

Morgridge College of Education

Quantitative Research Methods Program



UNIVERSITY OF
DENVER

**Morgridge College
of Education**

**Master's Degree
Student Handbook
2008-2009**

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The *University of Denver's Quantitative Research Methods Master's Student Handbook* provides the prospective and admitted student with the policies and procedures to progress through the requirements of the degree program. In addition to our program publication, the student should become familiar with the *Morgridge College of Education Bulletin*. Although every effort has been made to ensure their agreement, it is the student's responsibility to read the norms regarding degree programs in both documents and to complete various program steps in a timely fashion.

The University of Denver reserves the right to make changes in the regulations, courses, rules, fees or other changes in this handbook without advance notice.

Inquiries concerning the Quantitative Research Methods Program should be directed to the Office of Admissions and Enrollment Services, 2450 S. Vine St., Denver, CO 80208; Phone 303-871-2509 and edinfo@du.edu.

The University of Denver (Colorado Seminary) is an Equal Opportunity Institution. It is the policy of the University not to discriminate in the admission of students, in the provision of services, or in employment, on the basis of race, color, religion, sex, national origin, age, marital or veteran status, sexual orientation, or physical or mental disability.

Inquiries concerning allegations of discrimination based on any of the above matters may be referred to the University of Denver Affirmative Action Office, 2020 E. Evans Ave., Room 104, Denver, CO 80208, 303-871-2307, or the U.S. Department of Education, Office of Civil Rights, 1244 Speer Blvd., Denver, CO 80204.

INTRODUCTION

Welcome to graduate studies in Quantitative Research Methods (QRM). The goal of the QRM specialization is to enhance the development and use of research in the social and health sciences. Our goals as faculty are to equip you with cutting-edge research skills, creative educational vision, social responsibility, and sufficient experience in application of your skills and knowledge to achieve a feeling of comfort. We are committed to shaping a safe, sustainable, democratic and just world and believe that high quality research is one approach to doing this. We are pleased to have you join us in this venture.

Kathy E. Green

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UNIVERSITY OF DENVER'S HONOR CODE



Adopted by
The Morgridge College of Education

HONOR CODE STATEMENT All members of the University community are entrusted with the responsibility of observing certain ethical goals and values as they relate to academic integrity. Essential to the fundamental purpose of the University is the commitment to the principles of truth and honesty. The Honor Code is designed so that responsibility for upholding these principles lies with the individual as well as the entire community.

The Honor Code fosters and advances an environment of ethical conduct in the academic community of the University, the foundation of which includes the pursuit of academic honesty and integrity. Through an atmosphere of mutual respect we enhance the value of our education and bring forth the highest standard of academic excellence. Members of the University community, including students, faculty, staff, administrators and trustees, must not commit any intentional misrepresentation or deception in academic or professional matters.

Refer to http://www.du.edu.facsen/honor_code.html for the entire honor code.

QUANTITATIVE RESEARCH METHODS PROGRAM

This handbook provides information about the Master's degree program in QRM. This program is individually planned around the students' backgrounds and career goals. Most students prepare for positions that require consulting, research, measure development, and evaluation. It is assumed that graduates will be working with a varied group of professionals, lay people and students, and that they will need communication skills. Small seminars, independent projects, and practica offer opportunities for an individualized and well-rounded program.

The program in QRM at the M.A. level focuses on measurement, research design, statistics, and evaluation. All Master's students will take courses in assessment and communication as well as major area studies. Students can also take thesis credits.

UNIQUE PROGRAM FEATURES

In addition to the facilities of the entire campus, there are three features of the QRM Program at DU that distinguish it as a strong graduate program. We are particularly fortunate to have an outstanding faculty. Professors are not only leaders in their fields but also demonstrate a deep commitment to students' academic as well as personal growth. While our professors set high standards for students, they also individualize requirements to meet each student's needs and goals.

Another excellent feature of this program is the students themselves. A wide range of experiences, creative ideas, sincere dedication to research, and a sense of humor are some of the characteristics of people in our program. We enjoy each other's genuine cooperation, encouragement, and inspiration.

