# IV RESIDENT INSTRUCTION

General Comments 1/
B. R. Bertramson 2/

To read in 1984 the record of the early years of the College of Agriculture fills one with awe and wonder. How could so few people cover so many subjects--indeed even embark upon the development of a curriculum--with so little human, physical, and local-subject-matter resources? Further, one finds a mere sprinkling of people covering these bases--not only in teaching, but in research and in the embryonic Extension Service. Surely, they must have been believers in the old Chinese proverb: "The longest journey starts with but a single step." Start they did! We owe much to them for heading those early steps in the right direction. And progress on that journey has been impressive and inspiring.

The catalogues over the years from 1891 tell an interesting story of the people who did the teaching, and the subjects taught. These catalogues are bound and are available in the Office of the Registrar. The exact chronology will not be repeated here; but only the highlights will be cited to give some impression of the body and soul of the faculty and of the Department of Agronomy and Soils as they evolved.

The third Annual Catalogue 1893 lists William J. Spillman, Professor of Agriculture and Head of the Department of Agriculture on a par with the Department of Horticulture. The Department of Agriculture lists six courses offered:

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1/ Part of History of Agronomy and Soils, WSU. 1984.

2/ Former Chairman and Professor Emeritus. Department of Agronomy and Soils, WSU. Pullman, WA 99164-6420.

1. Comparative Anatomy and Physiology (of farm animals).
2. Soils (origin, composition, and characteristics).
3. Crops (methods of seeding, cultivating, and harvesting all crops for Washington, principles of crop rotation, pasture and forage crops, eradication of weeds).
4. Farm Economy (farm accounting, marketing, structure of building and fences, laws relating to the same.
5. Breeds and Breeding (of farm animals).
6. Dairying (production, processing).

In the Fouth Annual Catalogue, 1894, there were more courses listed, but the only reference to crops or soils was, "Farm Crops and Principles of Feeding".

Under the Department of Agriculture in the Seventh Annual Catalogue 1898, is listed W. J. Spillman, Professor and David A. Brodie, Assistant. Apparently the faculty had increased by 100%. Here for the first time was listed as a course offering:

1. Agronomy--Soils and Crops. (One and two-fifths courses--the class met daily the first semester and twice a week the second semester.) Three texts were listed:

   Aidman's "Manure and Manuring"

   King's "The Soil"

   Hunt and Morrow's "Crops"

In the twelfth Annual Catalogue, 1903, E. E. Elliott was listed as Professor and George Severance, Instructor in the Department of Agriculture. Severance came to teach the bulk of soils courses, then farm management courses and was named head of the newly organized Farm Management Department in 1918. Finally, he became Vice-Dean with Dean

E. C. Johnson in 1921. Records indicate he continued to serve the College until about 1931.

In the Fourteenth Annual Catalogue (1905) drastic changes were made in the course offerings now listed under the new heading:

"AGRONOMY"

1. Soils. A full course taught by George Severance. (Origin, formation, and classification of Soils. Texture-moisture relations, capillarity, osmosis, diffusion as affected by tillage; fertility, etc.)
2. Crop Production. A full course. (A study of requirements or adaptability of cereals, grasses, legumes, and other crops and their culture, seed-bed preparation, rotations, weed control, etc. Severance.)
3. Cereal Crops. A full course. Study of grains, grain judging, grading for market, handling, and storing.
4. Plant Breeding. A full course. Laws of heredity, variation and selection as applied to economic plants.
5. Irrigation Farming. Two-fifths course. Principles of applying water for growing crops. Severance.
6. Advanced Soil Studies. Three-fifths course. Methods of conducting laboratory and field investigations with soils. Severance.

In 1907, Claude Waugh Lawrence (B.S.) was added to the faculty as Cerealist and Instructor in Agronomy. He taught Cereal Crops. In 1908, Howard Brown Berry was added as Instructor in Agronomy. He taught Soils and Irrigation Farming. The listing of the agronomy curriculum for a B.S., degree as it appeared in the Eighteenth Annual Catalogue (1909) is

reproduced on the following page. For comparison, the curriculum in the 1945-46 Catalogue follows.

In 1910 (19th Cat.) it appeared that Berry was succeeded by Thom to teach beginning and advanced soils courses. He carried a heavy teaching load for a number of years. In the Crops area, Leonard Hegnauer was appointed to teach Crop Production, Plant Breeding and Climatology courses. Later, he became the first extension agronomist for both crops and soils subject matter areas.

In 1912 Edward Franklin Gaines became an Instructor in Agronomy. He taught Plant Breeding that year and for many years. An illustrious graduate student of his in the early thirties was Orville Vogel whose world renowned semi-dwarf variety "Gaines" was named in honor of Vogel's major professor for graduate work at WSU. Few major professors have been so well served. The variety and name are known to plant breeders around the world.

