GUIDEBOOK AND REGULATIONS

FOR

GRADUATE STUDY

IN

RESEARCH METHODOLOGY

2015

Program in Research Methodology
Department of Psychology in Education
University of Pittsburgh
School of Education
UNIVERSITY OF PITTSBURGH

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GUIDEBOOK AND REGULATIONS FOR GRADUATE STUDY IN
RESEARCH METHODOLOGY

I. INTRODUCTION

Students majoring in research methodology study methods that researchers employ when they conduct empirical studies of educational phenomena. The master’s and doctoral programs at the University of Pittsburgh are designed to train students in measurement, research design, and statistics. Students are prepared for positions in colleges, universities, research centers, public school systems, governmental agencies, testing companies and industry.

A. Master’s Degree (M.A./M.Ed.)

Purpose and Goals The master’s degree is a program of studies for students who wish to explore the field of research methodology. It also allows for the possibility of continued study toward the doctorate. All students in the master’s program are expected to develop methodological competencies defined by the curriculum of the master’s program (see Appendix A and Appendix B). Students successfully completing the degree are capable of participating in research of an applied nature, developing and validating assessments, analyzing test data, translating research findings for application to educational settings, and assisting professional educators with test selection and with the analyses and interpretations of data.

Curriculum The master’s curriculum emphasizes competencies in measurement, research design, statistics, and data analysis using computers. These include an understanding of (a) the theory and application of test and instrument construction and evaluation; (b) the strengths and weaknesses of various research designs; and (c) the statistical procedures used for data analyses. Students also take courses in three Basic Areas of Education (education and human development, education and society, and disciplined inquiry). These courses cover the fundamental theories, practical applications, social context, and historical foundations of education, and help students become professional educators.

The first four terms in the program are devoted to course work that develops the above competencies. Towards the end of their course work, students spend one term in a supervised research setting where they have the opportunity to apply their skills and competencies. A comprehensive examination is required. In the final stage of their program, students complete either a thesis or a research paper. Upon satisfactorily completing the program, students are awarded the M.A. or M.Ed. degree. (See Section II for specific details.)

Examples of Employment Opportunities Students who have successfully completed the master’s program have found employment in a variety of positions. Examples of these are given in Table 1.
Table 1  
Examples of Positions That Graduates of the Research Methodology Master’s Program Have Assumed

<table>
<thead>
<tr>
<th>Position</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Research Associate</td>
<td>Pediatrics Department, Metrohealth Medical Center, Ohio; National Board of Osteopathic Medical Examiners; Psychological Corporation, Abraxis Foundation, Pittsburgh, PA; Human Resources Research Org. (HumRRO)</td>
</tr>
<tr>
<td>Project Associate</td>
<td>Western Psychiatric Institute and Clinic, University of Pittsburgh</td>
</tr>
<tr>
<td>Psychometric Associate</td>
<td>National Board of Medical Examiners, Philadelphia, Pennsylvania</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>Various department and research projects, University of Pittsburgh</td>
</tr>
<tr>
<td>Test Development</td>
<td>Officer Examination Development Center, Ministry of Education and Culture, Jakarta, Indonesia</td>
</tr>
<tr>
<td>Computer and Research</td>
<td>Private consultant, Pittsburgh, PA Consultant</td>
</tr>
<tr>
<td>Research Specialist</td>
<td>Learning Research and Development Center, University of Pittsburgh</td>
</tr>
<tr>
<td>Evaluation Specialist</td>
<td>Office of Measurement and Evaluation of Teaching, University of Pittsburgh</td>
</tr>
<tr>
<td>Statistician</td>
<td>Educational Testing Service</td>
</tr>
</tbody>
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B. **Doctoral Degree (Ph.D.)**

**Purpose and Goals** Doctoral studies are for persons who desire advanced training in research methodology. Doctoral students develop methodological competencies defined by the doctoral curriculum (see Appendix F). Every effort is made to tailor the doctoral Plan of Studies to a student’s interest. For example, some students focus primarily on attaining the competence to be a testing and measurement specialist. Others focus primarily on attaining the competence to be a statistical data analyst. Still others develop a more theoretical orientation in psychometric theories or theories of quantitative research methodology.

Students successfully completing the doctoral degree have an understanding of the content, methods, theories, and professional ethics associated with research methodology. They are capable of independently conducting research of an applied nature, translating sophisticated research findings for application in educational settings, replicating research studies, and assisting educators with analyses and interpretations of research findings. They can design and validate assessments, examine their technical quality and apply psychometric models to test data.

**Curriculum** The curriculum in the doctoral program emphasizes the development of advanced competencies in measurement, research design, and statistics (see Appendix F). These include an understanding of the theory and application of classical test theory, item response theory, true and quasi-experimental designs, and various statistical procedures (e.g., analysis of variance, multivariate statistics).

The first four terms in the doctoral program are devoted to course work that develops the above competencies. After finishing this course work, students are placed in supervised research settings where they apply the competencies developed. A doctoral comprehensive examination is required. In the final stage of the program, students complete their dissertation research. Upon satisfactorily completing the program, students are awarded the Ph.D. degree.

**Examples of Employment Opportunities** Students who have successfully completed the doctoral program have been employed in a variety of positions. Examples of these are listed in Table 2.

C. **Student Involvement in Research**

A premium is placed on involving students in research activities, ranging, for example, from collaborating with one another on course-related research to engaging in supervised research under the direction of faculty researchers. Doctoral students are encouraged to collaborate with faculty on research projects of mutual interest. Collaboration at the doctoral level not only complements a student’s course work and other Program experiences, but may suggest a
dissertation topic. Students also have the opportunity to present research papers at professional conferences.

D. Research Orientation of the Program

The faculty strongly believes that research activities should be central to a student’s training and that these activities promote the acquisition of competencies essential to success upon attaining a degree. Research activities are integrated with a student’s course work, supervised research experience, and thesis/research paper or dissertation.

Among the research competencies students develop are: critically analyzing a body of literature, generating research questions which address specific issues in research methodology, developing empirically-based achievement tests, designing and executing studies in ways that take into account key methodological considerations (e.g., instrument construction and evaluation), correctly analyzing and interpreting research results, and succinctly communicating in writing the results of research studies. These competencies apply to both the master’s and doctoral programs. Doctoral students develop the ability to work independently and demonstrate a greater depth of mastery of these competencies.
<table>
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<th>Position</th>
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<tbody>
<tr>
<td>Professor</td>
<td>Schools of Education at University of Michigan, University of Iowa, West Virginia University, University of Delaware, Duquesne University, University of Kansas, Robert Morris University, University of Wisconsin – Madison, University of Saudi Arabia, United Arabs Emirates</td>
</tr>
<tr>
<td>Research Associate</td>
<td>Western Psychiatric Institute and Clinic, University of Pittsburgh; Pennsylvania State University</td>
</tr>
<tr>
<td>Associate Research Fellow</td>
<td>Institute of Statistical Science, Academica Sinica, Taipei, Republic of China</td>
</tr>
<tr>
<td>Evaluation Consultant</td>
<td>CTB/McGraw Hill-Macmillan, Monterey, California</td>
</tr>
<tr>
<td>President</td>
<td>American College Testing Program, Iowa City</td>
</tr>
<tr>
<td>Deputy Director</td>
<td>Uganda National Examination Board, Uganda</td>
</tr>
<tr>
<td>Professor and Senior Scientist</td>
<td>School of Education and Learning and Development Center, University of Pittsburgh</td>
</tr>
<tr>
<td>Director of Education Systems</td>
<td>American College of Life Underwriters, PA</td>
</tr>
<tr>
<td>Director of Testing, Evaluation, Research</td>
<td>Pittsburgh Board of Education</td>
</tr>
<tr>
<td>Director of Research and Evaluation</td>
<td>Sylvan Prometrics</td>
</tr>
<tr>
<td>Director of NAEP</td>
<td>Educational Testing Service (ETS)</td>
</tr>
<tr>
<td>Vice President</td>
<td>Graduate Management Admissions Test (GMAC), Harcourt Education</td>
</tr>
<tr>
<td>Research Scientist or Psychometrician</td>
<td>Law School Admission Council, National Board of Medical Examiners, ETS, Harcourt Education, Data</td>
</tr>
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Recognition Corporation, Pearson Assessment, TIMSS & PIRLS International Study Center Boston College

<table>
<thead>
<tr>
<th>Position</th>
<th>Organization</th>
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</thead>
<tbody>
<tr>
<td>Director of Psychometric Research</td>
<td>Graduate Management Admissions Council</td>
</tr>
<tr>
<td>Assistant Vice President, Research &amp; Analysis</td>
<td>National Committee for Quality Assurance</td>
</tr>
<tr>
<td>Biostatistician</td>
<td>University of Delaware</td>
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II. STUDIES FOR THE MASTER’S DEGREE

A. Admissions Procedures, Requirements, Deadlines

Applications for admission to the master’s program are available from the Student Service Center (SSC), School of Education, 5500 WWPH and from the Department of Psychology in Education, 5930 WWPH. Applicants for admission must have earned a baccalaureate degree from an accredited college or university before admission. The requirements for admission to the master’s program include: application form and fee, statement of career goals, and transcripts of previous work [complete individual transcripts of work done in all undergraduate and graduate study]. A minimum QPA of 3.0 on a 4.0 scale for previous undergraduate work is required. A personal interview is recommended, but not necessary.

In addition to the above, applicants whose first language is not English must submit scores from the Test of English as a Foreign Language (TOEFL). The TOEFL requirement for admission to graduate study set by the University applies to the Research Methodology Program. (The requirement to take TOEFL may be waived if the applicant has received a satisfactory score on other tests of English proficiency or has received a degree from an accredited institution in the United States.) Also, applicants from other countries must provide evidence of adequate financial resources for the estimated length of stay at the University of Pittsburgh.

The deadline for applications is February 1 for the Summer and Fall Terms, and November 15 for the Spring Term. However, if enrollment is not at a maximum, applications will be considered after these deadlines.

Admission Decisions Application materials are examined by all faculty in the Research Methodology Program. The decision to admit or not admit is made by the Research Methodology faculty. Applicants will be notified of the decision by the Student Service Center. Admission is made for a specific term. Students who cannot register for courses in the specified term should notify the Student Service Center. Students may defer admission for up to one year from the specified term of admission. Students who are unable to register for courses within one year of the specified term of admission must reapply for admission.

B. Student Financial Support

A limited amount of financial support is available to graduate students including graduate student assistantships (GSAs), graduate student researchers (GSRs), teaching assistantships (TAs), teaching fellowships (TFs), tuition remission (TR), and several scholarships, fellowships, and loan programs. GSA, TA, TF and TR awards are primarily merit-based:
Excellence in scholarship and service are the major criteria for selection. The deadline for applications for most of these awards is February 1 for the next academic year, although application for support can be made at any time during the year. Information about financial support and application forms are available in the Student Service Center. Application forms for GSA, TA, TF, and TR awards are available from the Department of Psychology in Education (5930 WWPH). Students must apply each year to renew their awards. (See Section III.B for additional information.)

C. Advisement

**Academic Advisor** When a student is accepted for admission, a faculty member is assigned to be the student’s academic advisor. The academic advisor acts as a liaison between the student and the faculty, and is responsible for the following:

1. Supervising the development of the student’s Plan of Studies.
2. Approving all course work at the time the student registers, including adds and drops.
3. Annually reviewing the student’s academic progress.
4. Representing the student when the student’s progress is reviewed by the faculty.
5. Certifying that graduation requirements have been met.

Students are encouraged to change their academic advisor when they feel doing so is consistent with their interests. To change advisors the student obtains the mutual agreement of the present and proposed academic advisors. The student is responsible for notifying the Program Coordinator in writing of a change in advisors so that the student’s Program records may be updated.

**Research Advisor** A research advisor is selected prior to the preparation of a master’s thesis or supervised research paper. The research advisor need not be the same person as the academic advisor. If the research advisor is different from the academic advisor, the Program Coordinator should be notified in writing. The research advisor is responsible for the following:

1. Supervising the development of the student’s research projects.
2. Assisting the student in identifying an appropriate research topic for a research paper or thesis.
3. Assisting the student in selecting additional members of the committee to review the research paper or thesis.
4. Giving grades for any courses associated with a student’s thesis or research projects.

