Brain & Cognitive Sciences

Major Course Requirements

Brain and Cognitive Sciences is a collaborative and interdisciplinary graduate program focused on elucidating the mechanisms of cognition and behavior. We bring together psychological, neural, and computational techniques and theoretical approaches to understand attention, executive function, language, learning, memory, motivation, and perception and action. To that end, course offerings provide an integrative perspective on these core topics across multiple scales and levels of analysis.

Required:
PSCH 552 Cognitive Sciences
PSCH 485 Neuroscience 2
PSCH 569 Current Topics in BCS (all semesters)

Plus *three* elective courses from:

PSCH 483 Neuroanatomy
PSCH 484 Neuroscience 1
PSCH 512: Attitudes and Social Cognition
NEUS 524: Neuroscience of Addiction
PSCH 526: Lifespan Development
PSCH 547: Introduction to Data Science
PSCH 553: Memory
PSCH 554: Language
PSCH 555: Thinking
PSCH 557: Skill and Knowledge Acquisition
PSCH 558: Seminar in Brain and Cognitive Sciences
PSCH 561: Perception and Action
PSCH 564: Behavioral Psychopharmacology
PSCH 565: Advanced Cognitive Neuroscience
PSCH 566: Motivation

Requirements for students whose research involves animals:

Graduate College 470: Essentials for Animal Research
They also must be named as personnel on an approved ACC protocol

Preliminary Examination Requirements

The Preliminary Examination (prelim) is the last major program requirement that students must complete before advancing to candidacy and beginning work on their doctoral dissertation.

Purpose

The purpose of the prelim is to assess the student's readiness to undertake dissertation research. The core competencies that a student should demonstrate in a successful prelim are as follows: The ability to work independently and generate a product showing coherent thinking and critical analysis about relevant background literatures/theories, research design, data, and analysis, etc. The student should also demonstrate foundational and contemporary knowledge of the field.

Based on the prelim product, faculty should be able to identify areas where students need more attention – both in knowledge and skills (e.g., presentation, writing) that will lead to further development as they advance to candidacy.

Prerequisites and Timing of Proposing a Prelim

Before beginning the prelim, students must complete at least four of the program's course requirements, four semesters of Current Topics (PSCH 559 or 569), their master's thesis, and maintain an average grade of B in all program courses taken to date.

The prelim will consist of a written proposal, product, and an oral exam. Following the exam itself, the results will be considered along with a review of the student's overall performance to decide whether the student advances to candidacy.

A prelim proposal may be submitted at any time during the first 12 weeks of the Fall or Spring semester to the program chair. The chair will assign the student's advisor and two additional program faculty members to serve as the prelim subcommittee for that student. The student and their advisor may make recommendations about members, but the chair ultimately assigns the committee to balance these recommendations, research expertise, and faculty availability. Feedback on proposals should be provided to the student *within two weeks of submission* to the subcommittee during the academic year. If the prelim is taken during the summer, it is the responsibility of the program chair to ensure that a time is chosen when subcommittee members are available to meet the timing requirements.

Roles of the Faculty Advisor and Prelim Subcommittee

The role of the faculty advisor is to provide constructive and hands-on feedback at the prelim proposal phase (e.g., line edits are permissible) but to take a more distant role

throughout the remainder of the prelim process. Students may consult with their advisor to discuss the general parameters of what they are working on or issues they are confronting as they work on the prelim after the proposal has been approved. The faculty advisor can provide big-picture feedback but may not read or edit the prelim document itself.

The subcommittee's role is to oversee the entire prelim process for the student. The subcommittee will read the student's proposal and the chair of the subcommittee will inform the student about whether their proposal has been approved within two weeks of submission. The prelim subcommittee will read and evaluate the final prelim product, conduct the oral exam, and provide a decision about the outcome of the exam. The primary role of the faculty advisor on the subcommittee is to provide context drawing from their expertise to the other committee members (e.g., steer questioning away from topics not pertinent to the exam). The faculty advisor may vote on the outcome of the exam but cannot chair the committee. The full subcommittee is responsible for arriving at a consensus agreement about the decision and the advisor is responsible for drafting final feedback to the student about the exam (written and oral components).

