PhD in
Educational Psychology & Leadership

Track of
Research, Evaluation, Measurement, & Statistics
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I. ABSTRACT

Welcome to the College of Education and the Research, Evaluation, Measurement, & Statistics (REMS) PhD program. The program is designed to prepare students for successful careers at leading educational institutions. Its goal is to provide training and experiences that enable graduates to become highly productive researchers and excellent educators. The program affords students opportunities to work closely with faculty on research projects and to develop their own research programs. The diverse expertise of the REMS faculty provides a research and learning environment that supports a wide range of interests.

This handbook will provide you with a basic understanding of what to expect during your PhD program. It should serve as a supplement to the College of Education Doctoral Student Handbook. Any questions regarding to the guidelines outlined in this handbook should be directed to the Program Coordinator, Dr. Jaehoon Lee (jaehoon.lee@ttu.edu).
II. PROGRAM OVERVIEW

The Research, Evaluation, Measurement, & Statistics (REMS) PhD program is a track area within the Department of Educational Psychology & Leadership at Texas Tech University. The program is guided by the standards of the American Psychological Association (APA), the American Educational Research Association (AERA), and sound professional judgment of experienced and caring faculty.

A. TRADEMARK OUTCOMES

The REMS PhD program is designed to foster strong theoretical foundations and expertise in quantitative methodology and statistical techniques. Students are trained as critical thinkers that are capable of working independently and collaboratively on teams, to design/conduct empirical research; enhance measurement, apply cutting-edge statistical methods, develop/disseminate new techniques; and evaluate programs that influence policy.

B. STUDENT LEARNING OUTCOMES

The REMS PhD curriculum is divided into three interrelated phases. Each phase is designed to assist students in developing the knowledge and skills that methodologists should possess:

PHASE I. Students develop an understanding of the theories and principles of educational psychology, research methodology, and their practical applications. At the end of Phase 1, students are able to (1) integrate knowledge about research methods and ethics, measurement, and evaluation; (2) conceptualize methodological issues in educational research and program evaluation; and (3) develop research questions and hypotheses for an empirical study.

PHASE 2. Students apply the knowledge and skills developed in Phase 1 to designing an original study that addresses methodological issues or hypothetical (or real) data problems in educational research and program evaluation. At the end of Phase 2, students are able to (1) develop a research protocol; (2) collect, manage, and analyze data in diverse environments; and (3) communicate the findings effectively in written, oral, and visual form.

PHASE 3. Students apply the knowledge and skills developed in Phases 1 and 2 to conducting an original study that addresses methodological issues or hypothetical (or real) data problems in educational research and program evaluation; and provide consultation services to prospective clients such as school districts, universities, and educational
agencies. At the end of Phase 3, students are able to (1) complete an empirical study with faculty supervision and (2) develop an evidence-based consultation model.

C. FACULTY

The REMS faculty is comprised of three core members and other affiliated member. The faculty members listed below make decisions for the program, serve as advisors and dissertation committee, and teach courses required in the REMS course sequence. Prospective students should examine the research interests of the faculty to obtain a more detailed sense of faculty expertise and research areas.

TODD D. LITTLE (PhD, University of California Riverside). Professor of Educational Psychology & Leadership; founding Director of the Texas Tech Institute for Measurement, Methodology, Analysis and Policy (IMMAP); 65th President of the APA’s Division 5: Evaluation, Measurement, and Statistics; Fellow of the AAAS, APA, and APS; Founder of the Stats Camps (statscamp.org). Dr. Little’s recent research focuses on longitudinal structural equation modeling, planned missing data design, retrospective pre-post design, and visual analog scale.

JAEHOON LEE (PhD, University of Kansas). Assistant Professor of Educational Psychology & Leadership; Program Coordinator of the REMS PhD program; Co-Director of IMMAP. Dr. Lee’s research interests are primarily on the development, evaluation, and application of latent variable modeling, multilevel modeling, mixture modeling, item response theory, propensity score analysis, Bayesian structural equation modeling, complex survey data analysis, and power analysis.

KWANGHEE JUNG (PhD, McGill University). Assistant Professor of Educational Psychology & Leadership; Research Associate of IMMAP. Dr. Jung’s research focuses on the development, evaluation, and application of latent variable modeling, multilevel modeling, latent growth curve modeling, time series analysis, generalized structured component analysis, constrained principal component analysis, and brain imaging data analysis.