5. Reviewing and signing the student’s application to the Human Subjects Committee for permission to use human subjects in the research project.

6. Ensuring that the thesis overview is prepared according to all School requirements and is ready to be reviewed by other committee members.

7. Guiding the student’s progress toward completing the research project.

8. Guiding and approving drafts of the research paper or thesis before it is presented to the committee for review.

9. Ensuring that the thesis is in proper final form before requesting signatures from other committee members.

D. How To Progress Through the Program

1. Length of Program, Credits, GPA, General Grading Policy

The Research Methodology Program offers an M.A. or M.Ed. degree that requires 39 credits and a comprehensive examination. A research paper or thesis is required for the M.A. degree. With normal progress, most students are able to complete the degree in four or five terms of full-time study. Students are required to maintain a grade point average of at least 3.0 on a 4.0 point scale on which an A = 4.00, B = 3.00, C = 2.00, D = 1.00, and F= 0.00. (See pages 34-35 in the Bulletin for a complete description of the School of Education grading policy.)

2. GPA Expectations for Core Courses

Students are expected to maintain a GPA of 3.50 or better in the master’s core courses (viz., PSYED 2001, 2018, 2019, 2030, 2072, and 2073). Student progress is reviewed annually by the faculty with this in mind (see #4 below).

3. G and I Grades

A G grade means course work is unfinished because of extenuating personal circumstances. An I grade means incomplete course work due to the nature of the course or incomplete research work in individual guidance courses or seminars. A student may graduate without removing G and/or I grades provided all degree requirements are met and the Program recommends the student for graduation. Students assigned G grades are
required to complete course requirements no later than one year after the term or session in which the course was taken. Once the deadline is passed, the G grade remains on the student’s record, and the student will be required to re-register for the course if it is needed to fulfill requirements for graduation.

4. **Annual Review of Student’s Progress**

   Each spring the faculty evaluates each student’s progress toward the degree and reports this evaluation to the student. Students may be required to submit additional information if the information in the student’s file is incomplete.

5. **Statute of Limitations**

   All requirements for a master’s degree must be completed within a period of four consecutive calendar years from the student’s initial registration for course work applicable to an M.A. degree or five years for an M.Ed. degree. (See the School of Education Bulletin, pages 18-19, for information on extension of the statute of limitations.)

6. **Registration**

   Exact dates for registration are published in the Schedule of Classes for each term. For continuing students, Fall Term registration typically starts in March and ends in July. Spring Term registration begins in October and ends in December. Summer Term registration begins in February and ends on the first day of the session or term in which a course is offered. Students should meet with their academic advisors as early as possible in the registration period to select the courses to be taken, and to complete the registration form that is signed by the student and the advisor. The students can register through the Department of Psychology in Education or the Student Service Center. Students are encouraged to register early so they will have a reasonable chance to be enrolled in the courses of their choice.

   A student’s academic advisor must approve and sign the student’s registration form every term, including any added or dropped courses.

7. **Plan of Studies**

   The Plan of Studies is developed by the student with the academic advisor prior to the student’s completion of 15 credits in the master’s program. The advisor submits a completed copy of the School of Education “Plan of Studies” form to the Research Methodology faculty. When approved, the Program Coordinator forwards the approved Plan of Studies to the Student Service Center. Any proposed changes to the plan must
follow the same procedures. Forms are available from the Department Office (5930 WWPH). See Appendix J for the Research Methodology Course Schedule.

All master’s programs must contain a minimum of nine credits of study from the Basic Areas of Education (BAE), which include three credits each in the areas of education and human development, education and society, and disciplined inquiry. An annotated list of courses that meet this requirement is given in Section VI.B. Other than BAE choices, there is little flexibility in the master’s program. Specialization and research methods courses are identical for all master’s students. The supervised research and paper/thesis requirements differ for the M.A. and M.Ed. degrees (See D9 and D11 below). Additional details regarding plans of studies appear in Appendix A and Appendix B.

8. Transfer of Credits and Course Waivers

A maximum of six credits may be transferred and counted toward a master’s program if approved by the Program faculty and the Student Service Center. If approved, these credits substitute for six credits of the required total.

If students wish to have courses waived because of previous course work, experience, or other proof of competence, they must complete the Department of Psychology in Education Course Waiver Request Form. If a course waiver is approved, the total number of credits a student must earn at the University of Pittsburgh and through transfer cannot fall below 36, the School of Education minimum. In such a case, additional course work must be included on the Plan of Studies.

9. Supervised Research Requirements

All M.Ed. students must complete six credits of supervised research. M.A. students who have selected Option B to meet Research Requirements (see Appendix A) must complete three credits of supervised research. See Appendix C for a description of the process.

10 Comprehensive Examination

The School of Education requires a comprehensive examination for all master’s degree students. The purpose of the comprehensive examination is to assess the competencies of students who have successfully completed course work in the master’s program. In the Research Methodology Program, this examination consists of three 100-item multiple-choice tests, one each in the areas of measurement, research design, and statistics. Although it cannot be guaranteed, students who have maintained GPAs of 3.50 or better in each of the master’s core course areas (i.e., measurement, research design, and statistics) usually experience no difficulty passing these tests. Calculators are not permitted for any of the examinations. Full-time students should take a test as soon as possible after completing the course work in that area. Study guides for the examination
are available from the Program Office (5930 WWPH). Advisors should be consulted before taking each of the examinations. Students should complete the form in Appendix I with their advisor and submit it to the Program Chair one week prior to sitting for the exam. Typically, the exams are offered the third Friday of each month.

The decision to pass or fail a student rests with the full faculty. To pass the Master’s Comprehensive Examination, a student must attain a score of 60 on each of the three area tests. The Program Coordinator notifies each student of the faculty’s decision.

The student must take each of the three area tests until a score of 60 is attained. Before retaking a test, however, the advisor and the student should make plans for removal of any knowledge deficiency identified from the results of the previous administration. The advisor’s approval for retaking any part of the examination should be obtained. There is no limit on the number of times a master’s student may take the comprehensive examination in order to obtain a passing score at the master’s level. Students cannot retake an examination for at least a month unless the advisor agrees.

Students who do not take the tests within one year of completing the course work in an area are considered as making unsatisfactory progress toward their degrees.

11. Master’s Paper or Thesis

All students who have selected the M.A. degree are required to complete a master’s research paper or a master’s thesis. Requirement details for each option appear on pages 20-21 of the School of Education Bulletin and in Appendix D (research paper) and E (thesis/thesis equivalent).

12. Summer Term Planning

Please note that Research Methodology faculty members are on eight-month contracts, September through April. Some faculty members are hired to teach courses during the Summer Term. Their obligations extend only to meeting their classes and other course-related matters. Therefore, students should complete their Summer and Fall Term registrations before the end of April. Although some faculty may agree to serve on thesis, research project, or dissertation committees during the Summer Term, students should not expect them to be available.

13. Graduation Requirements
Students must complete and file an application for graduation in the Student Service Center no later than ten calendar days after the beginning of the term in which he/she intends to graduate. The student must initiate action for removal of any incomplete grades for courses listed on the Plan of Studies and must be registered for at least one credit in the term of graduation. The academic advisor checks the student’s permanent file in the Student Service Center towards the end of the term of graduation to ensure that all requirements have been satisfied.
III. STUDIES FOR THE DOCTORAL DEGREE

A. Admission Procedures, Requirements, and Deadlines

Applications for admission to the doctoral program are available from the Student Service Center, School of Education, 5500 WWPH. The requirements for admission to the doctoral program include: application form and fee, Graduate Record Examination (GRE) general test scores (recommended but not required of international students), statement of career goals, transcripts of previous work [complete individual transcripts of work done in all undergraduate and graduate study (a minimum QPA of 3.3 on a 4.0 scale for previous graduate work is required)], writing sample (term paper, thesis, article), and three letters of recommendation. A personal interview is recommended, though not necessary.

In addition to the above, applicants whose first language is not English must submit scores from the Test of English as a Foreign Language (TOEFL). The TOEFL requirement for admission to graduate study set by the University applies to the Research Methodology Program. (The requirement to take TOEFL may be waived if the applicant has received a satisfactory score on other tests of English proficiency or has received a degree from an accredited institution in the United States.) Application deadlines are February 1 for the Summer and Fall Terms, and November 15 for Spring Term. However, if enrollment is not at a maximum, applications will be considered after these deadlines.

Admission Decisions Application materials are reviewed by all faculty in the Research Methodology Program and the decision to admit is made by them. Applicants are notified of the faculty’s decision by the Student Service Center. Admission is made for a specific term. Students who cannot register for courses in the specified term should notify the Student Service Center. Students may defer admission for up to one year from the specified term of admission. Students unable to register for courses within one year of the specified term of admission must reapply for admission.

B. Student Financial Support

Limited financial support is available to Research Methodology students through graduate student assistantships (GSAs), graduate student researchers (GSRs), teaching assistantships (TAs), teaching fellowships (TFs), tuition remission (TR) awards, and a number of scholarship, fellowship, and loan programs. GSA, TA, TF, and TR awards are primarily merit-based: excellence in scholarship and service are the major criteria for selection.

GSA, TA, and TF awards include two terms of tuition remission and a monthly stipend based on 20 hours of work. In most cases, Research Methodology GSAs assist the faculty with their courses. It is also possible to apply for tuition remission alone, that is, without an accompanying stipend. In this case there is no obligation to provide service to the School or Department. Tuition remission is usually limited to three credits of in-state tuition per term.
Application forms for GSAs, TAs, TFs, and TR awards are available from the Department (5930 WWPH). Students must apply each year to renew their awards. Students may also apply for financial support for the Summer Term, or Summer Sessions I and II.

In the School of Education, various units outside of the Research Methodology program regularly employ GSAs and GRAs. These units include the Dean’s Office, the Institute for International Studies in Education, the Institute for Research and Practice in Education, and the Tri-State Area School Study Council. A student applies for the various assistantships that are available by completing an application form available in the Department of Psychology in Education. (5930 WWPH).

A financial aid application for any award may be made any time during the school year. However, the deadline for these applications is February 1 for the next academic year. Announcements of awards are made in April for awards that begin the following September. Applications received after February 1 will be considered if all funds have not been awarded.

The School of Education also has a number of competitive scholarship and fellowship awards. These include Doctoral Fellowships (up to $5,000 awards as determined by committee), Graduate Research Fellowships (awards up to $1,500 are given to students twice a year), Graduate Colloquium Fellowship ($500), and Minority Graduate Fellowship ($2,500). Application information (including deadlines) for these and other scholarships may be obtained from the Student Service Center (5500 WWPH).

Research Methodology students may also apply for graduate assistantships and scholarships outside of the School of Education. The Learning Research and Development Center (LRDC), Office of Measurement and Evaluation of Teaching (OMET), and Western Psychiatric Institute and Clinic (WPIC), in addition to other centers and departments, award GSA and GSR positions to graduate students having research methodology skills.

C. Advisement

Academic Advisor A student is assigned an academic advisor at the time of admission to the program. All course work for which a student registers must be approved by the academic advisor, who assists in the preparation of the student’s Plan of Studies and who meets with the student at least once a term to complete registration documents and review the student’s academic progress. The academic advisor is a liaison between the student and the faculty, and is responsible for the following:

1. Supervising the development of the student’s Plan of Studies.
2. Approving all course work at the time the student registers, including adds and drops.
3. Approving the student’s taking of the Doctoral Comprehensive Examination.
4. Annually reviewing the student’s academic progress.

5. Representing the student when the student’s progress is reviewed by the faculty.

6. Certifying that a student has met graduation requirements.

Students are encouraged to change their academic advisor when they believe it enhances their program of study. To change advisors the student obtains the agreement of the present and proposed advisors. The student is responsible for notifying the Program Coordinator in writing of changes in advisors so that the Program’s records may be updated.