Preliminary Exam Product

Although the student should consult with their advisor about prelim options, the student may select any one of the following to fulfill the requirement of a preliminary exam product: 1) a literature review, 2) a grant proposal in the style of a National Science Foundation (NSF) or National Institutes of Health (NIH) small grant, 3) a full draft of a journal article that reports original empirical research, 4) a stage 1 registered report manuscript, or 5) a self-designed project. In each case, the prelim product must be distinct from the master's thesis, but can be on the same general topic. The level of work expected for a prelim product is that of a complete full draft of the product that reflects the student's knowledge and thinking, not the polished, submission-ready project that comes from rounds of revisions with collaborators.

Literature Review

The literature review can take one of two different forms. Both are problem-oriented, critical, and integrative rather than simply descriptive.

Evidence synthesis. An evidence synthesis summarizes past research by drawing conclusions from many separate investigations addressing related or identical hypotheses. An evidence synthesis presents the author's assessments of 1) the state of knowledge concerning the relations of interest, 2) critical assessments of the strengths and weaknesses of past research on the relations of interest, and 3) identification of important issues that research has left unresolved that require future scientific inquiry, and 4) the implications of the current state of knowledge across the reviewed empirical work have for theory, including whether or how

theory should be updated. Evidence synthesis can take either a narrative or quantitative (meta-analytic) form.

The *proposal* for an evidence synthesis prelim should establish the hypotheses to be examined and the search terms and databases used to identify the relevant empirical literature, inclusion and exclusion criteria for including papers in the review, and a reference list of articles that survive the review for inclusion/exclusion. Transparency for inclusion and completeness are essential components of a prelim that takes an evidence synthesis approach.

Theoretical analysis. A theoretical analysis should be an integrative theoretical article that will form the basis for new lines of research and theory or should critically synthesize existing theory and fields of research toward the same end. A successful theoretical paper will describe novel insights that emerge from a deep understanding of previously published empirical research. Successful theoretical reviews generally take one of two forms:

1. Propose a novel idea or approach. The paper begins with a description of the novel idea or hypothesis. After presenting an argument for the basic idea, the remainder of the paper reviews the empirical literature that supports the basic premises of the new idea. A theory paper that takes this form should include how the current idea is or is not consistent with existing theories that try to account for similar phenomena, research that is at odds with the proposed idea, and what new questions their approach suggests are important for future inquiry.
2. Systematic evaluation of alternative or competing approaches that attempt to explain the same phenomena. The alternative/competing programs of research could be:
    a. independent from each other. The paper would take an integrative approach to compare and contrast these theories and the empirical literature that support them.
    b. explicit competitors accounting for similar phenomena. The paper would review the empirical literature that is consistent or inconsistent with these competing perspectives, and how these approaches might be integrated given the state of evidence.
    c. a paradox or puzzle in the literature. The paper would consider two theories or programs of research that seem to be contradictory to each other and explore how and why research based on them yield appear to have different conclusions.

The *proposal* for a theoretical review should describe the new theoretical idea or core idea, the approaches that will be contrasted and compared, the paradox to be explored, etc. with an explanation of how or why the idea or the contrast is interesting and important to explore. In addition, the proposal should include a list of the key papers that will be included in the review.

Proposal guidelines: Regardless of type of paper, the proposal is limited to 2 single-spaced pages, not counting references, tables, figures, or outline. Students should have already read the extensive literature they propose to review for the prelim before proposing; the prelim period should be primarily devoted to writing the paper, not reading the literature.

Prelim paper guidelines: The maximum length of the paper should be 9000 words (~35 double-spaced pages), excluding tables, figures, and references. Students may adapt the organization of their paper as they go (in other words, the proposed outline is non-binding and can be revised as needed).

Grant Application

A grant proposal outlines a program of research the student could independently conduct to answer a novel scientific question. The prelim would consist of the scientific portions of a grant application, and should be formatted in accordance with submission guidelines as follows:

National Science Foundation. This application includes the 1) *project summary*, 2) *project description*, and 3) *references cited* parts of an application.

The project summary is a one-page single-spaced overview of the proposed project that includes brief statements on the *intellectual merit* of the proposed activity and its *broader impacts*. Summaries usually include 1-2 paragraphs devoted to a description of the research aims and product that would result if the proposal were funded, a statement of objectives, and methods to be employed. The statement on intellectual merit should describe the potential of the proposed research to advance knowledge. The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to achieving specific, desired societal outcomes. The project summary should be written in general language that could be understood by a broad audience in the scientific domain.