In 1913 Paul J. White appeared in the catalogue as the teacher for Forage Crops with 4 recitations and a 2-hour lab per week.

The twenty-fourth Annual Catalogue (1915) listed Edwin G. Schafer as Professor of Farm Crops. He became Head of the Department in 1918. In subsequent catalogues, he is listed as the instructor for the bulk of the crops courses and taught the first course at WSU in "Experimental Design".

Several subject matter areas--later to become "departmental" --gained some identity in the Twenty-fourth Annual Catalogue (1915). Sub-headed under Agronomy were farm crops, soils, farm management, and agricultural engineering. General ag research work was offered for credit in the several areas: soils and crops was to be covered by Severance, Schafer, and Thom. Arthur F. Hech was listed in the catalogue as an instructor in soils. He later also taught some courses in crops. He taught several soils courses over many years.

WSU 1909 CATALOGUE



## AGRICULTURE—AGRONOMY GROUP.

### SCHEDULE OF STUDIES.

#### FRESHMAN YEAR.

| FIRST SEMESTER: | Hrs. | SECOND SEMESTER: | Hrs. |
|---|---|---|---|
| *Study of Animal Form* (A. H.1) | 5 | *Trigonometry* (Ma.2) | 3 |
| *History* 2 | 5 | *Surveying* (C.E.6) | 2 |
| *Chemistry* 1 | 5 | *Rhet. and Comp.* (Engl.2) | 5 |
| *German* 11 or *French* 11 | 5 | *Chemistry* 3a | 5 |
| | | *German* or *French* | 5 |

#### SOPHOMORE YEAR.

| | | | |
|---|---|---|---|
| *Soils* (Ag.1) | 5 | *Crop Production* (Ag.3) | 5 |
| *Ag. Chemistry* (Chem.19) | 5 | *Pr. of Feeding* (A.H.3) | 3 |
| *German* or *French* | 5 | *Plant Breeding* (Ag.5)* | 2 |
| General Botany (Bot.1) | 5 | *Ag. Chemistry* (Chem.20) | 3 |
| | | *Chemistry* 14 | 2 |
| | | *German* or *French* | 5 |

#### JUNIOR YEAR.

| | | | |
|---|---|---|---|
| Cereal Crops (Ag.4) | 5 | Farm Dairying (D.1) | 3 |
| Economic Fungi (Bot.9) | 5 | Climatology (Ag.7) | 2 |
| Econ. Entom. (Zool 8) | 5 | Bacteriology (Bot.16) | 5 |
| *Economic Science* 31 | 5 | Plant Physioiogy (Bot.5) | 5 |
| *Military Science* (for men) | 1 | Debating (Engl.19) | 5 |
| | | *Military Science* (for men) | 1 |

#### SENIOR YEAR.

| | | | |
|---|---|---|---|
| *Thesis* | 5 | *Thesis* | 5 |
| Geology 1 | 3 | Rural Economy (Ag.9) | 5 |
| Hist. Geology (Geol.2) | 2 | Rural Engineering (Ag.2) | 5 |
| Irrigation Farming (Ag.6) | 5 | Elective | 5 |
| Ag. Economics (Ec.13) | 5 | | |

Courses printed above in *italics* are required for graduation; others are recommended as suitable electives, provided that four major courses shall be required in addition to the italicized subjects to be selected from one or both the agricultural groups. For description of the courses offered by the department of Agriculture, see pages 96-102. For the general requirements for graduation, see page 53.

*Students may take either Agronomy 5 or Animal Husbandry 4.

## SCHEDULE OF STUDIES

### AGRICULTURE—GENERAL COURSE ①

#### Freshman Year

| First Semester— | Hrs. |
|---|---|
| *Agricultural Orientation* (Ag. 2) | 1 |
| *General Inorganic Chemistry* (Chem. 1) or *Chemistry in Industry* (Chem. 70) | 4 |
| *English Composition* (Engl. 1) | 2 |
| *Military* | 1½ |
| *Physical Education* (Men, P. E. 1; Women, P. E. 11) | 1 or ½ |
| Elective | 2 |
| From the following group of courses a student will be required to select two out of the five: | |
| Types and Market Classes of Farm Animals (A. H. 1) | 3 |
| Farm Mechanics (A. E. 10) | 3 |
| General Horticulture (Hort. 50) | 3 |
| Field Crops (F. C. 1) | 3 |
| General Poultry Husbandry (P. H. 5) | 3 |

| Second Semester— | Hrs. |
|---|---|
| *General Inorganic Chemistry* (Chem. 1 or Chem. 3) | 4 |
| *English Composition* (Engl. 2) | 2 |
| *Military* | 1½ |
| *Physical Education* (Men, P. E. 2; Women, P. E. 12) | 1 or ½ |
| Elective | 3 |
| From the following group of courses a student will be required to select two out of the five: | |
| Field Crops (F. C. 1) | 3 |
| General Dairy Husbandry (D. H. 1) | 3 |
| General Poultry Husbandry (P. H. 5) | 3 |
| Farm Mechanics (A. E. 10) | 3 |
| General Horticulture (Hort. 50) | 3 |