**Research Advisor**  A research advisor is selected prior to the preparation of the dissertation. This advisor need not be the same person as the student’s academic advisor. The student, in consultation with the academic advisor, identifies a research advisor. The research advisor is selected on the basis of expertise in the area of the research project. The research advisor and student must both consent to the relationship.

The research advisor is responsible for the following:

1. Supervising the development of the student’s research projects.

2. Assisting the student in identifying an appropriate research topic for a dissertation.

3. Assisting the student in selecting additional members of the doctoral dissertation committee.

4. Submitting the dissertation topic and rationale for selecting particular dissertation committee members to the Program faculty for their approval.

5. Reviewing and signing the student’s application to the Human Subjects Committee for permission to use human subjects in the research project.

6. Ensuring that the dissertation overview is prepared according to all school requirements and is ready to be reviewed by other committee members.

7. Guiding the student’s progress toward completing the dissertation.

8. Guiding and approving drafts of the dissertation before it is presented to other members of the doctoral committee.

9. Ensuring that the dissertation is in proper final form before requesting signatures from other committee members.
A change in research advisors may be initiated by the student, the advisor, or the department. Notification of such change must be sent to the Program Coordinator so that the Program’s records may be updated.

D. Overview of the Major Steps for Attaining the Ph.D.

Figure 1 shows the major steps through which a student progresses when attaining a Ph.D. Prior to graduation, the student must pass through three stages: (a) admission and initial graduate study in the doctoral program, (b) advancement to doctoral study, and (c) advancement to doctoral candidacy.
Figure 1 Overview of the Major Steps for Completing the Ph.D.
1. **Initial Graduate Study**  After admission and by the time the student completes 30 post-master’s graduate credits at the University of Pittsburgh, the student must:

   (a) be admitted to full graduate status.

   (b) have passed the Doctoral Preliminary Examination (see E6 below).

   (c) have a Plan of Studies approved (see E8 below).

   (d) have maintained a grade point average of 3.3 or better in University of Pittsburgh post-master’s graduate study.

   (e) be recommended by the Program faculty for advancement to doctoral study.

2. **After Advancement to Doctoral Study**  After advancement to doctoral study the student completes the course work on the student’s approved Plan of Studies. In addition, the student must:

   (a) have completed two terms of residency (see School of Education Bulletin, page 26).

   (b) have completed the supervised research and predissertation project requirements (see E9 and E10 below).

   (c) have passed the Doctoral Comprehensive Examination (see E11 below).

   (d) have maintained a grade-point average of 3.3 or better in University of Pittsburgh post-master’s graduate study.

   (e) have passed the dissertation Overview Examination.

   (f) have the dissertation research approved by the Institutional Review Board (IRB) process (see E12 (f) below).

   (g) be recommended by the Program faculty for advancement to doctoral candidacy.

3. **After Advancement to Doctoral Candidacy**  After the student’s advancement to doctoral candidacy the student’s main effort is to undertake and complete the dissertation research. The following requirements must be completed before a student’s graduation is approved (see E12 below):

   (a) register for the required dissertation credits while working on the research.
(b) complete the dissertation research under the supervision of the research advisor.

(c) defend the dissertation successfully.

(d) complete and obtain approval of the final copy of the dissertation document.

(e) complete and obtain approval of the dissertation abstract.

(f) apply for and obtain approval for graduation (see E13 below).

Details of how to complete these requirements are described in Section E below. Additional details may be obtained from the student’s advisor.

E. How to Progress Through the Program

1. Each student is expected to consult the School of Education Bulletin for course work requirements and procedural regulations.

2. Length of Program, Credits, QPA, Grading Policies

   (a) Students holding a master’s degree from the Research Methodology Program typically need at least 3 years of full-time study to complete the doctoral program.

   (b) The Research Methodology Ph.D. curriculum consists of a total of 105 credits. Appendix F shows the curriculum.

   (c) A student needs to maintain an overall GPA of 3.3. An “A” indicates superior attainment, “B” indicates adequate graduate-level attainment, and “B-” and below is considered below graduate-level expectations. The student is expected to maintain a GPA of 3.5 for Research Methodology courses. Research Methodology courses with grades of “B-” or lower must be retaken.

3. G and I Grades

   A G grade means course work is unfinished because of extenuating personal circumstances. An I grade means incomplete course work due to the nature of the course or incomplete research work in individual guidance courses, or seminars. A student may graduate with G and/or I grades provided all degree requirements are met and the student is recommended for graduation by the Program. Students assigned G grades are required to complete course requirements no later than one year after the term or session in which the course was taken. Once the deadline is passed, the G grade will remain on the students’ record, and the student will be required to re-register for the course if it is needed to fulfill requirements for graduation.
4. Annual Review of Student’s Progress

Each spring the faculty evaluates each student’s progress toward the degree and reports this evaluation to the student. Students may be required to submit additional information if the information in the student’s file is incomplete.

5. Statute of Limitations

(a) For students who received credit for a master’s degree appropriate to research methodology, all requirements for a doctoral degree should be fulfilled within a period of eight calendar years from their first registration for graduate study following the receipt of that degree or from the first course work at the post-master’s level considered for degree purposes.

(b) For students holding only a bachelor’s degree, all requirements for the doctoral degree should be fulfilled within a period of ten calendar years from the student’s initial registration for first course work considered for degree purposes.

(c) Extensions of the statute of limitations may be granted under exceptional circumstances.

6. Registration Procedures

Exact dates for registration are published in the Schedule of Classes for each term. Fall Term registration typically starts in March and ends in July. Spring Term registration begins in October and ends in December. Summer Term registration begins in February and ends in April. Students should meet with their academic advisors as early as possible in the registration period to select the courses to be taken, and to complete the registration form which is signed by the student and the advisor. The student can register through the Department of Psychology in Education or the Student Service Center by the deadline date. Students are encouraged to register early so they have a reasonable chance to be enrolled in the courses of their choice.

A student’s academic advisor must approve and sign the student’s registration form every term, including any added or dropped courses.

7. Doctoral Preliminary Examination

Each doctoral student is required to pass at the doctoral level of proficiency (see below) a preliminary examination that assesses the breadth of the student’s master’s-level knowledge in research methodology. The examination identifies students who may be
expected to complete the research methodology doctoral program successfully and reveals areas of weakness in a student’s preparation.

A student who received the master’s degree in the Research Methodology Program should take the Preliminary Examination (if their previous scores were not at the passing level for the doctoral program) during the first or second term of post-master’s graduate study. Other doctoral students should take the Preliminary Examination during the first or second term after completing the course work in a relevant area (i.e., the basic courses in measurement, statistics, and research design. A student must be registered during the term in which the Preliminary Examination is taken.

Students should receive the approval of their academic advisors, complete the form in Appendix I and submit it to the program chair one week prior to the exam. The exams are typically offered the third Friday of each month. The Doctoral Preliminary Examination consists of three tests, one each in the areas of measurement, research design, and statistics. Each test contains 100 multiple-choice items. Calculators are not permitted for any of the examinations. The passing score for each test is 70% correct. These are the same tests that serve as the Comprehensive Examination for the master’s program. If the student does not pass a test, he/she is permitted up to two retakes. A study guide for each of the tests is available from the Program Office (5930 WWP).

Regulations for students failing the Doctoral Preliminary Examination are as follows:

(a) The student must retake each of the tests failed in its entirety. Before doing so, however, the advisor and the student should make plans for removal of any deficiency identified from the results of the first administration. The advisor’s approval for retaking any part of the examination must be obtained. Students may not retake an examination for at least a month unless the advisor agrees.

(b) If, on the second administration, the student does not pass a test that was retaken (using the same criterion as used for the first administration), the advisor’s approval for a third attempt must be obtained. The advisor must submit in writing to the full faculty the procedures that the student will follow to remove any remaining deficiencies. When these procedures have been approved by the full faculty, the student may take for a third time those tests failed. The third attempt must be completed within one year of the first administration of the examination. If the examination is not passed in three attempts or within one year of the first administration of the examination, the student must terminate study in the Department.

8. **Transfer of Previous Master’s Degree and Waivers of Required Courses**

   (a) **Transfer of Credits**
1. A limit of 30 post-baccalaureate credits may be transferred from institutions fully accredited for master’s (or higher) degree study. Transfer of credits is not automatic. Each course transferred must meet a number of conditions.

2. An additional nine doctoral-level, post-master’s degree credits may be transferred from institutions fully accredited for doctoral degree study. Again, transfer of credits is not automatic. Each course transferred must meet a number of conditions.

(b) Waiver of Required Courses

1. The student must demonstrate competency in the course under consideration to the faculty member in charge of the course. This faculty member must then sign the course waiver form.

2. The academic advisor and the Program faculty must review the course waiver form and must approve it.

3. After the waived courses are excluded, the student’s Plan of Studies must contain a minimum of 90 graduate credits distributed as follows: a minimum of 72 course credits (including transferred credits) and a minimum of 18 dissertation credits.

10. Plan of Studies

(a) During your second semester in the Program, the student, under the supervision of the academic advisor, develops a Plan of Studies that conforms with the Program, Department, School, and University requirements. See Appendix J for the Research Methodology Course Schedule. The advisor presents the student’s Plan of Studies to the Program faculty for approval and suggestions for improvement. The approved Plan is filed with the Student Service Center. (See Appendix F for the courses that must be included in the Plan of Studies and a Plan of Studies Form.)

(b) No lower level undergraduate courses (numbered 0001-0999 or 7000-7999) may be applied toward a graduate degree. All courses listed on the Plan of Studies, except supervised research, internship, and dissertation research, must be taken under the letter grade option, unless explicitly exempted by the full faculty. Undergraduate computer science courses may be counted as part of the cognate requirement but would not count towards the 90 credits required for the doctorate.

(c) Any changes in the Plan of Studies must be approved by the academic advisor and the Program faculty, conform to departmental requirements, and be filed with the Student
Service Center. At the time of advancement to doctoral candidacy, completed courses must comply with the approved Plan of Studies.

9. **Research Seminar and Supervised Research Requirements**

(a) Six credits of supervised research experience are required. Up to four credits may be transferred for an acceptable master’s research project/thesis. The research experiences undertaken must prepare students to conduct research on the methods of data analysis, research design, and/or instrument development.

(b) Students must complete several forms in the course of the supervised research experience, including a weekly log and a report of their activities at the end of each term. Concomitantly, the on-site supervisor must submit an evaluation of the students’ contribution to the project. The student may obtain forms from the Department Office (5930 WWPH).

(c) Students may serve two terms in the same research setting or in two different research settings.

(d) After completing each supervised research experience, the student is required to submit a form to be placed on file indicating that it is completed. On the form, the student specifies, for each supervised research experience, the topics and content of the supervised research, the name of the supervisory faculty member, and the nature of the student’s activities. The Program Coordinator processes the approved update to the Student Service Center. Forms are available from the Department Office (5930 WWPH).

11. **Predissertation Research Project**

(a) All doctoral students in the Department of Psychology in Education must complete a predissertation research project before taking the Doctoral Comprehensive Examination. Students who have already completed a research paper project or a master’s thesis may ask for a waiver of this requirement. The academic advisor presents the request for a waiver to the Program faculty. A request for a waiver must include the written research report/thesis. This report will be read and evaluated by two Research Methodology faculty members before a decision is made by the Program faculty. Forms for evaluating the research document are available from the Department Office (5930 WWPH).

(b) The predissertation research project may be completed in conjunction with the supervised research practicum or may be a separate, unrelated project. A faculty member monitors the research and the student’s academic or research advisor evaluates the written report prepared by the student. If a project extends beyond the
six credits of supervised research, the student may be required to register for up to six additional credits of PSYED 3491 depending on the amount of research supervised. When the advisor is satisfied that the report meets acceptable standards and after consulting with the student, the advisor submits the report to a second Research Methodology faculty member for evaluation. If both faculty evaluators approve the research report, a form is completed and submitted along with the research report to the Research Methodology faculty. The report and the approval form are placed in the student’s file.

(c) The Program faculty encourages students to submit their research reports for publication in appropriate journals or for presentation at professional meetings.

