed during the Freshman year. Differential and Integral Calculus and Mechanics will be taken up during the Sophomore and Junior years.

A thorough knowledge of these branches will be necessary in order that the student may be prepared to study intelligently the Applied Mathematics which come later in the Engineering Department work.

PREPARATORY DEPARTMENT

PROF. B. F. MAIDEN

A Preparatory course of one year is provided for those not sufficiently advanced in the common branches to regularly enter the courses in Agriculture, Domestic Economy or Business.

Students should be at least 14 years of age, and competent to pass an examination in Arithmetic through Denominate Numbers; should possess a fair knowledge of English Grammar, Geography and to read and write well.

TO PARENTS AND STUDENTS

It is highly important that students should enter at the commencement of the Fall term.

Those entering later must adapt themselves to classes started at first of the term.

COURSE OF STUDY

FALL TERM	WINTER TERM
Arithmetic	Arithmetic
English Grammar	English Grammar
Geography	Physical Geography
Orthography	United States History.
SPRING TERM	
Elementary Algebra	English Grammar.
Physiology	United States History.
Spelling lessons throughout the year.	

The requirements for entrance to the course of Applied Science will be found on the schedule of studies of that course, in another part of the catalogue.

BUSINESS COURSE

PROF. H. G. PHELPS

BOOK-KEEPING DEPARTMENT

The curriculum of this department includes: Book-Keeping, Commercial Arithmetic, Commercial Correspondence, Penmanship, Commercial Law, Business Ethics, etc.

Instruction in these is supplemented by a thorough training in Business Practice, frequent lectures, class drills, and examinations.

BOOK-KEEPING

Is taught as a science. The student begins the work by journalizing simple transactions in Double Entry. He then writes a number of sets, making out statements of RESOURCES and LIABILITIES, statements of LOSSES and GAINS. He admits a partner, closes the books and makes statements showing each partner's true relation to the business. Next, he opens a set of Single Entry books, finally changing them into Double Entry. The work continues by opening and closing sets in Commission, Retailing, Lumbering, Manufacturing and National Banking, until the student becomes familiar with every phase of book-keeping. No two students will have buying and selling price-lists alike; hence, each will depend upon himself alone for final results.

COMMERCIAL LAW

Includes Contracts, Negotiable Paper, Agency, Partnerships, Corporations, Guaranty, Rights of Stoppage in Transitu, Law of Tender, Liens, Interest and Usury, Distribution of Estates of Persons Deceased, Real Estate Conveyances, etc.

PENMANSHIP

All students in the business course will receive instruction in plain penmanship each day throughout

the year. By plain penmanship is meant writing without shade and without flourish, for general purposes, ROUND HAND for ledger heading, two kinds of BACK HAND engrossing for box marking, etc.

COMMERCIAL CORRESPONDENCE

Without the ability to compose and arrange neatly his business letters and other papers, a student, no matter how well versed in the science of accounts, need not expect to find employment in first-class business houses. Therefore this branch will form a leading feature of this course.

COMMERCIAL CALCULATIONS

Will begin with simple problems and continue through the most complicated as applied in the business world. Daily drills in rapid calculations will constitute a part of the student's work.

BUSINESS PRACTICE

When the student will have mastered the theory of accounts, he will make practical application of his theoretical knowledge in the College National Bank, Merchants' Emporium, Commercial Exchange, Real Estate and Insurance offices. In these, he will keep such books and do such work as is done in real business. This work is so important that we mean to extend the time about two months longer than that which is usually given in business colleges.

SHORT-HAND AND TYPE-WRITING

Theory and Practice of Short-hand.

Corresponding Style. Easy Reporting Style.

Brief Reporting Style. Dictation Exercises Daily.

Benn Pitman system is used.

The type-writer is used in making correct transcriptions of letters, legal documents, business forms, etc.

Manifolding, Envelope Directing, Spelling, Capitalization, Paragraphing and Punctuation.

Care and management of writing machines.

The Business Course will include just what is found in business colleges, and Short-hand students will find it to their advantage to attend here as they will have much actual correspondence to do for the different instructors.

TIME REQUIRED

The course as planned will require the work of one school year, and students will not be permitted to graduate upon what they know merely but upon what they DO and CAN DO.

Those desiring further information should address the Principal of this course.

DEPARTMENT OF MUSIC

MISS KATE CALVIN

INSTRUMENTAL

In this course special attention is given to thorough technique, and correct interpretation with practical analysis of rhythm and form.

Selections from the following course in Piano will be given according to the ability of the students:

Instruction in Theory and History of Music will be free to all members of the Piano Department.

Jadassohn and Emery's Harmony will be used, and those wishing to take a complete course in Piano must pass examination in Harmony.

Frequent recitals will be given by the students for the purpose of acquiring confidence in playing at public concerts. Pupils will also receive special training in memorizing and sight-reading.