#### Sophomore Year

| | Hrs. |
|---|---|
| *Agri. Economics* (Econ. 12) ② | 4 |
| *Soils* (Soils 1) | 3 |
| *Military* | 1½ |
| *Physical Education* (Men, P. E. 3; Women, P. E. 13) | 1 or ½ |
| Elective | 1 |
| From the following group of courses a student will be required to select two out of the five: | |
| Ag. Quan. Anal. (Chem. 115) ③ | 3 or 4 |
| Animal Biology (Zool. 1) | 4 |
| Introd. Botany (Bot. 5) | 4 |
| Gen. Plant Path. (P. P. 101) | 4 |
| Gen. Bacteriology (Bact. 10) ④ | 4 |

| | Hrs. |
|---|---|
| *Int. to Literature* (Engl. 8) | 2 |
| *Organic Chemistry* (Chem. 46) | 3 |
| *Military* | 1½ |
| *Physical Education* (Men, P. E. 4; Women, P. E. 14) | 1 or ½ |
| Elective | 6 |
| From the following group of courses a student will be required to select one out of the five: | |
| Agri. Entomology (Zool. 43) | 3 |
| Animal Biology (Zool. 1) | 4 |
| Introd. Botany (Bot. 5) | 4 |
| Gen. Plant Path. (P. P. 101) | 4 |
| Gen. Bacteriology (Bact. 10) ④ | 4 |

#### Junior Year

| | Hrs. |
|---|---|
| *Principles of Feeding* (A. H. 3) | 3 |
| *Forage Crops* (F. C. 2) | 2 |
| *English* | 2 |
| *Physical Education* (Men, P. E. 5; Women, P. E. 15) | 1 or ½ |
| Elective ⑤ | 9 |

| | Hrs. |
|---|---|
| *Soil Fertility* (Soils 102) or *Plant Nutrition* (Soils 107) | 3 |
| *Landscape Design* (Hort. 60) or *Farm Buildings* (A. E. 6) | 2 |
| *Physical Education* (Men, P. E. 6; Women, P. E. 16) | 1 or ½ |
| Elective ⑤ | 12 |

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① Students who have had one or more standard courses in dairying, poultry, or horticulture in Smith-Hughes schools will be excused from D. H. 1, P. H. 5, or Hort. 50 on recommendation to the Dean by the Head of the Department concerned, and permitted to substitute more advanced elective courses in their place. Students who have had extensive experience and training in practical work in one or more of the subjects named and are able satisfactorily to pass examinations in these subjects will also be permitted to substitute elective courses. In neither case, however, will collegiate credit be granted for courses so dispensed with.

② Transfers to the College of Agriculture who have had three or more hours of General Economics will not be required to take Agricultural Economics (Econ. 12).

③ Required of students majoring in agronomy, horticulture, and vocational education.

④ Students planning to teach Smith-Hughes Agriculture should substitute Psych. 1, 4 hrs., for Bact.

⑤ 51 hours of technical agriculture are required of all students in General Agriculture. It is advised that some of these courses be completed in each semester of the junior and senior years.

In all schedules the courses in *italics* are required for graduation and others are suggested as suitable electives.

## AGRICULTURE—AGRONOMY

Freshman and sophomore years the same as in General Agriculture, except as indicated below.*

### Junior Year

| First Semester— | Hrs. | Second Semester— | Hrs. |
|---|---|---|---|
| *Forage Crops* (F. C. 2) | 3 | *Soil Fertility* (Soils 102) | 3 |
| *Genetics* (Zool. 162) | 3 | *Crop Breeding* (F. C. 104) or *Soils Elective* | 3 |
| Climatology (Soils 108) | 2 | *English* | 2 |
| *Principles of Feeding* (A. H. 3) | 3 | *Agricultural Entomology* (Zool. 43) | 3 |
| *Grain Grading and Marketing* (F. C. 106) | 2 | Crop Ecology (F. C. 114) | 2 |
| Elective | 4 | Elective | 3 |
| *Physical Education* (Men, P. E. 5; Women, P. E. 15) | 1 or ½ | *Physical Education* (Men, P. E. 6; Women, P. E. 16) | 1 or ½ |