(d) The predissertation research report must be completed before the student takes the Doctoral Comprehensive Examination.

12. Doctoral Comprehensive Examination

(a) After completing the formal course work on the doctoral Plan of Studies and the predissertation research project, each student is required to take the Doctoral Comprehensive Examination. This examination assesses the student’s mastery of research methodology and the student’s acquisition of both depth and breadth of understanding the general field of research methodology.

(b) A student must be registered for the term during which the Comprehensive Examination is taken. Students may not register for dissertation credits prior to passing the Comprehensive Examination. In no case may a student graduate in the same term in which the Comprehensive Examination is taken.

(c) A doctoral mentoring committee consisting of three faculty is formed by the student’s academic advisor with input from the student. The chair of the committee may be the student’s advisor or a faculty member who has agreed to direct the student’s dissertation, conditional on the student satisfactorily completing all program requirements for conducting dissertation research.

(d) The academic advisor and the student review the student’s approved program of studies and career goals. They then decide on the primary and secondary areas of the examination. The primary area would be either (1) statistical methods/research design, or (2) educational measurement. The one area becomes the primary; the other becomes the secondary.

(e) The student develops six questions under the supervision of the chair of the doctoral comprehensive mentoring committee: four in the major area and two in the minor area. The questions must be approved by the student’s doctoral mentoring committee.
Questions should reflect content beyond the material covered in required doctoral course work and previous research projects. The student may formulate one or more questions that could serve as the basis for dissertation research. A student who has a dissertation topic in mind could form one or more questions that require a literature review relevant to that topic.

(f) The doctoral mentoring committee selects three questions (two from the major area and one from the minor area) for the student to respond to in the form of a take-home project. Students should respond to each of the three questions in a typed, double-spaced paper that follows APA style and form requirements. The typed response to each question would not usually exceed 15 pages. Students will have one month to respond to the questions. The doctoral mentoring committee will review the student’s work and make a recommendation to the Research Methodology faculty.

13. Dissertation Research

(a) Dissertation Characteristics

Each student writes a dissertation that presents the results of the student’s research project. An appropriate research project involves a significant, original, and independent research work that is grounded in a body of literature. The research must be relevant to the field of quantitative research methodology as it is currently practiced. It presents hypotheses tested by data and analyses, and provides a contribution or advancement in the field of quantitative research methodology. It is the responsibility of the student’s doctoral committee to evaluate the dissertation in these terms and to recommend awarding the doctorate only if the dissertation is judged to demonstrate these qualities.

Characteristics that a dissertation should demonstrate are: the establishment of a historical context for the problem(s) analyzed, the use of an analysis and synthesis of a broad and relevant literature base to explain the problem(s) under investigation, a well-specified and appropriate research design, clear writing and careful documentation, and results which are of sufficient merit to be published in a refereed journal, as a monograph, or as a basis for a book. The quality of the dissertation research must demonstrate that the author is ready to assume a position within the profession of research methodologists.

(b) Phases of the Dissertation Research

The dissertation is prepared in three phases: a proposal phase, a research phase, and a defense phase. In the proposal phase, the student works under the supervision of the research advisor to prepare an overview document that clearly describes the proposed research. This document is presented to a doctoral committee and defended by the
student during an Overview Examination. After approval by the doctoral committee (and if necessary by the Human Subjects Committee), the student carries out the research under the research advisor’s supervision and prepares the written dissertation. In the defense phase, the student presents the written dissertation to the doctoral committee and defends it before them.

(c) **Credits**

1. Students may not register for dissertation credits prior to passing the Comprehensive Exam.

2. The Ph.D. program in Research Methodology includes a minimum of 18 credits of dissertation research (see Appendix F).

3. Students register for dissertation credits (PSYED 3499) during the terms in which they are preparing the overview document as well as during the terms in which they carry out and defend their research. Students must register for at least one credit during the 12-month period preceding their graduation.

(d) **Summer Term Planning**

Please note that Research Methodology faculty members are on eight-month contracts, September through April. Some faculty are hired to teach courses during the Summer Term. Their obligations extend only to meeting their classes and other course related matters. Therefore, students should complete their Summer and Fall Term registrations before the end of April. Although some faculty may agree to serve on thesis, research project, or dissertation committees during the Summer Term, students should not expect them to be available.

(e) **Doctoral Committee Structure and Approval**

1. The doctoral committee consists of the research advisor and at least three other members, including one member from outside the School of Education at the University of Pittsburgh or from an appropriate graduate program outside education at another academic institution. The research advisor and a majority of the total committee must be full or adjunct members of the Graduate Faculty of the University of Pittsburgh. A “member of the Graduate Faculty” is not simply a faculty member teaching at the graduate level, but is a distinction earned by the person. If unsure, a student must check with the research advisor before asking someone to be on the doctoral committee.

2. After identifying a topic, a student selects a research advisor in consultation with the academic advisor. Usually, the academic advisor and the research advisor are
the same person, a faculty member in the Research Methodology Program. However, depending on the topic, exceptions are made (see Section C on page 16).

3. The student and research advisor select additional members of the doctoral committee. The student and the advisor prepare a description of the research to be done, the names of the doctoral committee members, and a short rationale for each member selected. [Form 3A is used for this purpose and may be obtained from the Department Office (5930 WPPH).] The advisor submits this information to the Research Methodology Program faculty for approval. The Program faculty may approve the doctoral committee selected or, after consultation with the student and advisor, may arrange for additional members to be included on the committee. If members are added to the committee, the student and the research advisor must be informed of the addition.

4. After receiving Program approval, Form 3A is submitted to the Student Service Center. The Dean’s Office must give final approval of the committee before a student may schedule the Overview Examination. Any subsequent changes made in membership of the committee must also be approved by the Program faculty and the Dean’s Office.

5. The doctoral committee must be approved at least one month before the Overview Examination is scheduled.

(f) Overview Document

1. The student prepares an initial draft of the overview document and submits it to the research advisor. Other members may or may not be involved at this point, depending on their preferences and the advice of the research advisor.

2. The student revises the draft based on suggestions of the research advisor. This step is repeated as many times as necessary, before submitting the overview document to other members.

3. The student is responsible for the content, form, and style of the document. The Department of Psychology in Education requires students to use APA style and the form specified in the University of Pittsburgh Style and Form Manual (April, 1995). The latter is available from the Student Service Center; the APA Publication Manual is available at the Book Center.

4. It is the research advisor’s responsibility to assure that the overview document is properly prepared prior to scheduling the Overview Examination. If a committee member believes that further revision is necessary prior to the Overview
Examination, that member should contact the research advisor, request further revision of the overview document, and request a rescheduling of the Overview Examination.

(g) Overview Examination

1. Overview Examinations may be scheduled at any time during Fall and Spring Terms except during the final two weeks of those terms. Exceptions must be approved by the doctoral committee. Committee members must be given the overview document at least two weeks before the scheduled meeting.

2. Students must be aware of deadlines for scheduling Overview Examinations. When Overview Examinations are to be held between the 1st and 15th of a month, materials must be submitted to the Student Service Center no later than the 15th of the preceding month. When Overview Examinations are to be held after the 15th, materials must be submitted to SSC by the 1st of the month. Materials include name, title of the overview document, date, time, place of the Overview Examination, research advisor, and the names of the approved committee members.

3. The student must be registered during the term in which the Overview Examination is scheduled.

4. The Overview Examination is chaired by the research advisor and is open to any faculty member of the University. Only members of the doctoral committee are present during the final deliberation and vote, however.

5. In the event that an examination is scheduled at a time when one committee member cannot attend, written comments must be submitted by that member in advance of the meeting. If those comments are not available before the meeting, the meeting must be rescheduled.

6. If a meeting is scheduled at a time when all committee members can attend, but one member is absent because of an unanticipated emergency, the meeting may be held, even if that member is unable to submit written comments before the meeting.

7. No Overview Examination may be held when two or more committee members are absent from the scheduled meeting.

8. The Overview Examination form is signed by each committee member and each votes whether to approve the document. Unanimous approval is required for admission to doctoral candidacy.
9. After revisions are made based on the committee suggestions, and the proposed research is approved by the Institutional Review Board (IRB) if the research proposed involves human subjects, a final copy of the overview document is submitted to SSC along with the signed overview form and, if necessary, the approval letter from the IRB (see (h) below).

(h) **Human Subjects Approval**

Before any proposed research involving human subjects may be carried out, it must be approved by the University Institutional Review Board (IRB) Forms for requesting IRB approval are available from SSC. Forms may be submitted before or after the overview document is approved, but no data collection may take place before receiving IRB approval.

(i) **Advancement to Doctoral Candidacy**

The student must meet with his or her Doctoral Committee at least once per year after advancement to doctoral candidacy. The purpose of these meetings is to assess the student’s progress and set goals for future progress.

(j) **Dissertation Document**

1. The student is responsible for completing the research as proposed in the approved overview document. Major changes require approval of the overview committee.

2. The student submits drafts of the dissertation to the research advisor for review and prepares revisions based on the advisor’s suggestions. Other members of the doctoral committee may be involved at this stage, depending on the recommendation of the advisor and their preferences.

(k) **Dissertation Defense**

1. After the research advisor agrees that the document is ready for the doctoral committee, the revised draft is distributed to the other members and a final dissertation defense is scheduled. A doctoral committee member should contact the research advisor if that member believes that further revision of the dissertation is necessary before the defense.

2. Doctoral candidates must give the doctoral committee members at least two weeks to read the dissertation before the defense occurs. The defense may be scheduled at any time during the Fall and Spring Terms except during the last two weeks of those terms. Under exceptional circumstances, and subject to approval
of the doctoral committee, dissertation defenses may be scheduled during the last
two weeks of the Fall and Spring Terms.

3. The student must be registered in the term during which the dissertation defense is
scheduled.

4. Rules regarding scheduling are similar to those for the Overview Examination
(see (g) above). In addition to other materials submitted to SSC, the student must
submit a copy of the revised draft of the dissertation as certified by the research
advisor in order to schedule the final defense.

5. Rules regarding the conduct of the defense and number of members present are
similar to those for the Overview Examination (see (g) above). The content of the
examination during the defense is not limited to the materials in or related to the
dissertation.

6. The dissertation defense must be held at the date and time scheduled unless
special permission is obtained from the Dean’s Office.

7. Each member of the doctoral committee must sign the dissertation defense form
and vote. If the decision of the doctoral committee is not unanimous, the case is
referred to the Dean’s Office for resolution.

(I) Final Form of the Dissertation

1. The student prepares the final form of the dissertation after successfully defending
the dissertation. The research advisor determines that the dissertation follows
APA and School-approved style before requesting signatures of the other
members of the doctoral committee on the dissertation approval form. This form
is in addition to the defense form specified above.

2. An abstract must be prepared in accordance with the rules specified in the
University Style and Form Manual. The abstract, including the heading, is limited
to 350 words. One copy must be signed/initialized by the research advisor.

3. One copy of the dissertation is submitted to SSC at least one week before the end
of the term. (See the School of Education Bulletin, page 31, for a list of materials
that must accompany this copy.)

14. Graduation Requirements

The student must register for at least 1 credit during the term of graduation.
The following are required for graduation at the doctoral level:

(a) An application for graduation filed with SSC no later than 10 calendar days after the beginning of the term. (If the dissertation is not completed in the term intended, this process must be repeated.)

(b) Advancement to doctoral candidacy.

(c) A completed dissertation on file in SSC.
IV. MINOR IN QUANTITATIVE RESEARCH METHODOLOGY

A. Procedure and Requirements

A minor in Quantitative Research Methodology is awarded to students who successfully complete a minimum of 18 credits of intermediate and advanced quantitative research methodology course work in the Research Methodology Program in the Department of Psychology in Education. The course work must be distributed as follows:

1. A minimum of 6 credits in statistical methods.
2. A minimum of 3 credits in measurement.
3. A minimum of 3 credits in research design.