The project description usually includes three major sections, that is, sections devoted to 1) scientific impact, 2) the proposed research, methods, and analysis, and 3) broader impacts. The scientific merit section provides the critical scientific/theoretical justification for the proposed work and what it will add to scientific knowledge, an explanation of the significance of the proposed work, and the relationship of the proposed work to the present state of knowledge in the field. The research and methods section provides a general plan of work, including a broad description of activities to be undertaken and a more specific description of the method, measures, and procedures of the proposed studies. This section aims to address what you propose to do, why you want to do it, how you plan to

do it, how you will know whether you succeed, and what benefits will accrue if the project is successful, from a scientific perspective. Power analyses should be included to justify sample sizes, and an overview of how the student proposes to analyze the data should be provided. The proposed research may be based on previously established and/or innovative methods and approaches, but in either case, must be well justified. The third section is broader impacts. Broader impacts may be accomplished through the research itself, through activities directly related to specific research projects, or through activities supported by, but complementary to, the project.

Proposal guidelines: To propose an NSF grant application for the prelim, students should prepare the Project Summary. The proposal is limited to 1 single-spaced page, not counting references, tables, or figures. Power analysis scripts/syntax should be included in an appendix for committee review.

Prelim paper guidelines: Consistent with NSF guidelines, the final grant proposal used for the prelim must have 1" margins, use a 12 pt sans serif font, and not exceed 15 single-spaced pages (excluding the project summary and references; per NSF guidelines, tables and figures need to be included in the 15 page limit.)

NIH Grant. This application includes the 1) *Specific Aims*, 2) *Research Strategy*, and 3) *Literature Cited* parts of an NIH small grant application (R03, R21, R36) with a more extended *Background* to introduce the *Research Strategy*.

The grant begins with the *Specific Aims,* a one-page single-spaced overview of the proposed project that includes an overview of the research question, its broader impacts, and the goals of the proposed studies. The *Background* is not part of the traditional NIH grant submission but is included in the prelim exam to provide space for an explanation of the relevant context that is needed to frame the proposal. This is followed by the R*esearch Strategy,* which would be included in the submission of a grant application. The Research Strategy consists of three major sections devoted to 1) Significance, 2) Innovation, and 3) Approach. Significance is a brief summary of the Background with a focus on why the proposed studies are important. The Innovation section explains how the proposal challenges existing research findings or brings novel theoretical concepts, approaches, or techniques/methods to the question. The Approach section outlines the scientific methods used to accomplish the Specific Aims of the study. This should include details about subjects, methods, experimental design, analysis plan (including power analysis), hypotheses about expected findings, and potential pitfalls/possible alternative empirical findings (if your primary hypotheses are not supported by the data). *Literature Cited* is included after the Research Strategy.

Proposal guidelines: To propose an NIH grant application for the prelim, students should prepare a Specific Aims page. The proposal is limited to 1 single-spaced page, not counting references, tables, or figures. Power analysis scripts/syntax should be included in an appendix for committee review.

Prelim paper guidelines: Consistent with NIH guidelines, the final grant proposal used for the prelim must have 0.5" margins and use 11 pt font. All pages are single-spaced. The text is limited to 1 page for the Specific Aims, 6 pages for the Background, and 6 pages for the Research Strategy. Per NIH guidelines, tables and figures need to be included in the 6-page limit for the Research Strategy. Literature Cited does not count against page limits.

Journal Article

A manuscript of an original journal article that the student would first author can fulfill the prelim requirement. The ideas/research question should originate from the student and the student must independently write an article in the format of a prominent, full-report journal in the student's field. Like the other prelim options, the prelim project must be distinct from the student's master's thesis but can be on the same general research topic. In addition, the proposed project should already be approved by the IRB or IACUC, and data must already have been collected before proposing a journal article write-up as the prelim. This prelim option will be evaluated on the criteria of high-impact journals in the field of specialization. In lieu of authorship for others that may have contributed to the project, the article should include a statement that describes the contributions of others to the project before the writing of the prelim (for example, see https://www.elsevier.com/authors/policies-and-guidelines/credit-author-statement).

Proposal guidelines: To propose this type of prelim, students should prepare (a) a brief description of the guiding research question and its significance, (b) a clear statement of their hypothesis or hypotheses in both conceptual and operational forms, (c) a brief overview of the methodology of the project, (d) the source of the data that will form the basis of the paper, and (e) power analyses to justify the choice of sample sizes (must be detailed and thorough). Parts *a* through *c* cannot exceed 2 single-spaced pages. Parts *d* and *e* should be included in an appendix.

