PROFESSOR LOUISE JACKSON, CHAIR  
Graduate Group in Soils & Biogeochemistry

RE: Soils & Biogeochemistry Revised graduate degree requirements

Dear Professor Jackson,

At its meeting of June 21, 2007, Graduate Council considered and approved the Soils & Biogeochemistry request for degree requirement changes. Thank you for working with the Educational Policy Committee on the proposed revisions and on the additional clarifications that the committee and Graduate Council requested.

In order to assist graduate programs and Graduate Studies in keeping accurate records of when degree requirement changes are approved by Graduate Council, we will send you the electronic version of the approved degree requirements to which we have added the revision and approval dates. The Office of Graduate Studies also will keep copies in its files.

Sincerely,

Shrini Upadhyaya, Chair  
Graduate Council

/cml

Enclosure

c: Kathy Garcia  
Cathy Jurado

c w/o encl:
   Edward Caswell-Chen  
   Jeffery Gibeling  
   Merlyn Potters  
   Kathy Garcia
SOILS AND BIOGEOCHEMISTRY GRADUATE GROUP (SBG-GG)  
(APPROVED BY GRADUATE COUNCIL 6/21/2007)

Degree Requirements Policy

MASTER'S DEGREE REQUIREMENTS FOR M.S. PLAN I AND PLAN II

1) Admissions Requirements

A. Applicants for admission must meet the University of California requirement of a minimum GPA 3.0/4.0 grade point average. In addition, students must complete the following entrance requirements: year-long preparatory courses in chemistry, physics, biology, and calculus. Applicants who are admitted without these prerequisites must show proficiency in these four areas or must take remedial course work in their first year of study. Other requirements for admission include:

B. Graduate Record Exam (General text; subject matter is not required).

C. Three letters of recommendation;

D. A Major Professor who must confirm that they accept the student into their program and will provide essential resources and mentorship.

E. English proficiency exam (TOEFL or other University approved exam) with the minimum score set by the Graduate Council. This is required for international applicants who have not studied at an English speaking University.

2) Master’s Degree Plan I (Thesis) or Plan II (Comprehensive Examination)

Candidates may pursue the MS Degree under Plan I (Thesis) or Plan II (Comprehensive Examination). Students must be in residence for at least three quarters.

A. Plan I (Thesis)

Graduate Studies requirements (see http://gradstudies.ucdavis.edu/continuing/degree.htm ) for residency and limitations on transfer units must be fulfilled. Plan I requires a thesis and a minimum of 30 units. Course work must be approved by the student’s Guidance Committee and the Graduate Adviser. All Plan I students are required to submit a thesis approved by the thesis committee that is responsible for directing the student’s research. The thesis committee will be chaired by their Major Professor. The thesis committee must sign the title page certifying the student has completed the thesis to the committee’s satisfaction.

B. Plan II (Comprehensive Examination)
Soils & Biogeochemistry Graduate Group Degree Requirements: L.E. Jackson, 25 June, 2007

Students are required to complete a minimum of 36 units of upper division and graduate courses and pass a comprehensive written examination. Course work must be approved by the student’s Guidance Committee and the Graduate Adviser. Following advancement to candidacy, students enrolled in the MS Plan II program are required to complete a written Comprehensive Examination with a passing grade.

3) Course Requirements – M.S. Plan I and Plan II

Plan I: At least 11 units of the 30 units must be in graduate courses in the major field and must include SSC 205 (5 units, Field Studies of Soils in California Ecosystems) and 6 units of approved Soil Science graduate courses (SSC 200 and higher). Students must take one unit of SSC 290 (soils seminar) and 2 units of other relevant seminars. The remaining 16 units may be a combination of upper division and graduate units including research. See list of suggested, but not required, courses. All students must maintain an average of a 3.0 grade point average (B) in all courses taken for a grade during residence. All courses taken to satisfy degree requirements during residence must be taken for a letter grade, except those for which letter grades are not normally assigned, such as research credits.