All courses a student wishes to apply toward the minor must be (a) taken in the Research Methodology Program in the Department of Psychology in Education (except for the two EDUC classes specified below), (b) at the intermediate or advanced level (see Section C), and (c) completed with a minimum quality point average of 3.25. A comprehensive examination for the minor is not required. Courses may not be transferred from outside the Research Methodology Program Courses. Courses that are cross-listed with another department must be taken by registering under a PSYED course number. Since the specific courses a student takes are up to the student, no exceptions to the distribution requirement are granted. Section C lists the courses that may be applied toward the minor.

B. Steps for Progressing Through the Minor

Listed below are the steps to be followed for a minor in Quantitative Research Methodology within the Department of Psychology in Education.

1. A minor advisor is arranged. Usually a student who wants to minor in Quantitative Research Methodology simply asks a Research Methodology faculty member to serve as the minor advisor. If a student does not know a Research Methodology faculty member, the Program Coordinator should be contacted and a minor advisor will be appointed.

2. A proposed Plan of Studies for the minor is developed by the student and the minor advisor. The form used for this purpose is shown in Appendix H.

3. The proposed Plan of Studies is submitted by the minor advisor to the Research Methodology faculty for approval. Approval of the proposed Plan of Studies constitutes its acceptance.

4. When the courses on the approved Plan of Studies have been completed with a quality point average of at least 3.25, the minor is certified by the Research Methodology Program Coordinator.
C. **Courses That May be Applied Toward a Minor in Quantitative Research Methodology in the Department of Psychology in Education**

**Statistical Methods Courses (minimum of 6 credits)**
- PSYED 2018 Statistics I or EDUC 3100 Intro to Quantitative Methods
- PSYED 2019 Statistics II
- PSYED 2410 Applied Regression Analysis or EDUC 3103 Intermediate Quantitative Methods

**Measurement Courses (minimum of 3 credits)**
- PSYED 2072 Educational and Psychological Measurement
- PSYED 2073 Constructing Achievement and Ability Tests
- PSYED 3471 Constructing Questionnaires and Conducting Surveys

**Research Design Courses (3 credits)**
- PSYED 2030 Experimental Design

Some of these courses have prerequisites; see the description of courses.

**Other Courses That May Apply**

The Research Methodology faculty offer courses which are not on the above lists, but which may be applied toward the minor. Students should consult with their RM minor advisor before registering for these courses if they wish to apply them toward the minor. Some of these courses have prerequisites.

Additional information may be obtained from:
Program Coordinator for Research Methodology
Department of Psychology in Education
5930 WWPH
Pittsburgh, PA 15260
Telephone: (412) 624-7230
FAX: (412) 624-7231
V. FACULTY OF THE PROGRAM

Lindsay C. Page, Assistant Professor, 5918 WWPH, 624-7272
Research Scientist, LRDC
Ed.D., Quantitative Policy Analysis in Education (disciplinary focus in economics)
Harvard, 2011
lpage@pitt.edu

Her work focuses on quantitative methods and their application to questions regarding the effectiveness of educational policies and programs across the pre-school to postsecondary spectrum, including implementing large-scale randomized trials to investigate potential solutions to “summer melt”.

Suzanne Lane, Professor 5916 WWPH, 648-7095
Ph.D., Educational Psychology
University of Arizona, 1986
sl@pitt.edu

Her current research and professional interests are in educational measurement and testing, including design, technical and validity issues related to large scale assessments and performance-based assessments, and role of assessment in educational policy.

Clem Stone, Associate Professor 5920 WWPH, 624-9359
cas@pitt.edu
Ph.D., Educational Psychology
University of Arizona, 1987
(Educational Measurement and Statistics)
Research interests include large scale assessment and psychometrics, including instrument development and validation, item response theory models and applications, model-data-fit, computer adaptive testing, simulation and Monte Carlo methods, and the measurement of change.

Fei Fei Ye, Assistant Professor 5924 WWPH, 624-7233
feifeiye@pitt.edu
Current research interests include statistical methods and applications of multilevel and structural equation models for the study of change in multivariate repeated measures; development, implementation and evaluation of diagnostic assessment models capable of supporting complex constructed response tasks; and Bayesian methods and their application in diagnostic assessment.
VI. DESCRIPTION OF COURSES

A. Descriptions of PSYED Research Methods Courses

**PSYED 2001**  INTRODUCTION TO RESEARCH METHODOLOGY  
Introduces basic language and concepts of empirical research with emphasis on the applicability of research methodology (statistics, measurement, design, and evaluation) for improvement of professional practice in education.

**PSYED 2014**  STATISTICAL METHODS I: DESCRIPTIVE STATISTICS  
Introduction to descriptive and inferential statistics. Topics include frequency distributions, graphs, stem-and-leaf displays, boxplots, scatter diagrams, measures of central tendency, measures of variability, correlation, regression, sampling distributions, point estimation, introduction to hypothesis testing, and introduction to interval estimation. SPSS for Windows will be used.

**PSYED 2015**  STATISTICAL METHODS II: INFERENTIAL STATISTICS  
Topics include one-sample and two-sample tests of hypothesis for means, variances, proportions, and correlation coefficients, regression, one-way analysis of variance, and multiple comparisons. SPSS for Windows will be used. Prerequisite: PSYED 2014.

**PSYED 2016**  STATISTICAL METHODS III: ANALYSIS OF VARIANCE  
Topics include one- and two-way analysis of variance, multiple comparisons for main effects and interactions, analysis of covariance, multiple comparisons for adjusted means, randomized block designs, nested designs, repeated measures designs, non-orthogonal designs. SPSS for Windows will be used. Prerequisite: PSYED 2015.

**PSYED 2018**  STATISTICS I: DESCRIPTIVE AND INFERENTIAL STATISTICS  
Introduction to descriptive and inferential statistics. Topics include frequency distributions, graphs, stem-and-leaf displays, boxplots, scatter diagrams, measures of central tendency, measures of variability, correlation, sampling distributions, point estimation, introduction to hypothesis testing, introduction to interval estimation, chi-square analysis, one-sample and two-sample tests of hypothesis for means, variances, proportions, and correlation coefficients. SPSS for Windows will be used.

**PSYED 2019**  STATISTICS II: ANALYSIS OF VARIANCE  
Topics include one- and two-way analysis of variance, multiple comparisons for main effects and interactions, analysis of covariance, multiple comparisons for adjusted means, randomized block designs, nested designs, repeated measures designs, non-orthogonal designs, and linear regression. SPSS for Windows will be used. Prerequisite: PSYED 2018.

**PSYED 2410**  APPLIED REGRESSION ANALYSIS
Study of simple linear regression, multiple regression, multiple and partial correlation, model specification, prediction-selection techniques, dummy variables, interaction, and an introduction to logistic regression. SPSS for Windows will be used. Prerequisites: PSYED 2015 or 2019.

**PSYED 2416 APPLIED MULTIVARIATE ANALYSIS**
This course will emphasize the understanding, implementation, and interpretation of multivariate statistical methods, including MANOVA, MANCOVA, Profile Analysis, Doubly MANOVA, Discriminant Function Analysis, Logistic Regression, Principal Components and Factor Analysis. SPSS will be used as an introduction to SAS. Prerequisites: PSYED 2410

**PSYED 2030 EXPERIMENTAL DESIGN**
Topics include characteristics of experimental research, steps for implementing an experiment, internal and external validity, classification of experimental designs, and design techniques such as random sampling, random assignment, blocking, analysis of covariance, and gain scores. Prerequisite: PSYED 2015 or 2018 (may be taken concurrently).

**PSYED 2072 EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT**
Introduction to basic principles of measurement and a survey of educational and psychological testing. Topics include validity, reliability, item selection, and referencing (both norm and criterion); interpreting factor analysis of test scores; using tests in decisions; social and ethical issues in testing; theories of intelligence and their relation to intelligence testing; and tests of personality. Prerequisites: PSYED 2001 and PSYED 2014 or 2018 are recommended.

**PSYED 2073 CONSTRUCTING ACHIEVEMENT AND ABILITY TESTS**
A basic course in the construction of measures of cognitive achievement and ability. Topics include test planning, item writing, test tryout, item analysis, reliability, validity, criterion-referencing, norm-referencing, item banking, and aptitude test design. Students write items, critique items written by others, construct tests, try out and revise tests, and develop test manuals to document the process of test development and the quality of their tests. Prerequisites: PSYED 2014 or 2018 and PSYED 2072 (may be taken concurrently).

**PSYED 2190 RESEARCH SEMINAR IN PSYCHOLOGY IN EDUCATION**
Research seminar for students in Psychology in Education.

**PSYED 2197 INDEPENDENT STUDY**
Independent study for students in Psychology in Education.

**PSYED 2422 DATA ANALYSIS USING COMPUTER PACKAGES**
Introduction to the use of computer packages in the analysis of survey and research data. Mainframe and Windows versions of SPSS and SAS are used. Prerequisite: PSYED 2015 or 2018 or equivalent.

**PSYED 2491 SUPERVISED RESEARCH IN RESEARCH METHODOLOGY**
The student demonstrates the ability to apply research skills by planning and completing a research project under the guidance of an appropriate faculty member. Prerequisite: Permission of instructor.

**PSYED 2494  M.A. PROJECT IN RESEARCH METHODOLOGY**
Student prepares a library-based research paper that reviews, organizes, synthesizes, and critiques previously conducted research and scholarly discussion pertaining to quantitative research methodological issues and/or techniques in the areas of statistics, research design, and/or measurement.

**PSYED 2498  DIRECTED STUDY IN RESEARCH METHODOLOGY**
Student pursues study of various topics under the direction of faculty. Prerequisite: Permission of instructor.

**PSYED 2499  THESIS RESEARCH IN RESEARCH METHODOLOGY**
The student plans and completes a theoretical or empirical study on a quantitative research methodology topic under the guidance of the thesis advisor. Prerequisite: Permission of instructor.

**PSYED 3031  PREPARING RESEARCH AND DISSERTATION PROPOSALS**
Methodological and substantive issues in 1) conceptualizing a research problem, 2) analyzing and synthesizing empirical literature, and 3) designing a study are utilized to aid students in understanding the inquiry process. The relative importance of measurement, research design, and statistical considerations in various types of studies are discussed to show their relationship to theoretical and substantive considerations in doing educational research.

**PSYED 3190  RESEARCH SEMINAR IN PSYCHOLOGY IN EDUCATION**
Advanced seminar in research for doctoral students in Psychology in Education.

**PSYED 3197  INDEPENDENT STUDY**
Independent study for doctoral students in Psychology in Education. Prerequisite: Permission of instructor.

**PSYED 3408 HIERARCHICAL LINEAR MODELING**
This course is on hierarchical models for continuous and discrete outcomes. Hierarchical models are used when the units of observation are grouped within clusters. Observations in a cluster typically are not mutually independent for given covariate values as required by conventional linear and logistic regression models. Longitudinal or repeated measures data can also be thought of as clustered data with measurement occasions clustered within subjects. The focus of the course is on hierarchical linear models and their assumptions, as well as practical aspects of developing models to address research questions and interpreting the findings. Prerequisite: PSYED 2410 - Applied Regression
PSYED 3410  REGRESSION ANALYSIS
Various types of regression analyses will be covered such as simple linear regression, multiple regression, nonlinear regression, and logistic regression. Model selection, validation, residual analysis, diagnostics, and remedial measures of regression analyses will be discussed. Some of the remedial measures that will be covered are robust regression, ridge regression, and bootstrapping. Regression analyses of qualitative and quantitative predictors as well as interaction effects of these variables will also be covered. These topics will use matrix algebra which will be introduced in class.
SAS will be used. Prerequisites: PSYED 2016 or 2019

PSYED 3413  NONPARAMETRIC STATISTICS
Covers a number of flexible inferential techniques outside the realm of classical normal-theory tests. Two general areas are covered: 1) contingency table analysis, and 2) one, two, and K-sample procedures for testing for between-group differences, multiple regression, and analysis of covariance. At the conclusion of the course, students should be able to critically choose between normal-theory and nonparametric tests using analytic and empirical criteria, and to correctly interpret the results of the nonparametric tests. Prerequisite: PSYED 2016 or 2019

PSYED 3414  QUALITATIVE DATA ANALYSIS
Provides students and research workers in the behavioral sciences with an introduction to the logical and mathematical rationale of procedures for analyzing qualitative data. The course should be of interest to researchers who utilize qualitative information as supplementary data in a study, as well as to those who systematically analyze and interpret open-ended or other types of classification data as the primary evidence in their studies. Prerequisites: PSYED 2016 or 2019, PSYED 3413, and PSYED 3416

PSYED 3416  MULTIVARIATE METHODS
Topics include an introduction to the multivariate normal distribution, Q-Q plots, and Box-Cox transformations and assumptions for applying multivariate linear models. The analysis of two group designs, MANOVA, MANCOVA mixed models, repeated measurement designs and seemingly unrelated regression (SUR) models are analyzed in the course. Also included are the exploratory data analysis techniques of principal component analysis, discriminant analysis, canonical correlation analysis, cluster analysis, and multidimensional scaling. SAS for Windows will be used. Prerequisites: PSYED 3412

PSYED 3417  STRUCTURAL EQUATION MODELING
Fundamental material necessary for SEM will be reviewed, including matrix algebra, covariance algebra and multiple regression. SEM techniques that will be covered include factor analysis, general SEM, and mediation/moderation models. Advanced techniques that will also be discussed include mean and covariance SEM, latent growth curve models, multi-sample/multi-
group SEM, dealing with missing and non-normal data, and mixture modeling. Prerequisites: PSYED 2410.