Small class sizes are the third distinguishing feature of our program. It is one that enables us to get to know one another and engage in ongoing dialogue about topics of interest, form study groups, and give advice about the direction of a project or thesis. Personal and professional friendships form and continue long after graduate school.

These features contribute to an outstanding educational experience. We feel fortunate to be part of a program in which professors make themselves readily available for consultation, students support and assist one another, and small class sizes result in rich interaction among students and faculty.

The QRM program is one of seven programs offered within the Morgridge College of Education (Counseling Psychology, Curriculum and Instruction, Educational Leadership, Library and Information Science, Child-Family-and-School Psychology, Higher Education and Adult Studies, and Quantitative Research Methods). Students may opt to take cognate courses from programs within or outside of the Morgridge College of Education. QRM students take classes with students in programs from across the College and University.

QRM LEARNING GOALS

The broad learning goals of QRM are as follows. Students will:

1. have a general knowledge of research methods, program evaluation, psychometrics, and statistics.
2. think critically about research
3. engage in research serving professional and local communities
4. understand ethics as they apply to research and behave in an ethical manner

QRM goals relate to the MCE mission in advancing scholarship via practice and encouraging critical thought.

Data addressing learning outcomes come from multiple sources: (1) grades in courses, (2) annual review of QRM students, (3) comprehensive exams, (4) practicum and other research products, (5) selected items from MCE surveys of continuing and graduating students, (6) master's thesis quality (if the thesis option is selected), (7) QRM alumni survey, (8) course evaluations, and/or (9) MCE Research and Scholarship Committee discussions. Learning outcomes along with evaluation criteria and a synopsis of the process for reviewing data are listed below.

Learning Goal 1 (have a general knowledge of research methods, program evaluation, psychometrics, and statistics) and Learning Goal 2 (think critically about research)		
Learning Outcomes: Students will demonstrate skill in	Criteria for Evaluating Learning Outcomes	Process for Collection and Review of Evidence
1. designing research to address significant problems, with knowledge and understanding of the strengths and limitations of diverse modes of inquiry.	<ol style="list-style-type: none"> 1) Success in coursework (B or better): Empirical research methods (QRM 4903), survey research (QRM 4921) 2) Comprehensive exam performance (MA) 3) Evaluation practicum 4) Thesis quality 5) 3 MCE survey items (skill with critical thinking..., current level of expertise in designing quantitative research studies..., current level of expertise in designing .. qualitative research) 	<ol style="list-style-type: none"> 1) track student grades—reviewed annually by QRM faculty 2) review QRM student comprehensive exam performance on research methods questions—done each quarter there is a student taking an exam by both QRM faculty with discussion of mistakes on comps 3) Practicum advisor reviews product, which then is submitted for presentation (or publication) 4) Quality of thesis determined by committee 5) survey data collected by College—review of item responses by QRM faculty
2. applying appropriate analytic strategies in analysis of quantitative	1) Coursework: QRM 4930, intermediate, and advanced statistics classes	<ol style="list-style-type: none"> 1) track student grades—reviewed annually by QRM faculty 2) review QRM student

data.	<ul style="list-style-type: none"> 2) comprehensive exam performance 3) evaluation practicum 4) thesis quality 5) 1 MCE survey item (current level of expertise in statistics) 	<p>comprehensive exam performance on statistics questions—done each quarter there is a student taking an exam by both QRM faculty with discussion</p> <ul style="list-style-type: none"> 3) Practicum advisor reviews product 4) Review by thesis committee 5) survey data collected by College—review by QRM faculty
3. creating and evaluating measures using diverse analytic strategies.	<ul style="list-style-type: none"> 1) Coursework: QRM 4905, QRM 4921 2) Comprehensive exam performance 3) Thesis quality 4) 1 MCE survey item (level of expertise in designing measures) 	<ul style="list-style-type: none"> 1) track student grades—reviewed annually by QRM faculty 2) review QRM student comprehensive exam performance on measurement questions 3) Review by thesis committee 4) survey data collected by college
4. crafting coherent and concise expressions of ideas related to research, and communicating those ideas effectively.	<ul style="list-style-type: none"> 1) Coursework: QRM 4903 2) thesis quality 3) conference presentation or publication 4) 2 MCE survey items (skill with written communication, skill with verbal communication) 	<ul style="list-style-type: none"> 1) track student grades—reviewed annually by QRM faculty 2) Review by dissertation committee 3) paper accepted under peer review process 4) survey data collected by College—review by QRM faculty
5. Students will demonstrate a commitment to continuing learning by engagement with professional and local communities.	<ul style="list-style-type: none"> 1) membership in professional organizations (goal of all students maintaining membership in at least one relevant professional organization) 2) practica in local organizations 	<ul style="list-style-type: none"> 1) student annual review—discussed by QRM faculty on an annual basis 2) master’s students placement in local sites for practicum
6. Students will demonstrate professional behavior by understanding research ethics and adhering to an ethical code of conduct.	<ul style="list-style-type: none"> 1) coursework in research ethics (QRM 4903, QRM 4921) 2) 1 MCE survey item (level of knowledge of ethics...) 	<ul style="list-style-type: none"> 1) track student grades—reviewed annually by QRM faculty 2) survey data collected by College—review by QRM faculty