### Senior Year

| | | | |
|---|---|---|---|
| *Introductory Plant Physiology* (Bot. 24) or *Science Elective* | 4 | *Agronomy Elective* | 2 |
| *Farm Management* (F. M. 11) | 3 | Agriculture Elective | 2 |
| Soil Microbiology (Soils 103) or Agronomy Elective | 3 | *Seminar—Agronomy* | 1 |
| Marketing of Farm Products (Econ. 90) or Economics | 3 | *Landscape Design* (Hort. 60) | 2 |
| *Social Science, Language* or *Literature* | 4 | Weeds (F. C. 5) | 2 |
| | | Elective | 7 |

## AGRICULTURE—DAIRY MANUFACTURES

### Freshman Year

| First Semester— | Hrs. | Second Semester— | Hrs. |
|---|---|---|---|
| *Agr. Orientation* (Agr. 2) | 1 | *General Dairy Husbandry* (D. H. 1) | 3 |
| *Types and Market Classes of Farm Animals* (A. H. 1) | 3 | *Dairy Plant Mechanics* (A. E. 17) | 3 |
| *General Poultry Husbandry* (P. H. 5) or *Field Crops* (F. C. 1) or *General Horticulture* (Hort. 50) | 3 | *General Inorganic Chemistry* (Chem. 3) | 4 |
| *English Composition* (Engl. 1) | 2 | *English Composition* (Engl. 2) | 2 |
| *General Inorganic Chemistry* (Chem. 1) | 4 | Elective | 3 |
| Elective | 2 | *Military* | 1½ |
| *Military* | 1½ | *Physical Education* (Men, P. E. 2; Women, P. E. 12) | 1 or ½ |
| *Physical Education* (Men, P. E. 1; Women, P. E. 11) | 1 or ½ | | |

### Sophomore Year

| | | | |
|---|---|---|---|
| *Principles of Accounting* (B. A. 37) | 4 | *Technical Control* (D. H. 100) | 2 |
| *Agricultural Economics* (Econ. 12) | 4 | *General Bacteriology* (Bact. 10) | 4 |
| *Agricultural Quantitative Analysis* (Chem. 115) | 3 or 4 | *Organic Chemistry* (Chem. 46) | 3 |
| *Milk and Milk Products* (D. H. 2) | 2 | *Introduction to Literature* (Engl. 8) | 2 |
| *Military* | 1½ | *Military* | 1½ |
| Elective | 1 or 2 | Elective | 4 |
| *Physical Education* (Men, P. E. 3; Women, P. E. 13) | 1 or ½ | *Physical Education* (Men, P. E. 4; Women, P. E. 14) | 1 or ½ |

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* Students majoring in Agronomy are required to take F. C. 1, Bot. 5, P. P. 101, Bact. 10, and Chem. 115. Students specializing in farm crops are urged to elect additional courses in Botany. Those preparing for graduate study are urged to elect at least one course in mathematics. Those specializing in Soil Science are urged in addition to elect courses in mathematics in the freshman year and courses in physics in the sophomore year. Students preparing for graduate study in Soil Science are urged further to select the following courses as electives: junior year—Math. 4, 5, and Chem. 141; senior year—Chem. 131, 132, 142, and Math. 6.

Courses printed in *italics* are required for graduation.

In 1917 (26th Cat.) a new course was offered by E. G. Schafer: 35. Market Grain Grading, 2 hours.

Early in the Holland years, in the Twenty-seventh Annual Catalogue (1918), the several subject matter areas sublisted under "AGRONOMY" were given departmental status:

FARM CROPS with E. G. Schafer as Head; E. F. Gaines, Assistant Professor Emory D. Alvard, Instructor.

DEPARTMENT OF SOILS with Fred J. Sievers as Head, A. Floyd Heck Assistant Professor and Henry, F. Holtz as Assistant Soil Physicist.

Listed in the Catalogue (1918) under GENERAL AGRICULTURE was a 3-hour course in Farm Management by Schafer, and a 2-hour course by him entitled, "Methods of Teaching Agriculture." Severance taught a 2-hour course in Farm Cost Accounting. He was listed as Head of the DEPARTMENT OF FARM MANAGEMENT.

In 1923, Leonard Hegnauer was listed as Extension Assistant Professor in soils and crops. This is the first mention of a faculty member in Extension to cover this subject matter area. In 1924, and for some years thereafter Floyd Heck was listed on both Farm Crops and Soils Departmental rosters. In 1929 S. C. Vandecaveye was listed as a Professor in the newly consolidated (Crops and Soils) Department called, "Agronomy Department". Karl B. Daniloff was listed as Assistant in Farm Crops and Roscoe E. Bell was listed as Instructor in Soils. Noteworthy was the addition of a new course, "Experimental Methods", 2 hrs. to be taught by Schafer.