Prelim paper guidelines: The maximum length of a prelim that takes the form of a journal article should be 9000 words (~35 pages), excluding tables, figures, and references. Analysis scripts/syntax should also be included in an Appendix (these do not have to be publication-ready versions but should include sufficient annotations and so on to allow the subcommittee to follow the script/syntax).

Stage 1 Registered Report

Another option for meeting the prelim requirement is to write a manuscript of a Stage 1 Registered Report. A registered report is a publishing format that emphasizes the importance of the research question and the quality of the methodology by conducting peer review prior to data collection. The format is designed to reward best practices in adhering to hypothesis-driven model of the scientific method by judging the quality of the premise or argument for doing the research based on a critical review of the literature, the proposed methods, and proposed analyses independently of the results achieved.

Like the other prelim options, a Stage 1 Registered Report prelim must be distinct from the student's master's thesis, even if the registered report is on the same general topic area. Although the advisor can contribute to the idea guiding the research project, the student must independently come up with the method, develop their own analysis plan, and write the Stage 1 Registered Report.

A Stage 1 Registered Report prelim will be judged on how well it conveys the importance of the research question; the soundness of the logic, rationale, and plausibility of the proposed hypotheses; the rigor and feasibility of the methodology and analysis; whether the clarity and degree of methodological detail is sufficient to exactly replicate the proposed procedures; and whether the student has included a theoretical and methodological basis that ensures that more than one possible outcome can be interpreted meaningfully (e.g., non-tautological arguments; testing competing hypotheses; tests of the validity of the procedures, including manipulations; adequate statistical power). This prelim option will be evaluated on the criteria of high-impact journals in the field of specialization that publish Registered Report articles (for list of journals that publish Registered Report articles, see https://www.cos.io/initiatives/registered-reports).

Proposal guidelines: To propose a Stage 1 Registered Report prelim, students should prepare (a) a brief description of the guiding research question(s) the research is designed to address and why it is important, (b) a clear statement of hypothesis or hypotheses in both conceptual and operational forms, and (c) a brief overview of the study or studies that will be proposed (up to 2 single space pages). Power analysis scripts/syntax should be included in an appendix for committee review.

Prelim paper guidelines: The maximum length of a prelim that takes the form of a Stage 1 Registered Report should be 9000 words (~35 pages), excluding figures, tables, and references. Analysis scripts/syntax of proposed analyses should be included in an Appendix (these do not have to be publication-ready versions but should include sufficient annotations and so on to allow the subcommittee to follow the script/syntax).

Self-Designed Prelim

If the student and advisor feel that the student can demonstrate preparation for dissertation-level work in a way that is not described above, the student may petition an alternate format. Such petition would require approval from the advisor, program chair, and DGS. Examples might include: a comprehensive oral exam, proposing a new computational method to address a gap in the current literature, a proposal to apply BCS-developed approach in an applied setting, etc.

Proposal guidelines: To propose a self-designed prelim, students should prepare (a) a brief description of the overall goal of the project and why it is important, (b) a rationale that indicates how the prelim will demonstrate their ability to conduct dissertation-level research and (c) an overview of what the prelim project will be (up to 2 single space pages).

Prelim product guidelines: The guidelines for the parameters of a self-designed prelim must be agreed upon by the prelim subcommittee before the student begins the project. The parameters should be realistic for completion of the product in the 8-week window.

Exam Procedures

Proposal Review and Approval

Evaluation of the proposal for literature reviews, grant proposal, journal article, registered report, or self-designed product can produce a result of:

- *Unqualified pass*. The project is cleared to begin, even if the subcommittee provides some feedback and suggestions.
- *Qualified pass*. The subcommittee believes the proposal has most of the elements to lead to a successful prelim project, but sees some area(s) that give the committee enough pause to justify asking for a revision. Revisions of the proposal are due within two weeks of notification[1] of the qualified pass, at which time the subcommittee will make a final evaluation.
- *Fail*. Any prelim proposal that the subcommittee believes requires substantial revisions that cannot be addressed in two weeks to achieve an unqualified pass will be considered a failed proposal. Students who fail their first prelim proposal will have the choice to revise their initial proposal for further reconsideration or

[1] The two-week limit on revisions is meant to represent the amount of work required to accomplish the revision. The exact time subcommittees give to students to complete the revisions can exceed this time-limit under extenuating conditions, e.g., when there are conflicts with religious holidays or conference travel, if the student has major exams or papers due at the same time, and so on. Under no circumstances, however, should the time-limit exceed 4-weeks.

propose something new. Students who fail two prelim proposals of the same project will also fail the prelim exam.