DANIEL E. BONTEMPO (PhD, Pennsylvania State University). Research Assistant Professor of IMMAP. Dr. Bontempo’s research interests include latent variable measurement models and issues of measurement equivalence and harmonization, as well as random-effects models for the study of individual differences.
III. ADMISSION

A. APPLICATION PROCESS

Applying to the program is a two-step process. First, prospective students must apply to the Graduate School (through ApplyTexas) by creating an eRaider account and submitting an application with the following materials:

1. Application fee ($60);
2. Official transcripts; and
3. Proof of English language proficiency (for international applicants only)

Next, prospective students must apply to the College of Education (through College of Education Graduate Application Website) by submitting an application with the following materials:

1. Statement of purpose;
   - The prospective student’s interest in the field of quantitative methodology, learning and career goals, and special skills/abilities
   - The names of faculty the student would like to work with
2. Curriculum vitae;
   - Educational background
   - Specialized training and licensure/certifications
   - Work experience
   - Publications (conference presentations, manuscripts published or in preparation)
   - Awards, fellowships, and scholarships
3. Three letters of recommendation;
   - The recommenders should include individuals with knowledge of the prospective student’s academic performance
4. A writing sample; and
5. GRE scores which are no more than 5 years old at the time of application

To increase the likelihood of admission, it is imperative that prospective students identify faculty whose research and expertise fits with their interests. Applicants should consider making personal contact with those faculty prior to submitting the application. A primary reason why prospective students are denied admission is because they did not identify explicitly in their statement of purpose which faculty with whom they would like to work with if admitted into the program.
To ensure eligibility for graduate assistantships and scholarships, prospective students should submit their applications on or before December 15 for following Fall admission. Spring and Summer admission are possible on a case-by-case basis.

B. CONDITIONAL ADMISSION POLICY

Conditional admission is left up to the program’s determination except in the case of English language proficiency for applicants who are not citizens/permanent residents of the United States.

Conditional admission status may be granted to students who do not meet all admission requirements or have incomplete applications. From time to time, applications are incomplete due to missing letters of recommendations, a vague or poorly written statement of purpose, and/or missing or outdated GRE scores. Students who are conditionally admitted for one or more of these reasons must submit the required materials prior to the end of the first semester in the program. Once the application materials are submitted, the REMS faculty will reevaluate the application and forward their recommendation to the Graduate School prior to the start of the second semester of coursework. The recommendation may be either to award or deny unconditional admission status.

Conditional admission status may also be granted to students in situations where the REMS faculty need additional information to adequately assess the student’s ability to perform successfully in the program and/or whether the program is suited to meet the student’s short-term and long-term career-related goals. Students who are conditionally admitted for this reason will be required to satisfy specific conditions within the first 18 credit hours of coursework.

1. Enroll for in a series of courses as specified by the REMS faculty. These courses will be determined on an individual basis;
2. Maintain a GPA of at least 3.0 each semester, and a cumulative GPA of at least 3.2; and
3. Meet with the temporary advisor each semester to complete a degree plan and identify the appropriate courses to take in the forthcoming semester.

Once these conditions have been satisfied, the REMS faculty will meet to discuss the student’s progress, ability to perform successfully in the program, and academic fit. Following this evaluation, the REMS faculty will forward their recommendation to the Graduate School prior to the third semester of coursework. The recommendation may be either to award or deny unconditional admission status.
Occasionally, we conditionally admit students for both of the reasons described above. In these situations, the student will be required to satisfy each condition as described and the REMS faculty will make their admission decision once the first 18 credit hours of coursework has been satisfied. Students who are conditionally admitted for any reason are not eligible to apply for graduate assistantship until unconditional admission status is awarded. Any grievances regarding the policy and/or the process should be brought to the attention of the Program Coordinator (see VII. Student Grievance).
IV. PROGRAM REQUIREMENTS

A. STUDENT REQUIREMENTS

The REMS PhD program is designed to be completed in four years. Students are required to:

1. Complete a minimum of 91 credit hours of coursework, including credit hours taken at Texas Tech University or other higher education institutions (see V-B. Transfer Credit & Entering with a Degree);
2. Maintain a minimum of 18 credit hours of coursework each year;
3. Take courses in four content areas – (1) Educational Foundations Core, (2) Contents Core, (3) Research Methods Core, and (4) Electives (see V-A. Curriculum);
4. Maintain a GPA of at least 3.0 each semester, and a cumulative GPA of at least 3.2 (see IV-B. Required Semester Credit Hours);
5. Pass benchmark assessments (see IV-F. Benchmark Assessments);
6. Develop and present an original, solo-authored research paper during the second year in the program, which may qualify a master’s degree (see IV-G. Second-Year Research Paper);
7. Pass a qualifying examination during the third year in the program (see IV-H. Qualifying Examination); and

B. REQUIRED SEMESTER CREDIT HOURS

Texas Tech University is on the semester system, which includes two regular semesters (Fall and Spring) and two summer sessions (Summer I and Summer II). Students typically take 9 credit hours in the Fall semester, 9 credit hours in the Spring semester, and 3 credit hours in each of the two Summer sessions.