**PSYED 3418 META-ANALYSIS IN EDUCATIONAL QUANTITATIVE RESEARCH**
Introduction to a methodology for conducting quantitative literature reviews in which the outcomes of empirical research studies are aggregated.
Prerequisite: Permission of instructor.

**PSYED 3420 COMPUTER APPLICATIONS TO RESEARCH METHODOLOGY**
Examples of the application include Monte Carlo techniques, statistical computing and programming, and computer testing. Students may work on independent projects for the application selected. Consult with the instructor for the application selected before registering.
Prerequisites: PSYED 2422 or one programming language.

**PSYED 3450 INTRODUCTION TO EDUCATIONAL EVALUATION**
Issues relevant to evaluation and utilizing results are addressed. Both evaluation “theory” and practical experience are utilized to prepare people who will be providing or using evaluation information. Special emphasis is given to: a) differences between evaluation and research; b) problems in using quantitative or qualitative methods when assumptions are not met; and c) issues that affect the usefulness of information in decision making.
Prerequisites: PSYED 2015 or 2018 and PSYED 2072.

**PSYED 3460 THEORETICAL FOUNDATIONS OF EDUCATIONAL RESEARCH**
Investigates philosophical and theoretical foundations of methods used to do educational research. Particular emphasis is given both to classical quantitative, objective methods and to qualitative approaches to research. The roles of theory, hypotheses, observation, interpretation, and verification in the inquiry process are addressed. Prior study of research methods is needed to take advantage of this course. Prerequisites: PSYED 2015 or 2018, PSYED 2030, and PSYED 2072.

**PSYED 3470 CRITERION-REFERENCED TESTING TECHNIQUES TESTING**
Reviews criterion-referencing and its application to educational practice.
Topics include curriculum-driven test development, concepts of mastery, item specification development, item-banking, item validation techniques, matching items to instructional events, setting passing standards for competency tests, reliability, decision consistency, equivalency of test forms, diagnostic testing, score reporting, and implications of cognitive psychology for criterion-referenced testing. Prerequisites: PSYED 2073 and PSYED 2015 or 2018.

**PSYED 3471 CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS**
Presentation of practical considerations in the construction of questionnaires including questionnaire blueprint, selection of item types, wording of items and length of instrument. Discussion of conducting surveys including selection of sample, cover letter, mailing or interview procedures, follow-up methods.
Prerequisite: PSYED 2014 or 2018

PSYED 3475  PSYCHOMETRIC THEORY
Course in classical and modern psychometric theory. Topics include basic formulations, composite tests, validity and reliability, test length, factors affecting precision, estimation, prediction, item parameters, test construction, test equating, and standard-setting. Both criterion-referencing and norm-referencing applications are included. Prerequisites: PSYED 2016 or 2019 and PSYED 2072.

PSYED 3476  GENERALIZABILITY THEORY
Generalizability theory (G-theory) is an extension of classical test theory and allows for the existence of multiple sources of error through the application of ANOVA procedures. By assessing each source of error, the student can better characterize the measurement and improve research designs. G-theory can be applied to a broad range of measurement, evaluation, and testing issues in education and psychology. Course covers the principle applications and uses of generalizability theory in norm-referenced and domain-referenced testing. Prerequisites: PSYED 2016 or 2019 and PSYED 3475.

PSYED 3477  ITEM RESPONSE THEORY
Continuation of PSYED 3475. Advanced measurement topics in item response theory models and their applications to achievement, aptitude, and attitude measurement. Includes one-, two-, and three-parameter models; item and test information functions; test characteristic curves; test design; item fit and selection; tests for unidimensionality and model fit; IRT equating; adaptive testing strategies; item banking; and Bayesian, maximum likelihood, and EM estimation. Reviews major computer packages for IRT parameter estimation. Prerequisite: PSYED 3475.

PSYED 3478  TEST DESIGN STRATEGIES
Emphasizes the scientific design of measurements of cognitive abilities. Considers how the findings of modern cognitive psychology and modern latent trait theories of psychometrics can be integrated and applied to the design and creation of test items of increased construct validity. Prerequisite: PSYED 3475.

PSYED 3484  ADVANCED TOPICS IN MEASUREMENT
Seminar on specialized topics in educational and psychological measurement organized around faculty and student interests (e.g. test equating). Students may request a specific seminar series on topics not covered by ordinary course offerings. Scheduling will depend on sufficient enrollment and faculty availability. Prerequisite: Permission of instructor.

PSYED 3485  ADVANCED TOPICS IN RESEARCH DESIGN
Includes new strategies in research design, and application of mathematical and behavioral design models for educational research. Topics vary each term according to interests of the students enrolled. Prerequisite: Permission of instructor.
PSYED 3486  ADVANCED TOPICS IN STATISTICAL METHODS
Special topics to cover specific statistical procedures and issues. May be arranged around interests of students enrolled. Prerequisite: Permission of instructor.

PSYED 3489  SPECIAL TOPICS IN RESEARCH METHODOLOGY
Special topics in research methods presented in seminar format. Prerequisite: Permission of instructor.

PSYED 3490  SEMINAR IN RESEARCH METHODS
Special topics in research methods presented in seminar format. Prerequisite: Permission of instructor.

PSYED 3491  SUPERVISED RESEARCH IN RESEARCH METHODOLOGY
The student demonstrates ability to apply research skills by planning and completing a research project under direction of an appropriate faculty member. Prerequisite: Permission of instructor.

PSYED 3495  TEACHING INTERNSHIP IN RESEARCH METHODOLOGY
The teaching internship provides students with experience in teaching a section of a research methodology course. It includes experience in the development of course lectures, assignments, and parts of a midterm and/or final examinations. The teaching internship satisfies 3 credits of electives within the research methodology program. Prerequisite: Successful completion of the Doctoral Preliminary Examinations and relevant advanced research methodology course work.

PSYED 3498  DIRECTED STUDY IN RESEARCH METHODOLOGY
Student pursues study of various topics under the direction of faculty. Prerequisite: Permission of instructor.

PSYED 3499  DISSERTATION RESEARCH IN RESEARCH METHODOLOGY
Student registers for this course while conducting research for a doctoral dissertation. Prerequisite: Permission of research advisor.
B. Descriptions of Basic Areas of Education (BAE) Courses

**EDUC 2000  PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATORS**
Course focuses on those areas of development and learning that have relevance for educators. Course covers preschool through old age. For each age range, typical behaviors and competencies that are learned or developed are considered from a number of domains (cognitive, affective, psychomotor, social). Attention is also given to appropriate research methods. An interactionist perspective is utilized; the course may be team taught.

**EDUC 2001/PSYED 2004  EDUCATIONAL PSYCHOLOGY FOR INSTRUCTION**
Course focuses on the main ideas, research findings, and instructional implications of cognitive psychology for major topics in educational psychology (development, learning, curriculum, measurement, and classroom and group processes). Both child and adult learners are studied. A premise of the course is that instructional procedures should be related to cognitive processes and to knowledge already attained by the learner. Course is primarily lecture/discussion with application-oriented homework assignments.

**EDUC 2002/PSYED 2107  SURVEY OF DEVELOPMENTAL PSYCHOLOGY**
Prepares students to understand individuals from a developmental perspective. Course covers development from the time of conception until the end of life. Physical, cognitive, emotional, and psychosocial processes are considered. Class is taught by means of lectures, discussions, and student presentations.

**EDUC 2003/PSYED 3522  ADULT LEARNING AND COGNITION**
Course presents psychological theory, research, and analytical methods applicable to the variety of settings in which adults learn and to the variety of objectives adults have for learning. The roles of memory, prior knowledge, and self-regulated learning in these and other task domains are considered. Students should emerge with an understanding of how to analyze what is involved in selected domains of learning and how to identify the more important questions for research.

**EDUC 2004/PSYED 2005  INDIVIDUAL DIFFERENCES IN INSTRUCTION**
Provides study of the psychology of individuality and of individual differences that are relevant to instruction. Differences considered include cognitive and psychomotor abilities, academic motivation, cognitive strategies, and learning styles. Course focuses on how to use these differences in the design of adaptive interventions. Several models of intervention are considered in light of theory and research.

**EDUC 2005/PSYED 2002  PSYCHOLOGY OF CROSS-CULTURAL DEVELOPMENT AND LEARNING**
Course teaches concepts of human development and learning and the effects of culture on these variables. Cross-cultural research literature is used to describe the roles that culture plays in cognitive development, communication, learning, and individual differences in ability, achieve-
ment, and social skills Laboratory experiences utilize cultural experiences to explain cross-
national and micro-cultural differences in development and learning. The course is designed for
international students and US students whose future careers involve other cultures.

EDUC 2006/I&L 2123  HPRE PSYCHOMOTOR DEVELOPMENT
Covers factors that influence children’s motor skill performance. In addition to developing a
research project on some aspect of motor skill development, topics include: factors that influence
motor performance, growth and maturation, physiological development, fundamental motor
pattern development, and information processing in motor skill acquisition.

EDUC 2100  EDUCATION AND SOCIETY
Focuses on the interaction between educational institutions and their social context. Uses
methods and insights drawn from the social sciences and humanities in the examination of such
policy issues as the role of the school in social change, the relationship between economic
systems and educational institutions, the influence of nonformal educational forces, and the
politics of school reform.

EDUC 2101/ADMPS 2301  SOCIAL FORCES AND EDUCATION
Course investigates the influence of various social forces on schools and schooling. By utilizing
analytic methods of the social sciences, students place issues arising from the interaction between
society and educational institutions in social and historical perspective. Such influential forces as
law, the economy, socio-economic status, families, and religion are examined. Course is a
combination of lectures and discussions.

EDUC 2102/ADMPS 2306  HISTORY OF EDUCATION IN THE UNITED STATES
Both a chronological order and a thematic/conceptual investigation will constitute the structure
of this course by juxtaposing past and contemporary historical developments. Emphasis is
placed on the ideas that prevailed in different time periods. Conflicting organizational ar-
rangements, competing theories, and growing external pressures in different eras are traced and
analyzed in order to develop an educational historiography.

EDUC 2103/ADMPS 2050  RACE AND RACISM IN EDUCATION AND SOCIETY
Course examines issues of race and racism from a political, historical, social and economic
standpoint. Emphasis, in particular, is placed on the underlying political and historical
assumptions about race and racism and how these assumptions relate to phenomenon in
education and society at-large. These assumptions are also examined with their role in the policy
and international arena.