Prelim Timeline and Deadlines

Once the prelim proposal is approved, the project is to be completed within 8 weeks. Rare exceptions to the 8-week deadline will be made for religious holidays (1 week) or significant extenuating circumstances. Students should carefully plan when to propose their prelim to make sure that they have time to complete the prelim on time and avoid conflicts, such as travel, during the preliminary exam period. The subcommittee should schedule the oral defense within two weeks of receiving the prelim project excluding religious holidays (1 week) or significant extenuating circumstances.

At the time that the oral defense is scheduled, the student should work with the Program Chair to complete a **Committee Recommendation Form** listing the 3 subcommittee members and 2 additional faculty from the program as the full committee to be sent to the Grad College.

Independence

The prelim is in many respects an exam. The prelim product is therefore expected to reflect the student's independent work. The writing of the prelim literature review, grant proposal, empirical article, registered report, or self-designed product must therefore be independent. As stated above, the prelim paper cannot be shared or receive line edits or comments from faculty advisors, peers, or anyone else. There is one exception to this very hard rule: Students may solicit assistance from the UIC Writing Center.

Students may discuss their prelim projects and their ideas with their advisors, peers; however, such discussions must stay at a big-picture level rather than anything that resembles explicit writing advice. Students may do preliminary analyses before proposing the prelim, but no part of the prelim paper can have already received editorial feedback (e.g., from the student's advisor, peers, collaborators, etc.). Students are encouraged to seek statistical and methodological consulting regarding the feasibility of their proposed methods and analysis plan (including power analysis) at the proposal stage for the grant proposal, empirical article, registered report, or self-designed options. Once a student has begun working on the prelim product, they cannot receive help with the analyses or their write-up.

The primary rule is that the prelim product MUST be the student's independent work to demonstrate clear, logical, and coherent thinking and writing. Breaking this rule will mean failing the prelim.

Oral Defense

All prelim exams—regardless of type—will include an oral defense scheduled for one hour. Before the oral defense, the committee may provide feedback on topics they would like addressed in the defense. The oral defense will begin with a brief student presentation of the student's prelim exam that should **not exceed 15 minutes**. The subcommittee will then ask the students to clarify aspects or defend various claims they make in their prelim exam work. Students should expect the kinds of questions candidates receive after a job talk. After one hour, the prelim subcommittee will ask the student to leave so they can confer. After conferring, the subcommittee will call the student back to communicate their decision. In the unlikely event that the subcommittee cannot come to a consensus decision, they will meet with the Committee on Graduate Studies to arbitrate a final course of action (i.e., a final decision, or disbanding and assigning a new committee to evaluate).

Pass/Fail Decisions and Revisions

The prelim subcommittee decides whether a *prelim exam* passes based on the quality of the work product and its oral defense. The student may receive a decision of:

- *Pass* if the product and oral exam are at the level for the student advance unconditionally.
- *Pass with Conditions* if the committee has a concrete checklist of items they believe the student can successfully address in a two-week period to raise the performance on the product and/or oral exam to the level of Pass. The conditions will be given in writing. At the end of the two-week period, the subcommittee will evaluate the product for a final decision.
- *Fail* if the product and oral exam are not sufficient to pass and require more work than can be accomplished in a two-week period to raise it to the level of a Pass or the conditions required (above) have not been met. If the prelim exam is failed, the Exam Report Form is completed and returned to the Graduate College.

Advancement to Candidacy

After passing their *prelim exam*, students will send a copy of their CV, courses taken, and grades received to their research advisor. The research advisor will write a statement that is not to exceed half a page describing the outcome of the oral meeting, a review of the student's academic record, and their endorsement of advancing the student to candidacy. The research advisor will distribute these materials to the two remaining prelim committee members who are listed on the Exam Report Form. After all committee members have signed, the Exam Report Form is returned to the Graduate College by the DGS.