Summary Table, Course Requirements, Plan I:

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSC 205: Field Studies of Soils in California Ecosystems</td>
<td>5</td>
</tr>
<tr>
<td>SSC 290: Soils seminar</td>
<td>1</td>
</tr>
<tr>
<td>Soil Science (SSC) graduate courses (see table)</td>
<td>6</td>
</tr>
<tr>
<td>Seminars</td>
<td>2</td>
</tr>
<tr>
<td>Electives and research</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total required for M.S. Plan I</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Plan II: At least 18 of the 36 units must be soil science graduate courses (numbered SSC 200 and higher) and must include SSC 205 (5 units) (Field Studies of Soils in California Ecosystems), SSC 290 seminar (1 unit), and 12 additional units of SSC graduate level courses not including seminars or research. Two additional units of seminar are required and these can be either SSC or other relevant seminars. The remaining 16 elective units may be a combination of upper division and graduate units, including research units. See list of suggested, but not required, courses. All students must maintain an average of a 3.0 grade point average (B) in all courses taken for a grade during residence. All courses taken to satisfy degree requirements during residence must be taken for a letter grade, except those for which letter grades are not normally assigned, such as research credits.

Summary Table, Course Requirements, Plan II:
Soils & Biogeochemistry Graduate Group Degree Requirements: L.E. Jackson, 25 June, 2007

SSC 205: Field Studies of Soils in California Ecosystems 5 units
SSC290: Soils seminar 1 unit
Soil Science (SSC) graduate courses (see table) 12 units
Seminars 2 units
Electives 16 units
Total required for M.S. Plan II 36 units

List of Suggested Courses for Plan I and Plan II

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSC 107</td>
<td>Soil Physics</td>
</tr>
<tr>
<td>SSC 202</td>
<td>Topics in Advanced Soil Chemistry</td>
</tr>
<tr>
<td>SSC 208</td>
<td>Soil-Plant Interrelationships</td>
</tr>
<tr>
<td>SSC 209</td>
<td>Physiology &amp; Ecology of Mycorrhizal Symbioses</td>
</tr>
<tr>
<td>SSC 211</td>
<td>Advanced Soil Microbiology</td>
</tr>
<tr>
<td>SSC 218</td>
<td>Soil Erosion and Conservation</td>
</tr>
<tr>
<td>SSC 219</td>
<td>Ecosystem Biogeochemistry</td>
</tr>
<tr>
<td>SSC 220</td>
<td>Pedology</td>
</tr>
<tr>
<td>SSC 222</td>
<td>Organic Chemistry of Soils</td>
</tr>
<tr>
<td>SSC 298ECL 290</td>
<td>Stable Isotopes in Ecology: Theory and Applications</td>
</tr>
<tr>
<td>EBS 215</td>
<td>Soil-Machine Relations in Tillage and Traction</td>
</tr>
<tr>
<td>EBS 240</td>
<td>Infiltration and Drainage</td>
</tr>
<tr>
<td>EBS 265</td>
<td>Design and Analysis of Engineering Experiments</td>
</tr>
<tr>
<td>EBS 270</td>
<td>Modeling and Analysis of Biological and Physical Systems</td>
</tr>
<tr>
<td>ECI 245A</td>
<td>Applied Environmental Chemistry: Inorganic</td>
</tr>
<tr>
<td>ECI 245B</td>
<td>Applied Environmental Chemistry: Organic</td>
</tr>
<tr>
<td>ECI 264B</td>
<td>Transport, Mixing and Water Quality in Estuaries and Wetlands</td>
</tr>
<tr>
<td>ECI 272C</td>
<td>Multiphase Reactive Transport</td>
</tr>
<tr>
<td>ECI 281A</td>
<td>Advanced Soil Mechanics</td>
</tr>
<tr>
<td>ECI 281B</td>
<td>Advanced Soil Mechanics</td>
</tr>
<tr>
<td>ECI 284</td>
<td>Theoretical Soil Mechanics</td>
</tr>
<tr>
<td>GEL 227</td>
<td>Stable Isotope Biogeochemistry</td>
</tr>
<tr>
<td>HYD 210</td>
<td>Hydrologic Modeling of the Vadose Zone</td>
</tr>
<tr>
<td>HYD 252</td>
<td>Hillslope Geomorphology</td>
</tr>
<tr>
<td>HYD 273</td>
<td>Introduction to Geostatistics</td>
</tr>
<tr>
<td>VEN 216</td>
<td>Soils and Precision Viticulture</td>
</tr>
<tr>
<td>PLB144</td>
<td>Trees and Forests</td>
</tr>
<tr>
<td>PLB 157</td>
<td>Physiology of Environmental Stresses in Plants</td>
</tr>
</tbody>
</table>
Soils & Biogeochemistry Graduate Group Degree Requirements: L.E. Jackson, 25 June, 2007

<table>
<thead>
<tr>
<th>PLB 158</th>
<th>Mineral Nutrition of Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBI 225</td>
<td>Methods and Instrumentation for Crop and Soil Science</td>
</tr>
<tr>
<td>PBI 210</td>
<td>Plant Ecophysiology</td>
</tr>
</tbody>
</table>

4) **Special Requirements**

The maximum time that a student may remain in the Soils and Biogeochemistry Graduate Program is five years for the MS degree.