EDUC 2104/ADMPS 3344  EDUCATION AND SOCIAL MOVEMENTS
Seminar examines the conditions under which social and ethnic movements have created non-
formal educational programs; assesses pedagogical aspects of movement education; and
evaluates movement education outcomes regarding movement goals and relations with the larger
society.
EDUC 2105/ADMPS 3305  SOCIOLOGY OF EDUCATION
An analysis of the development of modern social institutions with special reference to the sociology of the schools. The school is studied as a social system and in the context of broad social organization.

EDUC 2106/ADMPS 3342  EDUCATION AND CULTURE
Course integrates anthropological, psychological, and sociological theories and research evidence. Attention is given to similarities and differences in cultural elements (including language, thought, and values) among age groups.

EDUC 2200/PSYED 3031  DISCIPLINED INQUIRY
Course deals both with methods used in educational research and with the underlying theories assumptions, and limitations. Students examine various inquiry activities, including sampling, observation, and other data collection activities, as well as critical analysis of literature relevant to an important educational problem. These inquiry activities and study provide a foundation for further study to epistemological issues on which educational research and theory are based.

EDUC 2201/PSYED 2001  INTRODUCTION TO RESEARCH METHODOLOGY
Introduces basic language and concepts of empirical research with emphasis on the applicability of research methodology (statistics, measurement, design, and evaluation) for improvement of professional practice in education.

EDUC 2202/PSYED 2072  EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
Introduction to basic principles of measurement and a survey of educational and psychological testing. Topics include validity, reliability, item selection, and referencing (both norm and criterion); interpreting factor analysis of test scores; using tests in decisions; social and ethical issues in testing; theories of intelligence and their relation to intelligence testing; and tests of personality. Students participate in a laboratory section where they analyze data and evaluate tests.
Prerequisites: PSYED 2001 or equivalent and PSYED 2014 are recommended.

EDUC 2203/ADMPS 2352  EDUCATIONAL ANTHROPOLOGY
Cultural anthropology is presented as an interpretive social science for disciplined inquiry into social institutions and processes, including education. Education is viewed as cultural transmission in the context of contemporary communities and society. The course includes an introduction to cultural theory, anthropological field work, and ethnographic analysis.
C. Example of Courses Outside the School of Education for Ph.D. Cognate Area

Biostatistics

<table>
<thead>
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<th>Course Title</th>
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<tbody>
<tr>
<td>BIOST 2012</td>
<td>Bayesian and Empirical Bayes Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>BIOST 2016</td>
<td>Introduction to Sampling</td>
<td>2</td>
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<tr>
<td>BIOST 2043</td>
<td>Introduction to Statistical Theory I</td>
<td>3</td>
</tr>
<tr>
<td>BIOST 2044</td>
<td>Introduction to Statistical Theory II</td>
<td>3</td>
</tr>
<tr>
<td>BIOST 2046</td>
<td>Analysis of Cohort Studies</td>
<td>3</td>
</tr>
<tr>
<td>BIOST 2063</td>
<td>Bayes &amp; Empirical Bayes Statistics</td>
<td>3</td>
</tr>
<tr>
<td>BIOST 2066</td>
<td>Applied Survival Analysis</td>
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<tr>
<td>BIOST 2083</td>
<td>Linear Models</td>
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<td>BIOST 2084</td>
<td>Discrete Multivariate Analysis</td>
<td>2</td>
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<td>BIOST 2085</td>
<td>Applied Time-Series Analysis</td>
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<tr>
<td>BIOST 2092</td>
<td>Introduction to Computing</td>
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<td>BIOST 2093</td>
<td>Data Management and Analysis</td>
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<td>BIOST 2097</td>
<td>Data Processing and FORTRAN</td>
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Psychology

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<td>PSY 2020</td>
<td>Advanced Experimental Design</td>
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<td>PSY 2410</td>
<td>Perspectives on Cognitive Science</td>
<td>3</td>
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Statistics

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<tr>
<td>STAT 1151</td>
<td>Introduction to Probability Statistics I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 1152</td>
<td>Introduction to Probability Statistics II</td>
<td>3</td>
</tr>
<tr>
<td>STAT 1241</td>
<td>Introduction to Sampling</td>
<td>3</td>
</tr>
<tr>
<td>STAT 2200</td>
<td>Applied Nonparametric Statistics</td>
<td>3</td>
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<tr>
<td>STAT 2211</td>
<td>Discrete Multivariate Analysis</td>
<td>3</td>
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<tr>
<td>STAT 2320</td>
<td>Applied Time Series</td>
<td>3</td>
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<td>STAT 2521</td>
<td>Time Series I</td>
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<td>STAT 2522</td>
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APPENDIX A

RESEARCH METHODOLOGY M.A. DEGREE

The Research Methodology Program offers a Master of Arts degree as well as a Master of Education degree. The M.A. degree is for those students who wish to pursue a Ph.D. degree in the field of research methodology. The M.A. option is appropriate for specialists who wish to explore the field of assessment and quantitative research methodology as their main field of interest. It is also appropriate for testing and measurement specialists who will assume positions as testing officers or research assistants in test development agencies.

1. **Basic Areas of Education - 9 credits**
   - Psychological Foundations (select from a menu) (3 credits)*
   - Education and Society or Foundations of Education (select from a menu) (3 credits)
   - Introduction to Research (PSYED 2001) (3 credits)

   * For students who have a degree in Psychology, Human Development, or related field, the Psychological Foundations course can be replaced with a Qualitative Research course.

2. **Major Field Studies - 24 credits**
   a. **Research Methods Core Courses (15 credits)**
      - Educational and Psychological Measurement (PSYED 2072)
      - Constructing Achievement/Ability Tests (PSYED 2073)
      - Statistics I (PSYED 2018)
      - Statistics II (PSYED 2019)
      - Experimental Design (PSYED 2030)

   b. **Additional Research Methods Courses (9 credits; below are some possible courses)**
      - Applied Regression Analysis (PSYED 2410)
      - Applied Multivariate Analysis (PSYED 2416)
      - Data Analysis Using Computer Packages (PSYED 2422)
      - Constructing Questionnaires and Conducting Surveys (PSYED 3471)

3. **Master’s Comprehensive Examination**
   An objectively-scored examination covering knowledge and applications of the statistical methods core (PSYED 2018, 2019), testing and measurement (PSYED 2072, 2073), and research design (PSYED 2001, 2030).

4. **Research Requirements (6 credits)** (Student selects either Option A, Option B, or Option C)

   **Option A: MA – Thesis (see Appendix E)**

   Student completes a thesis and enrolls in 6 credits of PSYED 2499 in each of two terms. The thesis satisfies the pre-dissertation research project requirement in the doctoral program. The thesis should involve an empirical or theoretical study involving a research design, measurement or statistics issue. The thesis should be in the form stipulated by the University Style and Form Manual. A proposal (overview) is prepared by the student and presented to the thesis committee.
(consisting of a minimum of three faculty members, at least one of whom is from another program or department) for the overview meeting. The completed thesis is presented to the thesis committee for the final oral examination.

Option B: MA – Supervised Research Project Thesis Equivalent (see Appendix C and E)

Student enrolls in 3 credits of Supervised Research (PSYED 2491) in one term and 3 credits of PSYED 2494 in another term. The student conducts a research study and writes a research paper as an integral part of the supervised research experience. The research is an empirical or theoretical study on a research design, measurement or statistics technique or issue, and satisfies the pre-dissertation research project requirement in the doctoral program. Two faculty members from the Research Methodology program serve as readers (there may be a third faculty member from within or outside the program if the topic warrants it). The paper is completed in two stages. First, a one-page description of the topic of the paper is presented to the readers for approval. Second, the completed paper is presented to the readers for approval. The readers may require modification of the paper before final approval is given.

Option C: MA – Supervised Research Project and Literature Review (see Appendices C and D)

Student enrolls for 3 credits of Supervised Research (PSYED 2491) in one term and 3 credits of PSYED 2494 in another term. The student completes the supervised research experience and then typically in the following term completes a library-based research paper that reviews, organizes, synthesizes, and critiques previously conducted research and scholarly discussion pertaining to quantitative research methodological issues and/or techniques in the areas of statistics, research design, and/or measurement. The library-based research paper does not satisfy the pre-dissertation research project requirement in the doctoral program. Two faculty members from the Research Methodology program (there may be a third faculty member from within or outside the program if the topic warrants it) serve as readers. The paper is completed in two stages. First, a one-page description of the topic of the paper is presented to the readers for approval. Second, the completed paper is presented to the readers for approval. The readers typically require modification of the paper before final approval is given.

TOTAL CREDITS 39
APPENDIX B

RESEARCH METHODOLOGY M.ED. DEGREE

The Research Methodology Program offers a Master of Education degree as well as a Master of Arts degree. The M.Ed. is a professional degree for those students who do not wish to pursue a Ph.D. degree in the field of research methodology. The M.Ed. option is appropriate for teachers and other education specialists who wish to explore the field of assessment and quantitative research methodology as an adjunct to their main field of interest. It is also appropriate for testing and measurement specialists who will assume positions as testing officers or research assistants in test development agencies.

1. Basic Areas of Education - 9 credits
   - Psychological Foundations (select from a menu) (3 credits)*
   - Education and Society or Foundations of Education (select from a menu) (3 credits)
   - Introduction to Research (PSYED 2001) (3 credits)

   * For students who have a degree in Psychology, Human Development, or related field, the Psychological Foundations course can be replaced with a Qualitative Research course.

2. Major Field Studies - 24 credits
   a. Research Methods Core Courses (15 credits)
      - Educational and Psychological Measurement (PSYED 2072)
      - Constructing Achievement/Ability Tests (PSYED 2073)
      - Statistics I (PSYED 2018)
      - Statistics II (PSYED 2019)
      - Experimental Design (PSYED 2030)

   b. Additional Research Methods Courses (9 credits; below are some possible courses)
      - Applied Regression Analysis (PSYED 2410)
      - Applied Multivariate Analysis (PSYED 2416)
      - Data Analysis Using Computer Packages (PSYED 2422)
      - Constructing Questionnaires and Conducting Surveys (PSYED 3471)

3. Master’s Comprehensive Examination
   An objectively-scored examination covering knowledge and applications of the statistical methods core (PSYED 2018, 2019), testing and measurement (PSYED 2072, 2073), and research design (PSYED 2001, 2030).

4. Research Requirements (6 credits)
   The student participates in a supervised research activity that involves data collection. Usually, students register for three credits of PSYED 2491 in each of two terms. A report that describes the activities completed each term is written by the student. The written report prepared for the supervised research experience does not satisfy the pre-dissertation research project requirement in the doctoral program.

TOTAL CREDITS 39
APPENDIX C

DESCRIPTION OF THE MASTER’S SUPERVISED RESEARCH EXPERIENCE

Purpose: The supervised research experience provides students with training in data analysis, research design, and/or instrument development.

Research Setting: The student’s supervised research experience can be with a research project that is funded with either soft or hard money, with a research methodology faculty member, or another researcher outside of the research methodology program who is conducting research without funding.

Time and Effort: The time spent on research and supervised activities should reflect an average of 8 hours per week, including meetings.

Supervision: The advisor is responsible for ensuring that the supervised research requirements are satisfied regardless of whether the student is working with another research methodology faculty or a researcher outside of the program. If the student is working with another research methodology faculty member or another researcher outside of the program, this person is responsible for providing on-site supervision.

a. During the second week of the term, the student meets with the academic advisor to discuss the supervised research experience.

b. During the third week of the term, the student presents to the advisor a written description of the proposed activities and a timeline for the supervised research experience. The advisor has the option to modify the activities and/or timeline to ensure that the requirements of the supervised research will be satisfied.

c. During the 6th, 9th, and 12th weeks of the term, the student will contact the advisor to discuss the progress of the supervised research. Modifications can be made at these times to ensure that the supervised research requirements will be satisfied.

d. The on-site supervisor, whether that be the student’s academic advisor or another person, is responsible for providing an evaluation of the student’s work (see part d of the next section).

Written Report for the M.Ed.: During the week prior to the last week of the term, the student is responsible for submitting approximately a 3-5 page typed written report to the academic advisor describing his/her activities during the research experience. The report should include:

a. A title of the supervised research experience and individuals who were affiliated with the research project.
b. One or two paragraphs describing each research activity (including the time frame for each activity).

c. Two or three paragraphs describing what was learned and insights obtained.

d. The evaluation form completed by the on-site researcher (the student should obtain the form from the Program office) and the student’s written report will be placed in the student’s file.