New names on the agronomy faculty roster indicated an expanding curriculum and increasing teaching load in the Department of Agronomy: In 1930, A. L. Hafenrichter, was listed an Assistant Professor in Farm Crops

teaching "Crop Judging" was formerly listed as "Grain Grading and Marketing". In 1931 L. C. Wheeting was listed as Associate in Soils and G. O. Baker as Instructor in Soils. In 1936, Louis Kardos apparently succeeded Baker in Soils, and Ralph M. Weihing came to handle some of the duties formerly performed by Hafenrichter as the latter assumed duties in the SCS Nursery newly established on campus. In 1940 E. J. Kreizinger was listed as teaching a number of farm crops courses. In 1942 A. G. Law was listed as Instructor--succeeding Kreizinger--and S. P. Swenson Associate Professor was to assume the teaching load of Gaines who was failing in health. In 1943, H. W. Smith Joined the Soils teaching staff. Both Law and Smith advanced to positions of leadership in the administration of teaching programs in crops and soils in 1950 and served many years in these positions. They deserve much credit for the reputation that Agronomy enjoyed over the years for excellence in teaching and for the excellent products of the teaching program--the graduates of the Department.

The separate curricula for Agronomy and for Soils for 1982 follow. It is interesting to compare these with those of 1909 and of 1945-46 on pages 24,25, & 26. Specialization, sophistication, and advances toward professional career training are apparant.

Several members of the faculty in Agronomy and Soils have been among the advocates for credentialing of agronomists. A minimum core of nationally recognized course requirements for graduation and ultimate credentialing of agronomists was proposed by faculty members from this Department (Bertramson, 1980):

| | Semester hours |
|---|---|
| Agronomy (Crops and/or Soils) | 20 |
| Biology | 10 |
| Chemistry | 10 |
| Economics | 3 |
| Math and/or statistics | 6 |
| Communication (English, speech, journalism) | 9 |
| Minimum | 58 |

# WASHINGTON STATE UNIVERSITY STUDIES IN AGRONOMY

Agronomy Undergraduate Advisors: W.J. Johnston (335-3620), J.D. Maguire (335-9691), S.E. Ullrich (335-4936), R.E. Whitesides (335-3630), and T.A. Lumpkin (335-2726)

Contact Agronomy Office; 201 Johnson Hall (335-3471) for information.

Agronomy can be defined as the application of management and scientific principles to the cultivation of crops. Students majoring in Agronomy may have preference in the areas they wish to study (production, management industry, graduate studies, foreign service, etc.). In order to become proficient in agronomic principles and to obtain appropriate supporting knowledge, this outline provides guidance in course selection. Individual counseling based on student background and needs will be necessary to provide suitable education and to properly schedule the courses. Transfer students from other colleges or other major areas may substitute appropriate courses for WSU and Agronomy requirements. Minors and double majors involving other fields may be arranged.

## GENERAL AGRONOMY REQUIREMENTS

The core courses are common to all Agronomy majors and include General University Requirements and support courses. The two departmental undergraduate curricula and various options offer flexibility in courses and selection of electives that best suit individual needs and interests. The student must consult an advisor.

At least 40 hours of the total required for Agronomy must be in upper division courses.

| CORE REQUIREMENTS | Hours |
|---|---|
| Bio S 103 and 104 or Bot 201 | 8 |
| Agron 101, 201, 305, 445, 411, 412, and 498 or 499 (1) | 18 |
| Chem 105, 106, 107, (or 101, 102) and 240 | 12-13 |
| Bot 320 | 3 |
| Genet 301 | 3 |
| Soils 201 | 3 |
| Pl Path 329 | 3 |
| Entom 340 or 343 | 3 |
| Math Elective | 3 |
| Biom Elective (Science option-Biom 412) | 3 |
| Communications Proficiency Electives (including Ag 205 or Spe Elective) | 6 |
| Humanities Electives | 6 |
| Soc. Sci Electives (incl. Ag. Econ 201 or Econ Elective) | 6 |
| Computer Sci. 150 and Language Lab | 4 |

In addition to core courses students must select either a TECHNICAL CURRICULUM option, or the SCIENCE CURRICULUM.

Agronomy elective courses to fulfill the requirements of one or more of the options include: Agron, 301, 302, 303, 304, 405, 410, 469, and 498. A maximum of 3 credits of 498 can be used to satisfy Agronomy electives.