Note: Students who are defending their dissertations during a summer session must be enrolled for at least 3 credit hours during the session in which they are defending.

All students must maintain a GPA of at least 3.0 each semester, and a cumulative GPA of at least 3.2. Students who fail to meet this requirement are not eligible to apply for/continue graduate assistantship until they submit a proof of successful completion (i.e., official transcript).

C. LEVELING REQUIREMENTS
To assure that all students have the necessary foundational knowledge, skills, and competences, all students are required to complete a series of leveling requirements. Students who have a master’s degree may have some or all of the leveling courses waivered. The Program Coordinator reviews each student’s graduate transcripts and decides which of the course requirements students have met. The following courses comprise the leveling requirements:

**PHASE I**
- EPSY 6301: Structural Equation Modeling
- EPSY 6349: Categorical Data Analysis

**PHASE II**
- EPSY 6349: Multilevel Modeling
- EPSY 6349: Test Theory
- EPSY 6349: Item Response Theory

**PHASE III**
- EPSY 6349: Application Research Experience

**D. INCOMPLETES**

Students are expected to complete all courses for which they are registered. Should a situation occur in which a student receives an incomplete (“I”) in a course, the student is responsible for obtaining a signed authorization from the instructor and for completing the coursework as agreed upon.

**E. CLASS ATTENDANCE**

Students are expected to attend all classes for which they are registered. Meetings with faculty, advisors, clients, and doctor’s visits should not be scheduled during class times.

**F. BENCHMARK ASSESSMENTS**

Students are evaluated for their learning during their progression through Phase 1, Phase 2, and Phase 3 in the program (see IIB. Student Learning Outcomes). The rubrics used for benchmark assessments can be found in Appendix A.

**PHASE I: FIRST-YEAR COMPETENCY EXAMINATION**

Upon successful completion of the first 18 credit hours of coursework, all students must complete and pass a competency examination (normally during the first Summer in the
The first-year competency examination is designed to assess students’ foundational knowledge of research methods and ethics, measurement, and statistics. The examination is completed in an 8-hour period (single day) and is comprised of questions about the content covered in Phase 1 leveling courses. Unless modifications are approved by the Program Coordinator, the examination is given on campus without access to external resources, such as textbooks, cell phones, or the Internet (except for lecture notes carried in an external drive). The examination is graded by the REMS faculty. Students who fail the first administration (less than 50% correct or “intermediate”) may retake the examination until they pass. However, students are not eligible to enroll for Phase 2 courses and apply for/continue graduate assistantship until they pass the examination.

In addition, all students must complete (a) Human Subjects training provided by the Collaborative Institutional Training Initiative (CITI) or National Institutes of Health (NIH) and (b) Ethics training provided by the TTU Office of the Vice President for Research (OVPR) before they advance to Phase 2.

PHASE II: APPLY AND EVALUATION (A&E) PROJECTS

During Phase 2, students will be offered Apply and Evaluate (A&E) projects as a course assignment and all students must complete and pass each project. The A&E projects are designed to assess students’ ability to apply the knowledge and skills developed in Phases 1 and 2 to analyzing data and communicating the findings effectively in written, oral, and/or visual form.

In a typical A&E project, students are given hypothetical- or real-data problems and required to complete the following tasks: (a) create a database using software, (b) identify and conduct the appropriate statistical analysis, and (c) interpret the findings in writing and/or orally. Students are also required to complete a research paper of the project and/or an oral presentation as a conference-style talk with appropriate visual aids. Each A&E project is graded by the course instructor. Students whose efforts are judged to be unacceptable at the first administration (less than score of 3 or “intermediate”) may resubmit the project or complete additional assignments, depending on the discretion of the course instructor, until they pass. However, students are not eligible to enroll for Phase 3 courses and apply for/continue graduate assistantship until they pass all A&E projects.

PHASE III: APPLICATION RESEARCH EXPERIENCE (APEX) PROJECT

During Phase 3, students will be offered an Application Research Experience (APEX) project and all students must complete and pass the project. The APEX project is designed to assess students’ ability to apply the knowledge and skills developed during their coursework into a collaborative research or program evaluation with clients, such as
school districts, universities, and educational agencies, and thereby develop an evidence-based consultation model.