COURSE OF STUDY

First Year—Fundamental Technique; selections from the five finger exercises of Louis Kohler. Melodious Exercises. Enckhausen, Book I Duvernoy op. 176 Book 2 and 3. Czerny's Studies revised by Germer Book I, Part I. Selection from the Easier Sonatines

and Sonatas of Clementi, Kuhlau, Mozart and Haydn.

Second Year—Daily Technique; Czerny, Germer Studies, Book I and 2: Major and Minor Scales. Heller op. 47, Book 2; Felix Le Couppey, op. 20 and op. 26; Loeschorn's School of Velocity, Book I and 2. 12 Kleine Praludien Bach. Miscellaneous Classics from Mozart, Haydn, Beethoven, Schumann and Mendelssohn.

Third Year—Daily Technique, Germer Studies Book 2 School of Velocity Loeschorn Books 2 and 3; Two Voice Inventions J. S. Bach Concertos of Mozart Easier ones of Beethoven. Miscellaneous Classics Sonatas of Hummel Nocturns—Nos. 3 and 5 Field: Selections by Bach, Mozart, Handel, Beethoven, Schubert, Mendelssohn, Schumann, Chopin, also from Grieg, Godard, Scharwenkas, Paderewski and other modern composers.

Fourth Year—Daily Technique Studies—Moscheles op. 70; op. 25. Cramer op. 84 Czerny's Virtuoso School, Book 1 op. 365 Fugues by Bach Czerny's School for the Left Hand op. 718 Gradus by Clementi Concertos, Mendelssohn and Beethoven Miscellaneous Classics; also selections from modern composers.

MILITARY SCIENCE

The College is entitled to the detail of a U. S. army officer and when such detail is made instruction will be given in Military Science and Tactics. The Government also supplies the College with arms, ammunition and tents.

The value of military training for improving the habits, manners and health of students can hardly be overestimated, and a general knowledge of military matters is highly to be desired in every community.

The Military Tactics and Drill will occupy about three hours weekly and will not interfere with the student's regular work.

ADMISSION

Candidates for any class are examined in the studies of the lower classes. Students presenting certificates of proficiency from reputable schools or colleges may be admitted without examination in the branches specified in the certificate, providing they obtain the consent of the faculty.

ATTENDANCE

Prompt attendance at all recitations, lectures and regular exercises of the College is required of every student.

Any student who shall absent himself from any recitation or other exercise at which his presence is due, without acceptable excuse, shall be liable to be dropped from his class.

EXAMINATIONS

Frequent examinations are required of every student so that the standing of each student may be readily ascertained at any time.

ELECTIVE STUDIES

A certain amount of latitude in selecting studies will be allowed to special students, although any departure from the regular prescribed courses will be discouraged as a rule. Students desiring to take special courses must first obtain the consent of the faculty.

DEGREES

Suitable degrees and certificates will be conferred on graduates from all courses.

GOVERNMENT

Students will be expected to conduct themselves as ladies and gentlemen; those who fail to comply with this demand will be requested to leave the institution.

EQUIPMENT

The College has sufficient funds on hand to purchase a good library and furnish every department with the apparatus necessary to carry on thorough work. This material will be on hand in time to be utilized by the various departments. Machinery will also be purchased for shop work as soon as it is found desirable to do so.

EXPENSES

Preparatory, or any College Course, per year.....	\$10.00
Qualitative Apparatus (deposit).....	15.00
Quantitative Apparatus (deposit).....	25.00
Blowpipe Apparatus (deposit).....	10.00
Assaying Apparatus (deposit).....	15.00
Mineralogy, including Apparatus and 100 Minerals.....	10.00

A sufficient charge will also be made to cover the cost of chemical supplies used by the students in the laboratories.

At the end of the course the student may return such apparatus as has not been damaged and receive in return the balance of his deposit due him. This ought to amount to about 50 per cent. of the original deposit.

Town students entering the Preparatory course will be charged a fee of \$25 per year, instead of \$10, as given above, so long as they continue in that course. They may, however, enter the College courses on payment of the regular fee of \$10 per year.

DEPARTMENT OF MUSIC

Fall Term—One lesson per week on Piano.....	\$14.00
Winter Term—One lesson per week on Piano.....	12.00
Spring Term—One lesson per week on Piano.....	10.00
	<u>\$36.00</u>
Fall Term—Two lessons per week on Piano.....	\$25.20
Winter Term—Two lessons per week on Piano.....	21.60
Spring Term—Two lessons per week on Piano.....	18.00
	<u>\$64.80</u>

HARMONY

Class lessons, \$5.00 for the entire academic year.

PAYMENT OF FEES

All fees must be paid in advance. Students will not be permitted to enter classes until their fees are paid.

CALENDAR

College Opens.....	September 15, 1893
Examinations.....	December 22 and 23
Vacation Begins.....	December 24
Winter Term Commences.....	January 8, 1894
Examinations.....	March 29 and 30
Spring Term Begins.....	April 2
Examinations.....	June 11 and 12
Summer Vacation.....	June 15 to September 17

All legal holidays will be observed.



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