A CHNICAL CURRICULUM
Students in this area emphasize basic principles and applications for production and management. The courses indicated are concerned with the production of field crops, processing and marketing agronomic products. Various options offer specialization in interest areas. Students in this curriculum must complete one of the listed options:

A-1 PRODUCTION AND MANAGEMENT OPTION: For students who wish to engage in farming or corporate farm management and field agronomy positions.

| | Hours | | Hours |
|---|---|---|---|
| Agron 410 | 3 | Soils 301, 402 and 401 | 6 |
| Agron Electives | 7 | Ag M 344 | 3 |
| Ag Econ 340 | 3 | | |

A-2 PLANT PROTECTION OPTION: For students who wish to study pest control and environmental quality (agricultural chemicals).

| | Hours | | Hours |
|---|---|---|---|
| Agron Electives | 6 | Pl Path 405 or Entom 450 or IPM 452 | 2-3 |
| Bact 101 or 201 | 4-5 | Soils 301, 402 and 401 | 6 |
| Bio S 372 or Soils 407 or Hort 417 | 3-4 | Ag M 344 | 3 |

A TURF MANAGEMENT OPTION: For students who wish to specialize in golf course supervision similar recreation positions involving agronomic management techniques and personnel relat

| | Hours | | Hours |
|---|---|---|---|
| Agron 301, 302 and 499 (turf) | 7 | Ag M 312 and 313 | 4 |
| Hort 231 or Agron Elective | 3 | Ag M 344 and 346 | 4 |
| MGT Elective | 3 | Soils 301, 402 and 401 | 6 |
| Entom 450 or Hort 417 or Pl Path 405 | 3 | | |

A-4 SOILS OPTION: For students seeking training in soil and land management and plant/soil relationships.

| | Hours | | Hours |
|---|---|---|---|
| Agron Electives | 5 | Soils Electives | 3 |
| Geol 101 or 102 | 4 | Ag M 344 | 3 |
| Geog 311 or Ch E 174 | 3 | Soils 301, 401 & 400 or 402 | 6 |

B SCIENCE CURRICULUM: This program prepares students for advanced studies as scientists in such areas of crop physiology, plant breeding, and environmental quality. Students may qualify for research or teaching careers with universities, colleges or governmental agencies or industry.

| | Hours | | Hours |
|---|---|---|---|
| Agron Electives | 5 | Phys 101 and 102 | 8 |
| Chem 217 or 221 | 8 | Bact 101 or 201 | 4-5 |
| BC/BP 364 and 366 or 371 and 372 or 563 and 564 | 4-8 | BC/BP 417 or Bio S 450 or Bot 332 | 2-4 |
| Math 171 or 140 | 4 | Genet 402 or FS 371 | 2-4 |

## SCHEDULES OF STUDY - SOILS OPTIONS - B.S. DEGREE

Revised 9/83

### CORE REQUIREMENTS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| GUR's [H] 6 hrs | Soils 201 | 3 hrs | Chem 105 | 4 | Math 107 or 140 | 4 |
| [S] 6 | Soils 301 | 2 | Chem 106 | 3 | Bio S 103 | 4 |
| [C] 6 | Soils 400 | 3 | Chem 107 | 3 | Bio S 104 or Bot 201 | 4 |
| 18 | Soils 401 | 2 | Chem 217 | 4 | Bot 320 | 3 |
| | Soils 404 | 3 | Phys 101 or 201 | 4 | Bact 201 | 5 |
| (Total hours for graduation is 120, of which 40 should be at 300-400 level) | Soils 411 | 3 | Geol 102 | 4 | | 20 |
| | | 16 | | 22 | Total Core 76 hrs | |

### OPTIONS

#### GENERAL

| | |
|---|---|
| Soils elective | 2-3 hrs |
| Chem, Phys, Geol, or equivalent[a/] | 6 |
| Bio Sciences, including plant science, pure or applied[b/] | 8 |
| Math, Computer Sci, or Biometry | 2 |
| Electives to make 120-hr total | |

[a/] Soils 315, 406, 415, 417/18 and 472 apply.

[b/] Soils 402, 407/08, and 460, as well as other biologically oriented agricultural courses, apply.