In a typical APEX project, students are given real-data problems and required to complete the following tasks: (a) designate faculty mentor(s), (b) identify the client's needs, (c) develop a project implementation plan detailing project overview, data sources, research methodology, scope of work (expected deliverables, proposed timeline, etc.) and long-term dissemination plan, (d) complete IRB process, (e) collect data, (f) create a database using software, (g) identify and conduct the appropriate statistical analysis, (h) interpret the findings, and (i) present the findings in writing or orally to the client. The APEX project is graded by the faculty mentor(s). Students whose efforts are judged to be unacceptable at the first administration (less than score of 3 or “intermediate”) may complete another APEX projects until they pass. However, students are not eligible to apply for/continue graduate assistantship until they pass the project.

G. SECOND-YEAR RESEARCH PAPER

All students must complete an original, solo-authored research paper in publishable quality during the second year in the program. Manuscripts resulting from collaborative research with REMS faculty are also acceptable for submission, but students must demonstrate significant contribution to the research activities and manuscript writing as a co-author. The second-year research paper is designed to assess students' ability to develop and conduct an original research and present the research findings effectively in written and visual form.

The second-year research paper will be written following the most recent publication guidelines from APA, and should include (at least 20 pages):

1. Title page
2. Introduction
3. Method
4. Results
5. Discussion
6. References
7. Appendices: figures, tables, and programming syntax

Students who successfully complete the second-year research paper and at least 36 credit hours of coursework are eligible to earn a Master’s degree. However, students whose efforts are judged to be unacceptable at the first administration may submit the paper only once more as a second failure results in removal from the program. The final decision is made by the REMS faculty.

H. QUALIFYING EXAMINATION
Upon successful completion of the second-year research paper and 72 credit hours of Phase 1 and Phase 2 coursework, all students must complete and pass a qualifying examination (normally during the third Summer in the program). The qualifying examination is designed to assess students’ knowledge in the field of research, evaluation, measurement, and statistics. The examination will cover the content areas of Contents Core and Research Methods Core, and possibly the content within the student’s area of interest or emphasis. Outside members may also write examination questions that fall outside of the above content areas.

Students will work with the chair/co-chair of their dissertation committee to schedule the qualifying examination. The qualifying examination is completed in 4-hour periods over 3 to 4 days (12-15 hours) and is comprised of questions from each dissertation committee member (i.e., questions about the content covered in Phase 2 courses). Unless modifications are approved by the student’s dissertation committee, the examination is given on campus without access to external resources, such as textbooks, cell phones, or the Internet (except for lecture notes carried in an external drive). The examination is graded by the student’s dissertation committee. **Students who fail the first administration may take the examination only once more as a second failure results in removal from the program.**

I. APPROVAL OF CANDIDACY

After successful completion of all other requirements, students must apply to the Graduate School to be admitted to doctoral candidacy, prior to the dissertation proposal defense and at least 4 months before the proposed graduation date. Upon the approval from the Graduate School, the student is considered “doctoral candidate.”

J. DISSERTATION

The final requirement for a PhD in the REMS program is the completion of a dissertation. The dissertation process allows students, with guidance from the dissertation committee, to conduct research that uniquely contributes to the field of research, evaluation, measurement, and statistics. Key milestones in the dissertation process include:

1. Formal selection of a dissertation committee and a dean’s representative;
2. Selection of a dissertation topic;
3. Dissertation proposal defense (written document and oral presentation);
4. Formal approval of dissertation proposal;
5. Final dissertation defense (written document and oral presentation); and
6. Final decision by the dissertation committee (e.g., accepted as presented, accepted with minor changes, accepted with significant changes, or not accepted)
DISSERTATION CREDIT HOURS

Dissertations should be the result of original and significant investigation of a subject approved by the candidate’s dissertation committee. Although students are encouraged to explore dissertation topics and participate in research throughout their coursework (e.g., EPSY 7000), they are unable to enroll for EPSY 8000: Dissertation, until they have completed the qualifying examination.

Students must successfully complete a minimum of 12 dissertation hours to be eligible for graduation. Credit for dissertation hours is provided at the end of each semester with a grade assigned when the student passes an oral defense.

DOCTORAL COMMITTEE SELECTION AND CHANGE

The dissertation committee is comprised of a minimum of three faculty members. Upon successful completion of the first-year competency examination, students must identify 1 chair and 1 co-chair of their dissertation committee (REMS faculty members) and 1 or more committee members (not necessarily REMS faculty members). The dissertation committee will provide mentoring and guidance throughout the student’s progress in coursework and this support will be extended to the dissertation process. The committee chair/co-chair will direct the qualifying examination and dissertation through coordination with the committee members.

