

**73. Asphalt, Tar, and Distillation Products.**—Sources, characteristics, composition, and examination; binders and dust preventives used in road construction. (For students in highway engineering.) *II*; (2). Professor PARR

*Prerequisite:* Chemistry 2a or 4.

**76. Mineral Oils.**—Fractionation, analysis evaluation for fuel, lubrication and gas manufacture. *II*; (2). Professor PARR

*Prerequisite:* Chemistry 9a and 14a.

**77. Composition and Classification of Coal.**—Classification, changes in composition, weathering, spontaneous combustion, formation of mine gases. Lectures; assigned reading. *II*; (1). Professor PARR

*Prerequisite:* Chemistry 65.

**78. Metallography.**—Constitution and microstructure of metals and alloys; properties, chemical and mechanical treatment, and structure. Lectures; reading; laboratory. *II*; (2). Associate Professor MCFARLAND

*Prerequisite:* Chemistry 7.

**80. The Elements of Glass Blowing.**—Construction and repair of glass apparatus. Laboratory. *II*; (1). Mr. ANDERS

*Prerequisite:* Two years' work in chemistry.

**86. The Chemistry of the Higher Order Compounds.**—Complex compounds from the standpoint of the valence theory as developed by Werner. *II*; (2). Assistant Professor SMITH

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*Prerequisite:* Chemistry 9a, 9b, 14a-14b.

**90-91. Chemical Inspection Trips.**—(Required for juniors and seniors in the courses in chemistry and chemical engineering.) For the year 1917-18, the trips will occur on March 25 to 30, 1918. The expense involved will approximate fifteen to twenty-five dollars for each student. *II*; (no credit).

Associate Professor MCFARLAND in charge

**92a-92b. Chemical Literature and Reference Work.**—Periods, leaders, journals. (Required of juniors in chemistry and chemical engineering; required also of juniors who are majoring in chemistry.) *I, II*; (1). Miss SPARKS

**93a-93b. Journal Meeting.**—Required of seniors and all graduate students in chemistry. All members of the staff of the department of chemistry are expected to attend. *I, II*; (1). Dr. DEMING

Dr. DEMING

**95. History of Chemistry.**—Lectures and assigned reading. *I*; (2).

Assistant Professor SMITH

*Prerequisite:* 3 years of chemistry, including organic and physical.

### Courses for Graduates

Graduate students whose major subject is in some department other than chemistry, before taking graduate work for credit in this department, must have had the equivalent of 15 university credits in chemistry, and the ground covered should include satisfactory work in general chemistry and in qualitative and quantitative analysis. Such students are advised to make selections from the following courses: Chemistry 31, 33 (or 102, 102a), 14a, 14b, 9a, 9b, 15 and 25. Courses of a more special nature will not, as a rule, be accepted for graduate work unless preceded by one of the above courses.

For students in agriculture, Chemistry 5a and 13a will not be accepted for graduate credit.

Graduate students who are candidates for an advanced degree in chemistry must have had the equivalent of 25 university credits in chemistry, properly distributed.