#### SOIL MANAGEMENT

| | |
|---|---|
| Soils 402 | 3 hrs |
| Ag Mech 344 | 3 |
| Chem 240 | 4 |
| Ag Econ | 3 |
| Comp Sci or Biometry | 2-4 |
| Plant Protection | |
| Agron 305 | 3 |
| Pl P 329 | 3 |
| Entom 340 | 3 |
| Plant Production electives | 6 |
| Electives to make 120-hr total | |

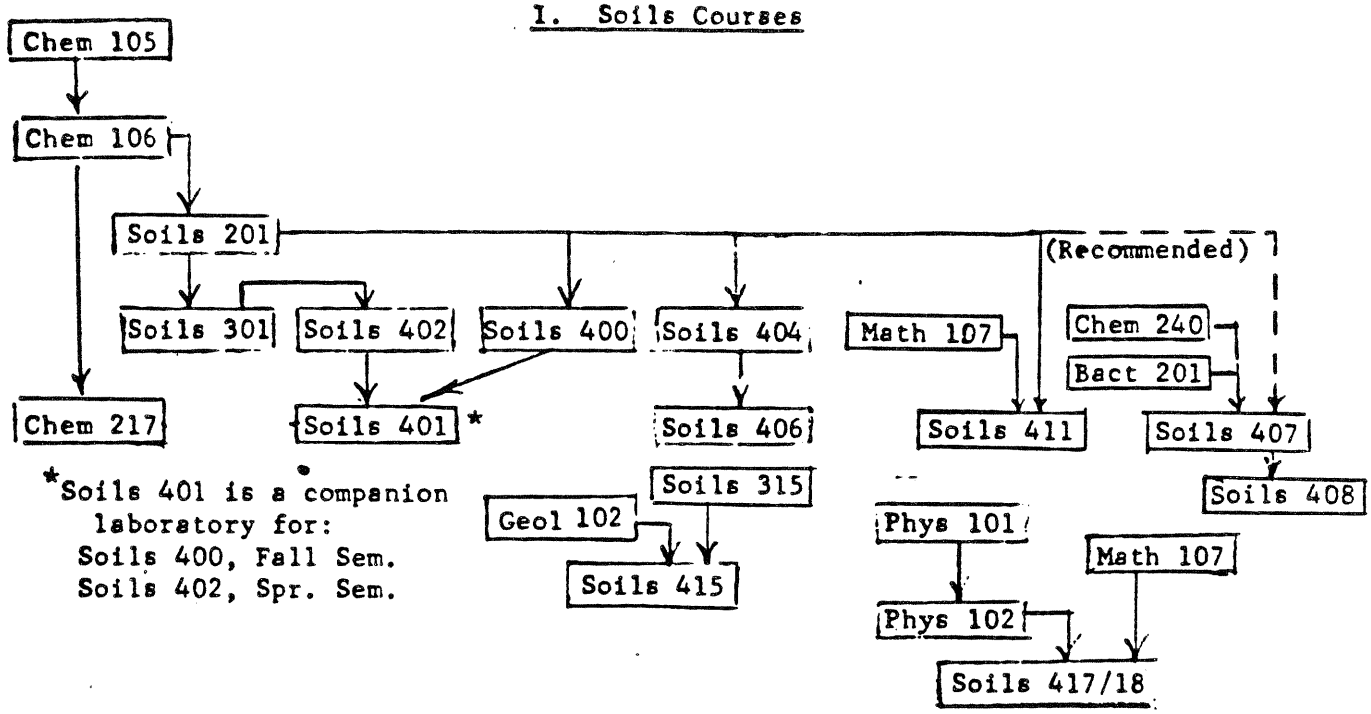
#### SOIL INVENTORY

| | |
|---|---|
| Soils 406 | 3 hrs |
| Soils 415* | 3 |
| Chem 240 | 4 |
| Geol 306 | 2 |
| Geol 310 | 4 |
| Chem E 174 | 3 |
| Bot 332 | 4 |
| Bio S 372 | 4 |
| Bot 460 or 462 | 3 |
| Comp Sci or Biometry | 2-4 |
| Electives to make 120-hr total | |

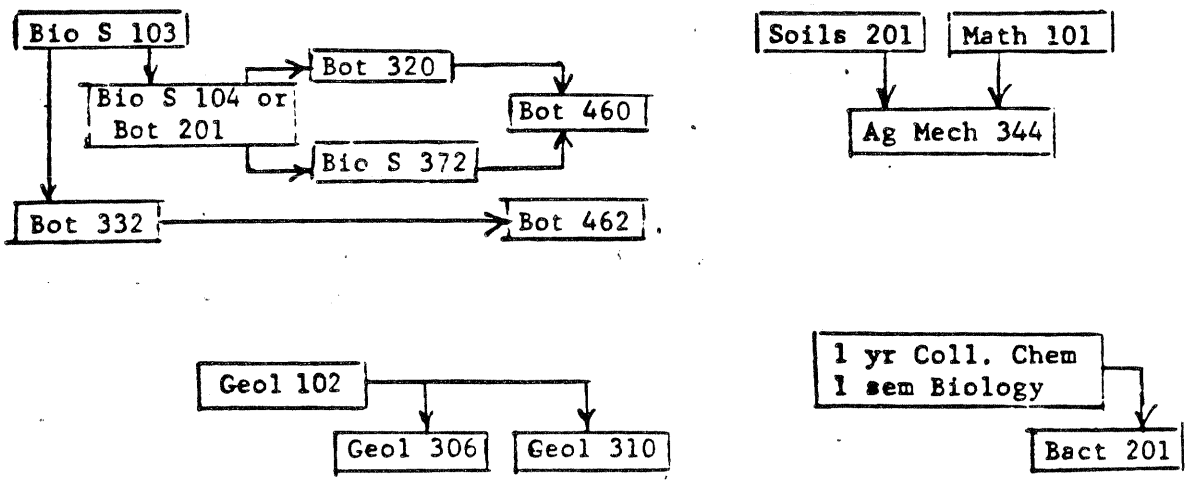
*Soils 315 can be waived as prerequisite. Additional courses in Remote Sensing (U of I) recommended.