Requirement Checklist

I. General Departmental Requirements

___ Advisor-approved MA Proposal
___ Committee-approved MA Proposal
___ Committee-approved MA Thesis
___ Graduate College--Approved MA Degree
___ Preliminary Examination Proposal
___ Committee-approved Preliminary Examination
___ Graduate College--Admission to Candidacy
___ Committee-approved PhD Proposal
___ Committee-approved PhD Dissertation
___ Major Program Requirements
___ Two semesters 50% TA (or equivalent) and TA orientation class
___ Graduate College--Approved PhD Degree

II. Department Course Requirements

___ PSCH 507 Emerging Research Issues (1 hour fall, 1 hour spring)
___ PSCH 508 Colloquium on Teaching Psychology (1 hour, fall)
___ PSCH 543 Research Design and Analysis I (4 hours, fall)
___ PSCH 545 Research Design and Analysis II (4 hours, spring)
___ PSCH 591 Research Apprenticeship (2 hours, fall)
___ PSCH 591 Research Apprenticeship (2 hours, spring)
___ PSCH 598 Thesis Research (3 hours, fall)
___ PSCH 598 Thesis Research (3 hours, spring)
___ PSCH 599 Dissertation Research (12 hours)
___ Students must complete 32 semester hours of course work for the MA
___ Students must complete 96 semester hours of course work for the PhD

III. Major Area Course Requirements

___ PSCH 552 Cognitive Sciences
___ PSCH 485 Neuroscience 2
___ PSCH 569 Current Topics in BCS (while enrolled)

Three elective courses from:

___ PSCH 483 Neuroanatomy
___ PSCH 484 Neuroscience 1
___ PSCH 512: Attitudes and Social Cognition
___ NEUS 524: Neuroscience of Addiction
___ PSCH 526: Lifespan Development
___ PSCH 547: Introduction to Data Science

___ PSCH 553: Memory
___ PSCH 554: Language
___ PSCH 555: Thinking
___ PSCH 557: Skill and Knowledge Acquisition
___ PSCH 558: Seminar in Brain and Cognitive Sciences
___ PSCH 561: Perception and Action
___ PSCH 564: Behavioral Psychopharmacology
___ PSCH 565: Advanced Cognitive Neuroscience
___ PSCH 566: Motivation

Requirement for students whose research involves animals:

___ Graduate College 470: Essential for Animal Research

IV. Minor Option (Specify area, course #, and course work if completing)

___ Area: _____

___ Course #1: _____
___ Course #2: _____
___ Course #3: _____
or ___ Current Topics (2 semester): _____

Sample 4-Year Course Schedule

Year 1--Fall Semester

Department	507	Emerging Research Issues		1
	508	Colloquium on the Teaching of Psychology		1
	543	Research and Design Analysis I		4
	591	Research Apprenticeship		2
Major	552	Cognitive Sciences		3
	569	Current Topics in BCS (Brown Bag)		1
	GC 470	Essentials for Animal Research		1
			TOTAL	13

Year 1--Spring Semester

Department	507	Emerging Research Issues		1
	545	Research and Design Analysis II		4
	591	Research Apprenticeship		4
Major	485	Neuroscience 2		3
	569	Current Topics in BCS (Brown Bag)		1
			TOTAL	13

Year 2--Fall Semester

Department	598	Thesis Research		5
Major	5**	Elective		3
	569	Current Topics in BCS (Brown Bag)		1
Minor	5--	Minor Course (If completing)		3
			TOTAL	12

Year 2--Spring Semester

Department	598	Thesis Research		4
Major	5**	Elective		4
	569	Current Topics in BCS (Brown Bag)		1
Minor	5--	Minor Course (If completing)		3
			TOTAL	12

Year 3--Fall Semester

Department	596	Independent Study (Prelim)		5
Major	5**	Elective		3
	569	Current Topics in BCS (Brown Bag)		1
Minor	5--	Minor Course (If completing)		3
			TOTAL	12

Year 3--Spring Semester

Department	596	Independent Study (Prelim)		8
	569	Current Topics in BCS (Brown Bag)		1
			TOTAL	12

Year 4--Fall Semester

Major	599	Dissertation Research		12
	569	Current Topics in BCS (Brown Bag)		1
			TOTAL	13

Year 4--Spring Semester

Department	599	Dissertation Research		12
Major	569	Current Topics in BCS (Brown Bag)		1
			TOTAL	13

** Course is from a list of elective courses from which the student may choose.