5) **Committees**

A. **Admissions Committee**: The Admissions Committee is composed of a Chair and two additional faculty members of the SBC Group. Applications will be reviewed by this Committee and make recommendations for admissions to the Chair of SBG-GG.

B. **Course Guidance Committee**: The Guidance Committee consists of the Academic Adviser, the Major Professor and an additional Graduate Group faculty member. The Committee is appointed by the Academic Adviser when a new student begins his/her graduate program. A graduate student may discuss the membership of the guidance committee with both his/her Major Professor and Academic Adviser. The Guidance Committee assists the student with academic planning such as course selection and timing and serves as another source of academic information. A student's program of study is subject to the approval of his/her Graduate Adviser and guidance committee. The guidance committee will meet as needed until the student advances to candidacy or passes the MS exam. Either the student or any member of the guidance committee may request guidance committee meetings. Typically, the guidance committee will meet at least once a year, or more often as needed in the first year of a student's residency.

C. **Thesis Committee**: The MS thesis committee consists of the student’s Major Professor and at least two additional faculty. Committee members are typically selected through consultation between the student, the Major Professor and the guidance committee. The Academic Adviser nominates the committee members to the Dean of Graduate Studies, who appoints the members. External Committee members are allowed with the approval of the SBG-GG Graduate Adviser and the Dean of Graduate Studies. Students must complete the approval process set by the Graduate Council for external committee members. The thesis committee advises the student, supervises the student’s research and has the final authority to review and approve the thesis. It is the responsibility of the student to keep the thesis committee informed of his/her progress.

D. **Comprehensive Examination Committee, MS Plan I**: This committee is composed of members of the SBG-GG Executive Committee who have expertise in the five core disciplines: Soil Chemistry, Soil Physics, Soil Microbiology, Soil Genesis/Classification (Pedology), and Soil Fertility/Plant Nutrition.

6) **Advising Structure and Mentoring**
Students are assigned an Academic Adviser. The Adviser maintains student records, is available for advice on course requirements, answers academic questions and is the liaison between the student and the Dean of Graduate Studies. The liaison role is to recommend examination, thesis and dissertation committee membership to Graduate Studies. The Adviser will appoint a Guidance Committee and complete official forms and documents, eg. Advancement to Candidacy and Qualifying Examination Committee Nomination forms.

Three faculty members typically serve on a Guidance Committee. Plan I MS students will also have a Thesis Committee. Each of these individuals and committees play a role in helping a graduate student reach his/her educational goals.

A Major Professor is identified for each student as a condition of admission to the graduate program. Once in the program, students are allowed to select a new Major Professor among the SBG-GG faculty. The choice is subject to mutual agreement by the student and the Major Professor. The Major Professor is primarily responsible for advising and mentoring his/her graduate students, guiding and directing a graduate student’s research. Faculty mentors should follow and adhere to the Graduate Council’s Mentorship Guidelines and the UC Davis Principles of Community.

7) **Advancement to Candidacy**

A student may advance to candidacy for the MS degree after completion of at least one-half of the course work requirements for the degree. A student must submit an advancement to candidacy form (http://www.gradstudies.ucdavis.edu/forms/index.html, or available from Graduate Studies). The form must be signed by the Graduate Adviser and, for Plan I applicants, by the thesis adviser. The advancement to candidacy form must be filed at least one quarter prior to completion of all degree requirements.

8) **Time Line and Sequence of Events**

Year one, Fall Quarter: submit approved Guidance Committee report. Year two, Fall Quarter: submit petition to Advance to Candidacy. Spring quarter, complete all required coursework for Plan I and Plan II. Plan II, take the Comprehensive Exam. Year three (if necessary): Complete research project, write thesis, submit thesis to Office of Graduate Studies.

9) **Sources of Funding**

Funding sources from the Graduate Group that are available to students include work study and block grant fellowship support. Students should consult with individual faculty regarding research funding and Teaching Assistant appointments.

10) **PELP and Filing Fee Status**

Students must maintain appropriate student status at all times to be eligible to complete the degree. Students will be required to follow PELP and Filing Fee Status guidelines and procedures set by the Graduate Council.
11) **Thesis Requirements**  
There are no program specific requirements.