Selection and any change in dissertation committee members must be approved by the committee chair/co-chair. Students must complete a Committee Selection/Change form that requires the signature of both the initial and replacement chair/co-chair/members.
V. CURRICULUM & COURSE SEQUENCE

A. CURRICULUM

The REMS PhD curriculum is divided into three interrelated phases. A minimum of 91 credit hours of Phase 1, Phase 2, and Phase 3 coursework, including credit taken at Texas Tech or other higher education institutions, is required for the granting of a PhD in the REMS program.

Note: The courses offered by the REMS faculty are Italicized.

PHASE 1 (MINIMUM 24 CREDIT HOURS)

1. Educational Foundations Core (minimum 6 credit hours)

   EPSY 5310: Philosophy of Education
   EPSY 5314: History of Education
   EPSY 5323: Cultural Foundations of Education
   EPSY 5330: Motivation in Educational Settings
   EPSY 5331: Human Development in Education
   EPSY 5332: Educational Psychology and Learning
   EPSY 5340: History and Systems in Educational Psychology

2. Contents Core (minimum 12 credit hours)

   EPSY 5380: Introduction to Education Statistics
   EPSY 5381: Intermediate Educational Statistics
   EPSY 5382: Qualitative Research in Education
   EPSY 5383: Data Analysis with Statistical Software
   EPSY 5385: Foundations of Educational Research
   EPSY 6301: Structural Equation Modeling (prerequisite: EPSY 5381)
   EPSY 6302: Survey Research in Education
   EPSY 6303: Educational Measurement (prerequisite: EPSY 5356)
   EPSY 6304: Qualitative Research Methods (prerequisite: EPSY 5382)
   EPSY 6349: Foundations of Mixed Methods Research
   EPSY 6349: Categorical Data Analysis (prerequisite: EPSY 5381)
   EPSY 6349: A First R Programming Class for Data Science
   EPSY 6349: Multivariate Topics and Generalized Regression (prerequisite: EPSY 5381)
   EPSY 6385: Causal Inference in Research (prerequisite: EPSY 5381)

3. Electives (maximum 6 or 8 credit hours)
With the assistance of the REMS faculty, students should identify and take courses offered outside of the REMS PhD program that will further assist them in developing research skills. Selection of elective courses will be based on individual student's interest and professional goals. These courses could be additional College of Education courses and courses in business, psychology, human science, computer science, engineering, or other areas deemed by the program to support the REMS PhD program. For example,

*ISQS 5347: Advanced Statistical Methods
*ISQS 6348: Applied Multivariate Analysis (prerequisite: ISQS 5347)
PSY 5447: Advanced Correlational Methods and Factor Analysis (4 credit)
PSY 5448: Advanced Multivariate Analysis for Psychologist (4 credit)

**PHASE 2** *(MINIMUM 55 CREDIT HOURS)*

1. Research Methods Core (minimum 30 credit hours)

   *EPSY 6349: Longitudinal Structural Equation Modeling* (prerequisite: EPSY 6301)
   *EPSY 6349: Multilevel Modeling*
   *EPSY 6349: Test Theory*
   *EPSY 6349: Item Response Theory* (prerequisite: Test Theory)
   *EPSY 6349: Generalized Structured Component Analysis* (prerequisite: EPSY 6301)
   *EPSY 6349: Survival Analysis* (prerequisite: Categorical Data Analysis)
   *EPSY 6349: Cognitive Diagnostic Modeling* (prerequisite: Item Response Theory)
   *EPSY 6349: Propensity Score Methods & Power Analysis*
   *EPSY 6349: Constrained Principal Component Analysis*
   *EPSY 6349: Functional Data Analysis*
   *EPSY 6349: Simulation using R/MATLAB*

   EPSY 6305: Qualitative Data Analysis in Education
   EPSY 6349: Foundations of Mixed Methods Research
   EPSY 6349: Meta-Analysis

   *EPSY 7000: Research* (maximum 6 credit)

2. Electives (maximum 27 credit hours)

   *ISQS 5347: Advanced Statistical Methods*
   *ISQS 6348: Applied Multivariate Analysis* (prerequisite: ISQS 5347)
   ISQS 6338: Database Concepts (8 weeks)
   *ISQS 6339: Business Intelligence* (prerequisite: ISQS 6338, 8 weeks)
   *ISQS 6347: Data and Text Mining* (prerequisite: ISQS 6339 & 6348, Summer I)
*ISQS 7339: Prescriptive Analytics (prerequisite: ISQS 6338 & 6348, Summer I)
*15-hour Graduate Certificate in Business Analytics ([https://catalog.ttu.edu/preview_program.php?catoid=2&poid=1272](https://catalog.ttu.edu/preview_program.php?catoid=2&poid=1272); ISQS courses must be taken in the following order: 5347→6348→[6338: prerequisite course that does not count toward the 15-hour requirement]→6339→6347→7339)