Preparation for Graduate Study: Students planning to do graduate work in Soils should take Phys 102 or 202, Math 171, and Chem 240. In addition, one course in both Computer Science and Biometry is strongly recommended.

## I. Soils Courses




## II. Non-Soils Courses



The curricula of crops and soils at WSU go far beyond these minima as revealed in more recent catalogues of WSU. These minima were used as general guidelines for certification of agronomists by ARCPACS--the "American Registry of Certified Professionals in Agronomy, Crops, and Soils".*

ARCPACS is the credentialing agency of the American Society of Agronomy, and affiliate Societies: Crops Science Society of America and Soil Science Society of America. The history of the development of ARCPACS was well covered by its Director, Dr. M. D. Openshaw in the AGRONOMY NEWS through several issues of 1980-1981. Noteworthy is the fact that the Chairman of the ASA Committee, A591 Certification of Agronomists, was WSU's Agronomy and Soils Department Chairman, Dr. J. C. Engibous, who proposed for the Committee in 1974 to the respective Boards of the three Societies the establishment of the professional registration program for the three Societies. Under his enthusiastic leadership, the Board of Directors of ARCPAC, appointed by the three Societies, reviewed and revised document after document to arrive at an acceptable set of Articles of Incorporation, Bylaws, Code of Ethics and Announcement-of-Position statement for a director. These documents were approved by the ASA Executive Committee as recorded in Agronomy Journal 69:141, 1977. Surely, this was a monumental accomplishment under leadership of the Chairman of Agronomy and Soils, WSU! Following the Incorporation under the laws of the State of Wisconsin, the former Chairman of the Department of Agronomy, Dr. B. R. Bertramson became Chairman of the Board of ARCPACS, and it became operational in July, 1977.

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* AGRONOMY NEWS, Nov. 1983, p. 5, carried the "Minimum Core Requirements for ARCPACS Certification" of Agronomists, Crop Scientists, and Soil Scientists. This was a milestone in the long journey toward credentialing of our graduates.

He continued as Chairman until his retirement from Director of Resident Instruction, College of Agriculture, WSU, in the fall of 1979. At that time, ARCPACS had about 2,000 certificants. A means of credentialling agronomists had been well established. The drive for professionalism in agriculture has been documented by Bertramson, 1977. That drive has been well served by WSU's Agronomists for the agronomic profession (Bertramson, 1978).

While it would be counter productive to rate the three areas--instruction, research, and extension--as to their relative importance in the success of the land-grant scheme, it is appropriate to note the Land-Grant Act of 1862 specifically called for, "teaching such branches of learning as are related to agriculture and engineering." Admittedly, subsequent legislation provided many times more financial support to research and extension activities. But the amount of assigned funds is not necessarily a measure of the importance of a function. Primarily, the emphasis was on teaching--on inculcating the science and art of agriculture into the young people who came to serve agriculture.

The wisdom of this objective is self-evident as one considers:

1) Researchers had to be educated--trained--to seek new knowledge;
2) Extenders had to be educated--trained--to extend new knowledge;
3) Practicing agriculturists had also to be trained to implement the technology;
4) Practical answers to agricultural problems had to be found; and
5) These answers had to be applied on the land through an extension process.

In brief, the Land-Grant Act provided for the training of professionals in engineering and in agriculture. The professional image

developed much more rapidly with the engineers; but in recent years, agriculturists have made rapid strides in the growth of a professional attitude and enhancing their professional image. While the agricultural sciences have made only half-hearted attempts at accreditation, they have moved to "certification" which ultimately may achieve similar credentialing and professional identity (Bertramson, 1977). "One sign of progression towards maturity in a profession is an increasing concern with the qualifications of its members." (Gagne, 1975). (Lippitt, 1969) holds, "We will have professional status only to the extent that we create it for ourselves."

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