DEGREE REQUIREMENTS

Master's Degree in Education

Transfer of Credit

Make a formal request on the Course Work Plan for transfer of graduate credit. Confirm with the Office of Admissions and Enrollment Services that Official Transcripts are on file for institutions from which credit is to be transferred. These credits must be post bachelor's, cannot be over five years old when transferred, and must have a grade of "B" or better. Maximum allowable transfer of credit is 10-quarter hours. Consult your advisor; *not all credit is transferable* as the coursework may not reflect program goals. All transfer credits must be approved in the *first* quarter of enrollment.

Course Work Plan

Draft a Course Work Plan with your advisor during your *first quarter* of enrollment. After it has the proper signatures, file it in the Office of Admissions and Enrollment Services of the Morgridge College of Education, Ammi Hyde Building Room 124 by the end of the quarter. If any changes occur in your course work plan during your program, request a Change of Course Work Plan form from the Office of Admissions and Enrollment Services, have your advisor approve all changes, then file it with the Office of Admissions and Enrollment Services. Changes to the plan may be made at any time based on discussion with your advisor.

Cognate Requirement

All Master's students must complete a cognate or minor study in a field outside their major area of study, determined in conjunction with the student's major course work advisor. The credits required to fill this obligation vary depending upon the student's prior graduate level course work (if any) in the minor field.

Practicum

Students complete an evaluation practicum. Students work with their advisor in deciding which project to pursue. The goal of the practicum is to provide field experience in evaluation.

Comprehensive Examination or Thesis Options

Take and pass a comprehensive examination near or at the end of the course work. There is a registration fee for Master's Comprehensive Exams. Students may choose to either take the Comprehensive Exam or complete a Master's Thesis.

Master's Thesis Proposal Approval

The Master's candidate has the option to develop a thesis proposal and present it to a committee. After approval of the proposal, each committee member will sign the approval page, which should then be filed in the Office of Admissions and Enrollment Services. Thesis study will be conducted according to the approved proposal. See pages 20-21 for additional information about the thesis.

Institutional Review Board (IRB)

All studies and experiments involving human subjects conducted by the Morgridge

College of Education faculty, staff, or students, under the auspices of the College and not under a sponsored agreement through the University, must gain prior approval from the Institutional Review Board (IRB). Anyone who conducts studies or experiments involving human subjects without such approval may be personally responsible for legal or other liabilities that may consequently arise. The *Procedures for Research Proposal Review* packet outlines the specific procedures for human subjects approval and also contains the application that is to be submitted to the Review Board. For more information view their website at: www.du.edu/orsp/irb.html.

Registration for Graduation

All students must apply for graduation one quarter prior to the quarter in which they intend to graduate. Applications are available in the Office of Admissions and Enrollment Services, Ammi Hyde Room 124, or in the Graduate Studies Office in University Hall Room 216. During the quarter of intended graduation, students should be sure that all library fines, traffic tickets, or other encumbered charges have been paid.