ISQS 7341: Seminar in MIS Research and Methods
ISQS 7342: Advanced Topics in Information Systems and Quantitative Sciences
ISQS 7346: Seminar in Cognitive and Behavioral MIS Research
ISQS 7347: Seminar in Managerial and Organizational MIS Research

**ENGL 5391: Grants and Proposals for Nonprofits
**ENGL 5393: Grants and Proposals for the Academy and Industry
**ENGL 5379: Empirical Research Methods
**ENGL 5374: Technical Editing
**ENGL 5371/5393/5375/5376/5377/5382/5384/5386/5387/5390
**15-hour Graduate Certificate in Grants & Proposals ([https://www.depts.ttu.edu/elearning/certificate/grants-proposals/](https://www.depts.ttu.edu/elearning/certificate/grants-proposals/); see application requirements)

PSY 5367: Analysis of Repeated Measures and Intensive Longitudinal Designs (prerequisite: PSY 5447 & 5480 [EPSY 6385])
PSY 5447: Advanced Correlational Methods and Factor Analysis (4 credit)
PSY 5448: Advanced Multivariate Analysis for Psychologist (4 credit)
PSY 5481: fMRI Design and Data Analysis (4 credit)
PSY 5485: Psychometric and Item Response Theory (4 credit; prerequisite: PSY 5447 & 5480 [EPSY 6385])
PSY 5490: Computer Modeling: Applied Analysis and Simulation (4 credit; prerequisite: PSY 5447 & 5480 [EPSY 6385])

HDFS 5349: Quantitative Methods I in Human Development and Family Studies
HDFS 6352: Quantitative Methods II in Human Development and Family Studies (prerequisite: HDFS 5349)
HDFS 6364: Quantitative Methods III in Human Development and Family Studies (prerequisite: HDFS 5349, 5351, & 6352)
HDFS 6365: Quantitative Methods IV in Human Development and Family Studies (prerequisite: HDFS 5349, 5351, & 6364)

EDIT 5321: Computer Programming for Educators
EDIT 5330: Computers, Critical Thinking & Problem Solving in the Content Areas

**PHASE 3** (MINIMUM 12 CREDIT HOURS)

1. Research Methods Core (minimum 12 credit hours)

   **EPSY 8000: Dissertation** (minimum 12 credit)
B. TRANSFER CREDIT & ENTERING WITH A DEGREE

Students may transfer up to 30 credit hours of an earned Master’s degree from another institution if it was completed within 7 years prior to admission with a grade of “B” or better. Students interested in transferring credit should schedule an appointment with the Program Coordinator of the REMS PhD program and must submit associated syllabi and official transcripts (to Program Coordinator and Graduate School) prior to completion of the first year of coursework. The credit to be transferred is determined by the Program Coordinator.

Note: No more than 6 credit hours of an earned Master’s degree from another institution may be transferred in for a Master’s degree. Grades from transfer courses will not appear on the TTU transcripts nor will the previous grades be considered in the TTU GPA.

C. COURSE SEQUENCE & TIMELINE

Below is the recommended course sequence and timeline, which is based on the following assumptions: (1) Fall admission, (2) no transfer credit, (2) full-time enrollment, and (3) enrollment for both Summer sessions.

<table>
<thead>
<tr>
<th>PROGRAM YEAR</th>
<th>PHASE</th>
<th>FALL</th>
<th>SPRING</th>
<th>SUMMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1 (24 credit)</td>
<td>P1</td>
<td>EPSY 5382, EPSY 6301, ISQS 5347</td>
<td>Categorical Data Analysis, R programming, ISQS 6350</td>
<td>2 Educational Foundations Core courses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* First-Year Competency Examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y2 (24 credit)</td>
<td>P2</td>
<td>Multilevel Modeling, Test Theory, ISQS 6338</td>
<td>Item Response Theory, GSCA, ISQS 6339</td>
<td>ISQS 6347, ISQS 7339</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Second-Year Research Paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y3 (24 credit)</td>
<td>P2</td>
<td>Longitudinal SEM, Cognitive Diagnostic Modeling, ENGL 5391</td>
<td>Survival Analysis, Constrained PCA, ENGL 5379</td>
<td>ENGL 5393, ENGL xxxx</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Qualifying Examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y4 (19 credit)</td>
<td>P3</td>
<td>Functional Data Analysis, EPSY 8000 (6 credit), ENGL 5374</td>
<td>Simulation Using R/MATLAB, EPSY 8000 (6 credit)</td>
<td>* Application Research Experience project, * Dissertation proposal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Dissertation defense</td>
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</tr>
</tbody>
</table>
REMS courses
Elective courses