12) **Comprehensive Oral Examination requirements for Plan II Students**

The comprehensive examination is given during the fifth week of fall and spring quarter each year. Questions for this examination are written by SBG-GG Executive Committee. There are questions in the following five core disciplines: Soil Chemistry, Soil Physics, Soil Microbiology, Soil Genesis/Classification (*Pedology*), and Soil Fertility/Plant Nutrition. Typically, students are given three hours to write answers to the exam questions. Each section of the examination is graded separately and students must earn a passing grade on all sections of the exam. Students who do not pass any or all sections may take the examination one additional time.
DOCTOR OF PHILOSOPHY DEGREE (PLAN B)

1) Admissions requirements

A. Applicants for admission must meet the University of California requirement of a minimum GPA 3.0/4.0 grade point average. In addition, students must complete the following entrance requirements: year-long preparatory courses in chemistry, physics, biology, and calculus. Applicants who are admitted without these prerequisites must show proficiency in these four areas or must take remedial course work in their first year of study. Other requirements for admission include:

B. Graduate Record Exam (General text; subject matter is not required).

C. Three letters of recommendation;

D. A Major Professor who must confirm that they accept the student into their program and will provide essential resources and mentorship.

E. English proficiency exam (TOEFL or other University approved exam) with the minimum score set by the Graduate Council. This is required for international applicants who have not studied at an English speaking University.

2) Ph.D. Dissertation

Students must be in residence for at least six regular quarters. Graduate Council’s requirements (see http://gradstudies.ucdavis.edu/continuing/degree.htm ) for residency and limitations on transfer units must be fulfilled. Course work must be approved by the student’s Guidance Committee and the Graduate Adviser. All students are required to submit a dissertation approved by the Dissertation Committee chaired by their Major Professor and responsible for directing the student’s research. The Dissertation Committee must sign the title page certifying the student has completed the dissertation to the committee’s satisfaction.

Two Tracks of Study

There are two tracks: (a) Soil Science and (b) Soils and Biogeochemistry. Students will choose one of two tracks during the initial planning phase of their course of study with their Academic Adviser and Guidance Committee. Both tracks have the same course requirements, but differ in the Qualifying Examination subject matter.

The Soil Science track is based on a traditional soil science course of study consisting of five core disciplines: Soil Chemistry, Soil Physics, Soil Microbiology, Soil Genesis/Classification (Pedology), and Soil Fertility/Plant Nutrition.

The Soils and Biogeochemistry track is based on a broader definition of soil science that includes soils in relation to environment and ecological processes. This track is more flexible, and can allow students to emphasize a particular area.
Soils & Biogeochemistry Graduate Group Degree Requirements: L.E. Jackson, 25 June, 2007

3) Course Requirements

The Soils and Biogeochemistry Graduate Group offers a Plan B Ph.D. program (see http://www.mrak.uchicago.edu/senate/ddregulations_0405_revisions.pdf). The minimum unit requirement is at least 17 units in addition to a variable number of research units. At least 12 units must be in graduate courses in the major field and must include SSC 205 (5 units, Field Studies of Soils in California Ecosystems) and 7 units of approved Soil Science graduate courses (SSC 200 and higher). Students must take three units of SSC 290 (soils seminar) and 2 units of other relevant seminars. The remaining units may be a combination of upper division and graduate units including research. Additional units may be required by the Major Professor, Academic Adviser and/or guidance committee prior to students being admitted to the Qualifying Examination. All students must maintain an average of a 3.0 grade point average (B) in all courses taken for a grade during residence. All courses taken to satisfy degree requirements during residence must be taken for a letter grade, except those for which letter grades are not normally assigned, such as research credits.

Summary Table, Ph.D. Course Requirements

SSC 205: Field Studies of Soils in California Ecosystems 5 units
SSC290: Soils seminar 3 units
Soil Science (SSC) graduate courses (see table) 7 units
Seminars 2 units
SSC 299: Research variable
Total required 17 units

4) Special Requirements

PhD students are required to present an exit seminar to the SBG-GG faculty and students prior to submitting the dissertation to the Office of Graduate Studies. The maximum time that a student may remain in the Soils and Biogeochemistry Graduate Program is ten years for the Ph.D. degree.

5) Committees

A. Admissions Committee: The Admissions Committee is composed of a Chair, three additional faculty members of the SBC Group, a graduate student representative from the SBG-GG and the SBG-GG Program staff. Applications will be reviewed by this Committee and make recommendations for admissions to the Chair of SBG-GG.