Extension of a Degree Program

Candidates for all degree programs are expected to complete their degree within the 5-year stated expected time period specified by the University of Denver. This time period is calculated from the date of initial enrollment in the student's program of study. Students may, under special circumstances, request one period of extension, not to exceed one year. Extension requests are not automatically granted and must be considered extraordinary circumstances. All requests for extension must be submitted to the Office of Admissions and Enrollment prior to the expiration of the allotted time period. Students who do not complete their program during an approved extension period will not be permitted to re-apply for additional extensions and their program of study will be terminated. Specific procedures for an extension of a degree program can be found in the MCE Bulletin.

Ethical Behavior and Conduct

Most students understand that copying another student's answers on a test, copying another student's paper, stealing copies of a test, using forbidden material on a closed book test, etc., are included in the typical definition of academic cheating. Again, as students you should know such behavior is unacceptable and, according to the DU Honor Code, are grounds for placing a student on probation or dismissing them from the University. Please refer to the DU Honor Code: <http://www.du.edu/ccs/honorcode.html>. Students are expected to demonstrate the highest level of ethical behavior as set forth by the American Psychological Association (APA).

In the QRM Program at the University of Denver, we have tried to maintain an atmosphere of student cooperation. As a result, students are often encouraged to work together on a project or to prepare for tests. Students study together for exams and often share notes, references, etc. On the other hand, it is and has been unacceptable in almost any academic setting to use other people's ideas or data without giving them credit. This is called plagiarism and is considered unethical according to the APA (2000) Code of Ethics. As a result, the Program faculty wants to clarify that it is similarly unacceptable in our Program to "borrow" another student's work without giving him or her credit. It is

often the case that professors use similar or identical assignments from year to year. Usually, this is because they believe the assignments are useful in teaching students a particular concept or skill. Using papers written by others, or parts of papers, materials, and handing it in as your own work is clearly unethical. It is tempting in the guise of friendship to pass on to new students copies of old assignments knowing that a professor will use the same one in future years. It is also tempting for new students to borrow copies of old assignments. Such behavior is, however, unfair to other students who do not have "friends" from whom to borrow assignments, to the student whose work is being "borrowed" without credit, and to the student who is "borrowing" the assignment since they do not have to do the learning involved in working through the assignment on their own. As a result, the faculty will consider such behavior to be cheating and it will be treated like other forms of cheating specified in the first paragraph.

Unethical behavior will be considered cause for dismissal at any time during a student's program. These policies are described more fully in the MCE Bulletin. Violations of code of student conduct or the honor code are overseen by the Office of Citizenship and Community Standards (www.du.edu/ccs) in conjunction with an appointed DU Conduct Review Board. This office can be contacted with questions about these policies and procedures at 303-871-4851.

Probation or Dismissal from the Program

Students who do not follow program or university policies may be placed on probation and ultimately dismissed from the program. While these instances are rare, should they occur, students first will be contacted by their advisor and then will be informed in writing of all concerns that have been raised. In other words, students will be told specifically and in writing of any issues in regards to academic progress or attendance, interpersonal or practice effectiveness, or ethical violations. Students also will be asked to respond to these concerns personally and in writing. Decisions regarding probation or dismissal will be considered by the Program Director and QRM faculty in consultation with the MCE Associate Dean. Students will be informed of all pertinent information regarding the basis for the decision. Consult the MCE Bulletin for additional information regarding dismissal.

Grievance Process

If a student has a grievance involving a faculty member, it is preferable for the student to work it out with the faculty member. Students' advisors may act in a consultative role in this process. If students cannot work out the grievance directly with the faculty member, the student may direct his/her concern to the QRM program faculty by contacting the Program Director or other QRM faculty personally or in writing. If the grievance is not solved to the student's satisfaction, the student may appeal through the regular University grievance procedure by contacting the Associate Dean of the Morgridge College of Education. Students placed on probation or dismissed from the program have the right to appeal by following the DU appeal procedure outlined in the MCE Bulletin. Grievance and due process procedures for all grading, retention and dismissal procedures are available in the MCE Bulletin.

COURSE REQUIREMENTS

Master's Degree

All students are required to complete a course plan with their advisors. Master's students will take courses in Assessment, Communication, QRM, and complete a comprehensive examination or an optional thesis. Students are also required to take courses in related studies or a cognate field. The *minimum* credit requirement for the program is 45-quarter hours though students with no quantitative background must take a minimum of 47-quarter hours. Students may transfer a maximum of 10-quarter hours above the bachelor's degree with approval during the first quarter of enrollment. Courses marked with an asterisk (*) are required unless previously taken, and all waived courses must be approved by an advisor.