Note: * First-year competency examination will be administered upon successful completion of the first 18 credit hours (normally during the first Summer in the program), ** Second-year research paper will be completed during the second year in the program, *** Qualifying examination will be administered upon successful completion of 72 credit hours of Phase 1 and Phase 2 coursework (normally during the third Summer in the program), **** Application research experience project and dissertation will be completed during the fourth year in the program.
VI. FINANCIAL SUPPORT

A. GRADUATE RESEARCH ASSISTANTSHIP (GRA)

On-campus graduate students may be hired as graduate research assistants at the College of Education or IMMAP. Graduate research assistantships are normally a 9-month appointment, with a stipend of $1,200 per month. Graduate research assistants are eligible for tuition and fee waivers and staff holiday but not eligible for vacation and sick leave. Semesters (or Summer sessions) that fall outside of a GRA are not eligible for stipend, tuition waiver, staff holiday, vacation, and sick leave.

Continuation of GRA is based on enrollment in at least 9 credit hours each semester with satisfactory progress in coursework (i.e., a GPA of at least 3.0 each semester, and a cumulative GPA of at least 3.2; see IV-B. Required Semester Credit Hours) and positive evaluations on GRA assignment. Failure to meet these requirements can result in the termination of GRA.

In accordance with the College of Education Research Assistant guidelines students are eligible for appointments with continued progress toward the completion of their degree up to four years or a maximum of 99 credit hours. Degree fulfillment may not be prolonged to maintain employment.

B. PART-TIME GRADUATE ASSISTANTSHIP (GA)

On-campus graduate students may be hired as part-time graduate assistants at IMMAP. Part-time graduate assistants are paid for hours worked and are not eligible for tuition and fee waivers, staff holiday, vacation, and sick leave.

C. SCHOLARSHIP

A limited number of scholarships are available from the College of Education or from Texas Tech University on a competitive basis. Qualified students will be nominated when these scholarships become available. Students interested in scholarships and other financial support should submit applications with the assistance of the REMS Program Coordinator.
VII. STUDENT GRIEVANCES

In situations where students have a legitimate grievance regarding any aspect of their graduate education, they have a right to exhaust all proper channels in resolving the complaint. In order, these channels are: the program coordinator, the department chair, the associate dean of graduate education, the dean of the academic college, and the dean of the Graduate School.
## VIII. APPENDIX

### A. RUBRICS

#### PHASE 1: FIRST-YEAR COMPETENCY EXAMINATION

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>UNDERDEVELOPED (1)</th>
<th>INTERMEDIATE (3)</th>
<th>ADVANCED (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem identification</td>
<td>Demonstrates a limited, surface, or superficial understanding of the problem</td>
<td>Demonstrates an understanding of the problem</td>
<td>Demonstrates a clear and deep understanding of the problem</td>
</tr>
<tr>
<td>Knowledge-based research design</td>
<td>Due to conduct design</td>
<td>Demonstrates an understanding of how to design and conduct a research</td>
<td>Demonstrates a clear and deep understanding of how to design and conduct a research</td>
</tr>
<tr>
<td>Link from data analysis to problem</td>
<td>Incorrectly or insufficiently links data analysis to research questions</td>
<td>Links data analysis to each research question with minimal errors</td>
<td>Correctly links data analysis to research questions</td>
</tr>
<tr>
<td>Data analysis techniques</td>
<td>Analysis is wrong, inappropriate, or incomplete</td>
<td>Analysis is thorough, appropriate, and correct</td>
<td>Analysis is original, robust, and precise</td>
</tr>
</tbody>
</table>

#### PHASE 2: APPLY AND EVALUATE (A&E) PROJECTS
### Finding presentation
- Does not use standard methods
- Does not handle missing data
- Presentation of results is not organized in a meaningful way
- Tables and figures are neither provided nor sufficiently explained in text
- Presentation of results is somewhat organized in a meaningful way
- Tables and figures are provided yet not explained in detail.