**Grade:** The student’s academic advisor is responsible for assigning a grade for the student based on the on-site supervisor’s evaluation, the student’s written report, and her/his own review of the activities carried out by the student.
APPENDIX D

EXAMPLE OF AN ORGANIZATION FOR A MASTER’S REVIEW OF THE LITERATURE PAPER*

NOTE: This outline is offered as one suggestion to how to organize your paper that reviews, organizes, synthesizes, and critiques previously conducted research and scholarly discussion pertaining to methodological issue(s) and/or technique(s) in the areas of statistics, research design, and/or measurement. Other outlines may be appropriate also. See your advisor on how to organize your particular paper.

Title Page
(Title of the work, name of the author, degree(s) of the author, department, and university to which it is submitted; date it is submitted.

Acknowledgments
(Acknowledge all academic and technical assistance you received at each stage of the project).

Table of Contents
(List all preliminary sections, all major headings and subheadings, reference list, and appendices. Include list of tables and list of figures, if appropriate. Page number that beings each section (subsection) is put at the right hand margin.)

Review of the Literature
A. A brief introduction of the methodological issue(s) and/or technique(s) that will be reviewed and discussed
B. A rationale for reviewing the literature pertaining to the methodological issue(s) and/or technique(s)
C. An organized and synthesized review and critique of the literature pertaining to the methodological issue(s) and/or technique(s) (The review of the research articles should include a discussion of the methodological and design constraints that may limit the conclusions that can be drawn from the results.) Use well-defined headings and subheadings.
D. A conclusion and summary that integrates and discusses the main issues/findings, and that suggests additional research that is needed in this area.

References
(APA style)

Appendices
(Include any material that supplement the text but which are not appropriate for inclusion in the text.)

*APA format is required.
APPENDIX E

EXAMPLE OF AN ORGANIZATION FOR A M.A. THESIS PAPER OR THESIS EQUIVALENT PAPER

NOTE: This outline is offered as one suggestion for how to organize your thesis or thesis equivalent paper. Other outlines may be appropriate also. Check with your research advisor for advice on how to organize your particular paper.

Title Page
(Title of the work, names of the author, degree(s) of the author, department, and university to which it is submitted; date it is submitted.)

Acknowledgments
(Acknowledge all academic and technical assistance you obtained at each stage of the study.)

Abstract
(500 word abstract summarizing the study and its findings.)

Table of Contents
(List all preliminary sections, all chapter titles, all major headings and subheadings of each chapter, reference list, and appendices. Include list of tables and list of figures. Page number of the beginning of each section (subsection) listed is put in the right hand margin.)

Chapter I. Introduction
A. General background introduction
B. Purpose of the study
C. Statement of the problem (i.e., hypothesis to be tested or research questions to be investigated)
D. Limitations of the study
E. Definitions of special terms you will use.

Chapter II. Review of the Literature*
A. Organize and synthesize previously conducted research and scholarly discussion related to the problem being investigated. The goal of this section is to show how each of your hypotheses or research questions is derived from the previous work of others.
B. End chapter with a summary section

Chapter III. Method
(Write this chapter before conducting study and present it along with Chapters I and II as the research proposal. After the data analyses are complete, revise this chapter.)
A. Sample
B. Procedures and research designs
C. Instruments used/developed and their reliability/validity
D. How each research question/hypothesis will be tested
   1. State hypothesis
   2. What analysis research design will be carried out?
   3. How will the results be organized and presented?
Chapter IV. Results and Analysis
A. General data analysis and results
B. Data specific to each hypothesis are then presented and a conclusion is reached about the hypothesis
C. Chapter review

Chapter V. Discussion, Interpretation, Conclusion, Summary
Summarize the entire project including what hypothesis/questions were investigated, why they were investigated, how they were investigated, the major findings, and your conclusions.
A. Discuss the findings and the hypothesis in a holistic and integrated fashion.
B. Explain any extraneous factors that may have led to the results you obtained.
C. Discuss the practical and theoretical implications of your findings and precisely how your research supports each implication.
D. State the conclusions to be drawn from your entire study (including review of the literature and empirical findings—i.e., integrate everything).
E. Discuss suggestion for future research, next stages of research, what others might do to follow-up on your study.

References*
(List every reference cited in the body of the paper in alphabetical order by last name of author. Use APA style for each entry. List only those references actually cited in the body of the paper.)

Appendices
(Include long data tables, copy of instrument(s) used, special computer program written especially for this study, supplementary illustrated material, letters soliciting subjects, consent forms, and other material that supplement the text but which are not appropriate for inclusion in the text.)

*APA format is required
APPENDIX F

RESEARCH METHODOLOGY PH.D. CURRICULUM

Component

1. Research Methodology Core Courses (36 credits)
   - Introduction to Research (PSYED 2001) 3 credits
   - Statistics I (PSYED 2018) 3 credits
   - Statistics II (PSYED 2019) 3 credits
   - Experimental Design (PSYED 2030) 3 credits
   - Educational/Psychological Measurement (PSYED 2072) 3 credits
   - Constructing Achievement and Ability Tests (PSYED 2073) 3 credits
   - Data Analysis Using Computer Packages (PSYED 2422) 3 credits
   - Structural Equation Modeling (PSYED 3417) 3 credits
   - Regression Analysis (PSYED 3410) 3 credits
   - Multivariate Statistics (PSYED 3416) 3 credits
   - Psychometric Theory (PSYED 3475) 3 credits
   - Item Response Theory (PSYED 3477) 3 credits
   - Total Credits: 36

2. Additional Courses – at least 15 of the 24 credits need to be within the Research Methodology program
   - Electives within the program (some possible courses are provided below) 24 credits
     - Applied Regression Analysis (PSYED 2410)
     - Applied Multivariate Analysis (PSYED 2416)
     - Hierarchical Linear Modeling (PSYED 3408)
     - Introduction to Educational Evaluation (PSYED 3450)
     - Constructing Questionnaires and Conducting Surveys (PSYED 3471)
     - Computer Applications to Research Methodology (PSYED 3420)
     - Advanced Topics in Statistical Methods (PSYED 3486)
     - Advanced Topics in Measurement (PSYED 3484)
     - Teaching Internship in Research Methods (PSYED 3495)

3. Cognate/Outside the Specialization Courses
   - PhD students take up to 18 credits outside the School of Education depending on their backgrounds 0 - 18 credits

4. Supervised Research Experience
   - Supervised Research (PSYED 3491) 6 credits

5. Dissertation
   - Dissertation Research (PSYED 3499) 18 credits
   - Total Credits: 90 - 102

NOTES:

a. (1) 18 credits assumes that a bachelor’s degree is not in an approved discipline.
   (2) 9 credits required if bachelor’s is in an appropriate academic discipline but master’s is not.
   (3) 0 credits required if master’s is in an appropriate academic discipline, but credits may need to be transferred to fulfill the 90 credit requirement.

b. Up to three credits may be transferred for an acceptable master’s research project/thesis

c. The research experiences prepare a student to conduct research on the methods of data analysis, research design, and/or instrument development. A student must complete a predissertation research paper.
# Research Methodology Ph.D. Plan of Study Form -- Page 1

## Core Courses (36 credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Term</th>
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<td>Experimental Design (PSYED 2030)</td>
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<td>Constructing Achievement and Ability Tests (2073)</td>
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<td>Regression Analysis (PSYED 3410)</td>
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<td>Structural Equation Modeling (PSYED 3417)</td>
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<td>Psychometric Theory (PSYED 3475)</td>
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<td>36</td>
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*indicate the term of the course and the grade you earned

## Additional courses

1.  
2.  
3.  
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7.  
8.

* indicate the courses, terms, and the grades you earned

## Cognate

1.  
2.  
3.

* indicate the courses, terms, and the grades you earned

## Supervised Research

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<th>Course</th>
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<th>Term</th>
<th>Grade</th>
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<tbody>
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</table>

*indicate the term and the grade you earned

## Dissertation

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*indicate the term
TOTAL CREDITS*

*indicate the total credits
In one or two paragraphs below, indicate your background and why you decided to pursue a Ph.D. degree in Research Methodology. Also, indicate your career interests once you receive your Ph.D.
APPENDIX G

TEACHING INTERNSHIP FOR RESEARCH METHODOLOGY DOCTORAL STUDENTS

**Purpose:** The teaching internship provides students with experience in teaching a section of a research methodology course. It includes experience in the development of course lectures, assignments, and parts of a midterm and/or final examinations. The teaching internship satisfies 3 credits of electives within the research methodology program.

**Prerequisites:** The prerequisites are successful completion of the Doctoral Preliminary Examinations and relevant advanced research methodology course work. A student must present the proposed teaching internship for approval to the Research Methodology faculty prior to the term in which it is to be implemented. Non-native speakers of English need to pass a test designed to assess spoken English prior to presenting the proposed internship. The test is administered by the English Language Institute (see page 30 in Teaching at Pitt: A Handbook for Teaching Assistants).

**Teaching Internship Setting:** A teaching internship may be arranged with any research methodology faculty member willing to serve as a supervisor.

**Teaching Internship Requirements:** The student and the faculty member who is responsible for the course work closely together in outlining the course content to be taught and assessed by the student. The student is responsible for preparing and teaching at least four 2 hour and 40 minute lectures or their equivalent, for developing class/homework assignments, and for developing items for the midterm and/or final examinations. This requires that the student meet regularly with the course instructor to discuss the nature of the lectures, assignments, and examination items, and to receive feedback.

**Supervision:** The teaching internship is supervised by the research methodology faculty member who is responsible for the course. That person is responsible for ensuring that the teaching internship requirements are satisfied. The faculty member is responsible for attending the classes that the student teaches and is responsible for telling the students in the course on the first day of class the role of the teaching intern.

a. Prior to the beginning of the term, the student meets with the instructor of the course to discuss the teaching internship.
b. The student meets with the instructor regularly to discuss the teaching responsibilities and for ongoing evaluation and feedback.
c. The instructor is responsible for providing a written evaluation of the student’s work.
d. The student is responsible for providing a written report of his/her teaching activities.
e. The instructor is responsible for placing the student’s written report and the evaluation form in the student’s permanent file.
## APPENDIX H

### PLAN OF STUDIES

**MINOR IN QUANTITATIVE RESEARCH METHODOLOGY**

<table>
<thead>
<tr>
<th>NAME</th>
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<td>MAJOR Advisor</td>
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| HOME ADDRESS |  |

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Plan of Studies Approved:  
Program Coordinator  
Date

Minor Certified:  
Program Coordinator  
Date

61
APPENDIX I

Research Methodology Master’s Comprehensive Exam and Doctoral Phase I Exam

Advisor Signature Form

This form needs to be signed and given to Suzanne Lane one week before you sit for the exam. If you do not have this form completed and signed by your advisor, you will NOT be able to take the exam.

Student Name: ________________________________

Degree Enrolled: _____ Master’s _____ Doctoral

Exam: _____ Statistics

_____ Measurement

_____ Research Design

Exam Attempt: _____ 1st _____ 2nd _____ 3rd

Date of Exam: ________________________________

Advisor Name: ________________________________

Advisor Signature: ________________________________

Prior to taking an exam, student should read the rules outlined in the GUIDEBOOK AND REGULATIONS FOR GRADUATE STUDY IN RESEARCH METHODOLOGY.
## APPENDIX J

Research Methodology Course Schedule - Tentative (subject to change)

<table>
<thead>
<tr>
<th>Course</th>
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<td>2018 Stat I</td>
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<td>2030 Exp/Quasi Exp Design</td>
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<tr>
<td>2072 Ed/Psych Testing</td>
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<td>2073 Const Ach Tests</td>
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<td>2410 Applied Regression</td>
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<td>3408 HLM</td>
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<td>3410 Regression Analysis</td>
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<td>3471 Const Quest/Surveys</td>
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