QRM Master's Degree Course Requirements

I. Morgridge College of Education Requirements (both required)	Course #	Credit Hours
Educational Measurement (or Psychometric Theory)	QRM 4900 (4905)	3
II. Program Requirements		
A. Leadership (choose one)		2-5
Leadership and Power	HCOM 3190	5
Principles of Leadership	HCOM 3230	5
Building Group/Team Effectiveness	HCOM 3245	5
Leadership and Administration	HED 4213	3
Principles of Leadership	ADMN 4807	2
Leadership in Complex Systems	ADMN 4822	3
Learning in Organizations	HED 4284	3
B. Measurement and Research Design (3+ required)		9+
Psychometric Theory	QRM 4905	3
*Survey Research Methods	QRM 4921	3
Meta Analysis in Social Sciences Research	QRM 4907	2
*Empirical Research Methods	QRM 4903	3
Qualitative Research Methods	CUI 4951	3
Community Based Research in Urban Settings	CUI 4036	3
C. Statistics (all required)		14
*Statistical Methods in Education and Psychology	QRM 4930	5
*Multivariate Analysis	QRM 4950	5
*Correlation Regression (or PSYC 4300)	QRM 4952	4
D. Evaluation (all required)		9
*Program Evaluation Theory	QRM 4980	3
*Program Development and Needs Assessment or	CUI 4423	3
Program Development and Evaluation or	CFSP 4363	3
International Project Analysis or	INTS 4333	3
Cost Benefit Analysis or	PPOL 4500	3

School Admin: Program Dev and Evaluation or	ADMN 4820	3
Program Development and Evaluation or	CNP 4730	3
Program Development and Assessment	HED 4262	3
*Practicum in Program Evaluation	QRM 4981	3
<i>E. Cognate Requirement (5 hours required)</i>		5
<i>F. Thesis Option</i>		10-15

COGNATE

Cognate (minimum 5 credits)

The cognate should add to one’s breadth or depth of knowledge in evaluation, research methods, and statistics. Graduate-level classes, chosen in consultation with an advisor, can be taken from (1) the QRM Program, (2) other programs within the Morgridge College of Education, or (3) any other department at the University of Denver.

THESIS OPTION

QRM 4995 Thesis10-15 credits

	Credits Required	Transfer Credits	Credits Completed
I. Morgridge College of Education Requirements	3		
II. Division/Program Requirements	32+		
<i>A. Leadership</i>	2-5		
<i>B. Measurement and Research Design</i>	9+		
<i>C. Statistics</i>	14		
<i>D. Evaluation</i>	9		
<i>E. Cognate</i>	5		
<i>F. Thesis Option</i>	10-15		
Total	Minimum 45 hours		

Example of Recommended Course Sequence

YEAR ONE

Fall Quarter

QRM 4930 Statistical Methods in Education and Psychology	5 credits
QRM 4980 Program Evaluation Theory	3 credits

Winter Quarter

QRM 4905 Psychometric Theory	3 credits
QRM 4921 Survey Research	3 credits
QRM 4952 Correlation and Regression	4 credits

Spring Quarter

CFSP 4363 Program Development and Evaluation	3 credits
CUI 4951 Qualitative Research Methods	3 credits
QRM 4950 Multivariate Analysis	5 credits

Summer Quarter

QRM 4981 Evaluation Practicum	3 credits
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YEAR TWO

Fall Quarter

Cognate course(s)	5 credits
HCOM	5 credits

TESTING OUT OR WAIVING COURSES

Students may waive QRM 4900, QRM 4903, QRM 4930, or CUI 4951 if they have taken comparable coursework within 5 years with a grade of “B” or better. Students may also attempt to test out of these courses. There is a fee to register for each course test-out exam; consult the MCE Office of Admissions and Enrollment Services. Courses waived or tested out of must be replaced, typically by a more advanced course.