B. Course Guidance Committee: The Guidance Committee consists of the Academic Adviser, the Major Professor and an additional Graduate Group faculty member. The Committee is appointed by the Academic Adviser when a new student begins his/her graduate program. A
graduate student may discuss the membership of the guidance committee with both his/her Major Professor and Academic Adviser. The Guidance Committee assists the student with academic planning such as course selection and timing and serves as another source of academic information. A student’s program of study is subject to the approval of his/her Graduate Adviser and Guidance Committee. The Guidance Committee will meet as needed until the student advances to candidacy. Either the student or any member of the Guidance Committee may request meetings. Typically, the Guidance Committee will meet at least once a year, or more often as needed in the first year of a student’s residency.

**C. Qualifying Examination Committee:** Students must pass a Qualifying Examination for the Ph.D. degree that tests the student's eligibility to attain Ph.D. Candidate status. The Qualifying Examination must be taken within seven academic quarters (not including summer) after admission to the Soils and Biogeochemistry Graduate Group. All required courses must be completed before admission to the Qualifying Examination. Application for taking the Qualifying Examination is made by filing the application for Qualifying Examination form with Graduate Studies.

Members of the Qualifying Examination committee consist of five faculty, not including the student’s Major Professor. The members are selected by the Guidance Committee in consultation with the student.

Before scheduling the Qualifying Examination, the faculty member of the examination committee closest to the student’s research interest may decide to give a comprehensive written examination to determine if the student is prepared for the Qualifying Examination. Prior to the Qualifying Examination, one or more members of the Qualifying Examination Committee may choose to give a preliminary written examination to the student.

The Qualifying Examination typically begins with a brief presentation by the student of her/his research proposal and preliminary results. The proposal, based on the general format of USDA-NRI grant proposal programs, will be 12-15 pages double-spaced, including tables and figures. This is followed by both general knowledge questions and questions about the student's research proposal from each member of the examination committee. No time limit has been set for the length of the examination but a typical examination is three hours in length. It is the student’s responsibility to arrange the date and time of the examination in consultation with committee members. Either the student or the chair of the examination committee is responsible for reserving the room for the examination.

**Soil Science Track:** This committee is composed of members of the SBG-GG who have expertise in the five core areas -- Soil Chemistry, Soil Fertility/Plant Nutrition, Soil Microbiology, Soil Physics, Soil Genesis/Classification (Pedology).

**Soils and Biogeochemistry Track:** This committee is composed of members of the SBG-GG who have expertise in the following five areas:

1. Principles of Soil Science (breadth of knowledge at the SSC 100 level)
2. Methods/Tools/Quantitative Skills
Soils & Biogeochemistry Graduate Group Degree Requirements: L.E. Jackson, 25 June, 2007

(3) A major emphasis topic from one of the 5 traditional soil science disciplines (Soil Chemistry, Soil Fertility/Plant Nutrition, Soil Microbiology, Soil Physics, Soil Genesis/Classification (Pedology)
(4) A minor emphasis topic chosen by the student and Guidance Committee. This topic is of minor emphasis with regard to the student’s research area.
(5) A second minor emphasis topic chosen by the student and Guidance Committee. This topic is of minor emphasis with regard to the student’s research area.

Examples of topics for minor emphasis are: (a) Monitoring Environmental Quality and Ecosystem Services, (b) Biogeosciences, (c) Global Change, (d) Environmental Degradation and Restoration, (e) Isotope Biogeochemistry, (f) Nutrient Cycling, (g) Fate and Transport Processes, (h) Plant-Soil Interactions, (i) Soil-Plant-Water Interactions, (j) Rhizosphere Ecology, and (k) other soil science sub-disciplines not selected as major emphasis.

D. Dissertation Committee: The Dissertation Committee consists of the student’s Major Professor and at least two additional faculty who are typically selected through consultation between the student, the Major Professor and the Guidance Committee. The Academic Adviser nominates the committee members to the Dean of Graduate Studies, who appoints the members. External Committee members are allowed with the approval of the SBG-GG Graduate Adviser and the Dean of Graduate Studies, and students must complete the approval process of the Graduate Council. The Dissertation Committee advises the student, supervises the student’s research and has the final authority to review and approve the dissertation. Students are responsible for keeping their committee informed of their progress.