### Finding interpretation
- Does not tie things up
- Does not address the significance or implications of the research
- Does not identify the limitations of the research
- Does not identify future research directions
- Ties things together
- Identifies the significance and possible implications of the research
- Identifies the limitation of the research
- Identifies some future directions

### PHASE 3: APPLICATION RESEARCH EXPERIENCE (APEX) PROJECT

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>UNDERDEVELOPED (1)</th>
<th>INTERMEDIATE (3)</th>
<th>ADVANCED (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem identification</td>
<td>- Demonstrates a limited, surface, or superficial understanding of the problem</td>
<td>- Demonstrates an understanding of the problem</td>
<td>- Demonstrates a clear and deep understanding of the problem</td>
</tr>
<tr>
<td></td>
<td>- Problem is not stated, is wrong, or trivial</td>
<td>- Provides a statement of the problem</td>
<td>- Provides a clear statement of the problem</td>
</tr>
<tr>
<td></td>
<td>- The importance of the problem is missing or not clearly explained</td>
<td>- Does not make a convincing case why a problem is important</td>
<td>- Explains why the problem is important and significant</td>
</tr>
<tr>
<td>Knowledge-based research design</td>
<td>- Demonstrates a limited, surface, or superficial understanding of how to design and conduct a research</td>
<td>- Demonstrates an understanding of how to design and conduct a research</td>
<td>- Demonstrates a clear and deep understanding of how to design and conduct a research</td>
</tr>
<tr>
<td></td>
<td>- Does not design and/or conduct a research using best-practice and modern methodology</td>
<td>- Designs and/or conducts a research using best-practice and modern methodology with minimal errors</td>
<td>- Skillfully designs and/or conducts a research using best-practice and modern methodology without any error</td>
</tr>
<tr>
<td></td>
<td>- The methods and techniques to be used are not adequately described or justified</td>
<td>- The methods and techniques to be used are described but not appropriately justified according to the purpose and research questions</td>
<td>- The methods and techniques to be used are clearly and fully described and justified according to the purpose and research questions</td>
</tr>
<tr>
<td>Data collection strategies</td>
<td>- Data collection strategies are poorly executed and flawed</td>
<td>- Data collection strategies are executed correctly with minimal mistakes</td>
<td>- Data collection strategies are executed correctly and follows best practice</td>
</tr>
</tbody>
</table>


### Link from data analysis to problem

- Incorrectly or insufficiently links data analysis to research questions
- Does not explain whether assumptions associated with the data analysis have been met
- Does not consider statistical power
- Links data analysis to each research question with minimal errors
- Describes all assumptions associated with the data analysis but does not provide solutions when the assumptions are violated
- Conducts a power analysis with minimal errors
- Correctly links data analysis to research questions
- Describes all assumptions associated with the data analysis and fully resolves issues when the assumptions are violated
- Skillfully conducts a power analysis without any error

### Data analysis techniques

- Analysis is wrong, inappropriate, or incomplete
- Does not use standard methods
- Does not handle missing data
- Analysis is thorough, appropriate, and correct
- Uses standard methods
- Substantiates the results
- Properly handles missing data
- Analysis is original, robust, and precise
- Uses advanced and cutting-edge techniques
- Properly handles missing data using modern methods

### Finding presentation

- Presentation of results is not organized in a meaningful way
- Tables and figures are neither provided nor sufficiently explained in text
- Presentation of results is somewhat organized in a meaningful way
- Tables and figures are provided yet not explained in detail.
- Presentation of results is well organized and transitions in a meaningful narrative.
- Tables/figures are provided and used to supplement explanations in text.

### Finding interpretation

- Does not tie things up
- Does not address the significance or implications of the research
- Does not identify the limitations of the research
- Does not identify future research directions
- Ties things together
- Identifies the significance and possible implications of the research
- Identifies the limitation of the research
- Identifies some future directions
- Ties everything together
- Fully understands the strength, weaknesses, and limitations of the research
- Raises new questions and discusses some future directions

### Ethical conduct

- Does not adhere to APA’s ethics code of conduct, especially as it relates to Section 8: Research and Publication
- The methods, data, or narrative of the evaluation might be construed as having ethical and human protection violations.
- Adheres to APA’s ethics code of conduct with minor unintentional violations, especially as it relates to Section 8: Research and Publication
- The researcher will/did exhibit ethical and due regard for protecting the welfare of those involved in the research.
- Consistently adheres to APA’s ethics code of conduct, especially as it relates to Section 8: Research and Publication
- The researcher will/did consistently exhibit ethical and due regard for protecting the welfare of those involved in the research.

### Project Management

- Identifies tasks that are not germane to completion of the project
- Does not set deadlines
- Project is not completed on time
- Some or all individual assignments are not completed on time
- Seldom takes initiative for completing tasks
- Identifies most of the tasks associated with the project
- Sets deadlines
- Project is completed on time
- Most individual assignments are completed on time
- Typically takes the initiative for completing tasks
- Identifies all of the major tasks associated with the project
- Sets realistic and achievable deadlines
- Project is completed and delivered on time
- Individual assignments are completed on time
- Takes the initiative for completing tasks