6) Advising Structure and Mentoring

Students are assigned an Academic Adviser who maintains student records, is available for advice on course requirements, who answers academic questions and who is the liaison between the student and the Dean of Graduate studies. The liaison role is to recommend examination, thesis and dissertation committee membership to Graduate Studies. The Academic Adviser is also responsible for appointing a Guidance Committee and for completion of various official forms and documents such as the advancement to candidacy form and Qualifying Examination committee nomination form.

Graduate students will have a Major Professor who serves as the student’s research adviser and an assigned faculty member who serves as an Academic Adviser. In addition three faculty members typically serve on a guidance committee for each student. Each of these individuals and committees plays a role in helping a graduate student reach his/her educational goals.

The primary responsibility for advising and mentoring graduate students will be the Major Professor and the respective laboratory group. The Major Professor guides and directs a graduate student’s research. Faculty mentors should follow and adhere to the Graduate Council’s Mentorship Guidelines and the UC Davis Principles of Community. A Major Professor is identified for each student as a condition of admission to the graduate program. Once in the program, students are allowed to select a new Major Professor among the SBG-GG faculty. The choice is subject to mutual agreement by the student and the Major Professor.
7) Advancement to Candidacy

A student may advance to candidacy for the Ph.D degree after completion of all required coursework and successful completion of the Qualifying Examination. A student must submit an advancement to candidacy form (http://www.gradstudies.ucdavis.edu/forms/index.html, or available from Graduate Studies). The form must be signed by the Graduate Adviser. The advancement to candidacy form must be filed at least one quarter prior to completion of all degree requirements.

8) Normative Time and Time to Degree

The normative time to degree for a student entering with a M.S. degree is approximately 3-4 years. Students without a M.S. degree normally take 4-6 years. The Graduate Council allows a maximum time of four years after a student passes the qualifying examination before s/he goes on probation for one year. If a student does not complete all degree requirements at the end of the probationary period the student will be dismissed (please see http://gradstudies.ucdavis.edu/gradcouncil/timetodegree.pdf).

9) Typical time line and sequence of events

Year one, Fall Quarter: submit approved Guidance Committee report. Year two, Spring Quarter or earlier: submit request for Qualifying Examination. After successful completion of this exam, student submits form to Advance to Candidacy. Year three and beyond: complete research project, write dissertation, receive comments from Dissertation Committee and submit to Office of Graduate Studies.

10) Sources of Funding

Funding sources from the Graduate Group that are available to students include work study and block grant fellowship support. Students should consult with individual faculty regarding research funding and Teaching Assistant appointments. The current year's student fees are available from the Office of Resource Management and Planning. Domestic students may establish residency in one year, however international students are subject to nonresident tuition in each quarter of registration. As per the current University policy, the non-resident tuition is reduced to zero for a period of three years for all international students who are advanced to candidacy. In state educational fees for students on 25% or greater research assistantship positions are paid as part of the research assistantship. Nonresident tuition fee waivers are awarded to both domestic and international students through decisions made by the scholarship committee of the SBG-GG. For graduate students to receive any Soils and Biogeochemistry Graduate Group funds, that they must return in the Annual Progress Report in a timely manner.

11) PELP and Filing Fee Status

Students must maintain appropriate student status at all times to be eligible to complete the degree. Students will be required to follow PELP and Filing Fee Status guidelines and procedures set by the Graduate Council.
12) Dissertation Requirements
Ph.D. students have the option of using three manuscripts that are worthy of publication in a major research journal instead of a traditional dissertation. The dissertation would consist of an Introductory chapter, three substantive chapters (three manuscripts) and a brief Summary and Conclusions chapter. The dissertation committee is authorized to approve the appropriate content of the manuscripts. There are no program specific requirements. The program requires an exit seminar of each student. Satisfaction of this requirement must be verified by the Dissertation Committee Chair.
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Figure 1. Portrayal of the two tracks for the Qualifying Examination.

Soils and Biogeochemistry
Ph.D. degree program

7 units of graduate SSC (>200) coursework
SSC 205 Field Course (5 units)
5 units of seminar (3 units must be SSC 290 seminars)

Soil Science Track
Qualifying Exam consists of the 5 traditional soil science sub-disciplines:
- Soil chemistry
- Soil fertility/Plant nutrition
- Soil microbiology
- Soil physics
- Soil genesis and classification (pedology)

Soils and Biogeochemistry Track
Qualifying Exam consists of 5 topics:
- Principles of soil science
- Methods/Tools/Quantitative Skills
- Major emphasis topic – one of the 5 traditional soil science sub-disciplines
- Two minor emphasis topics to be chosen by the student and guidance committee