COURSE DESCRIPTIONS

The following are descriptions of some of the Morgridge College of Education courses you might take as a part of your degree program. *For complete and current course schedules and descriptions, please refer to the Morgridge College of Education web site at www.du.edu/education.*

COURSE DESCRIPTIONS

CUI 4951 Qualitative Research Methods 3qtr. hrs

This course emphasizes conceptual and theoretical issues in qualitative research.

CFSP 4363 Program Development and Evaluation 3qtr. hrs

Focuses on program development and evaluation in school and agency settings.

- Both qualitative and quantitative methods of program evaluation are discussed.
- CFSP 4364 Single-Subject Designs** 3 qtr hours.
 This course reviews alternatives to the group-comparison approach to experimental educational and psychological research. Students learn principal 'within-subject' or 'single-case' designs: the reversal design, the multiple-baseline design, the alternating treatment design, and the changing criterion design. Students also learn how to develop a measurement system to analyze data using these designs and how to assess the reliability and validity of their measurements.
- QRM 4900 Educational Measurement** 3 qtr. hrs
 This course examines the meaning, characteristics, and processes of educational measurement and evaluation. Development and interpretation of both standardized and informal tests are considered.
- QRM 4901 Practicum in Research** 1-3 qtr. hrs
 This course provides a supervised experience in design and implementation of an empirical research study. Organization of research proposal, completion of human subjects applications, collection and analysis of data are emphasized. Students are also expected to prepare a written report of their project, which is suitable for professional presentation or publication. Prerequisite: permission of instructor.
- QRM 4903 Empirical Research Methods** 3 qtr. hrs
 This course provides in depth study of empirical research requirements involved in experimental, quasi-experimental, correlational, and single-subject designs.
- QRM 4905 Psychometric Theory** 3 qtr. hrs
 This course examines the major psychometric theories (e.g., classical, item response) as they relate to issues of reliability, generalizability, validity, item analysis methods, and criterion referenced assessment. Prerequisite: QRM 4930
- QRM 4906 Topics in Psychometrics** 1-3 qtr. hrs
 Topics vary, but include dichotomous Rasch model, computer applications of item response theory, affective measure construction, generalizability theory, additive conjoint measurement and standard setting. Prerequisites: QRM 4905 and instructor's permission
- QRM 4907 Meta Analysis in Social Sciences Research** 2 qtr. hrs
 This course examines meta-analytic techniques in the social sciences. Included are discussions of review of critical databases, coverage of all major methods of data collection and analysis, and coverage of how best to present meta-analytic findings for publication.
- QRM 4908 Topics in Research Design** 1-3 qtr. hrs
 Topics vary by quarter, but may include new innovations in quantitative research design, best practices in single-subject design and analysis, or best practices in the analysis of change.
- QRM 4910 Education Research and Measurement** 4 qtr. hrs
 This course is intended for Master's students in the Morgridge College of Education. Quantitative research designs, empirical methods of data collection and interpretation, and measurement issues in research are examined.
- QRM 4920 Structural Foundations of Research in Social Sciences** 3 qtr. hrs

- This is the introductory course on research methods for all PhD students in the Morgridge College of Education. Included are discussions of identification and development of problems for research; introduction to basic quantitative and qualitative methods of conducting research in educational and human service settings; and critical review of experimental, survey, case study, educational, historical, ethnographic, and criticism methods.
- QRM 4921 Survey Design and Analysis** 3 qtr. hrs
Survey techniques, item construction, sampling, maximizing response rates and data analysis; survey construction and data analysis required. Prerequisites: QRM 4920, 4930
- QRM 4925 Structural Equation Modeling** 5 qtr. Hrs
Major applications of and issues related to covariance structure modeling, specifically confirmatory factor analysis and latent variable path modeling; types of research applications for which covariance structure modeling analyses using computer program. Prerequisite: QRM 4952. Recommended Prerequisite: background in multivariate analysis, factor analysis and psychometric theory.
- QRM 4930 Introductory Statistics** 5 qtr. hrs
This is the beginning statistics course and examines the use and interpretation of statistics in educational and human services research, including descriptive and inferential techniques.
- QRM 4950 Multivariate Analysis** 5 qtr. hrs
This course emphasizes a conceptual understanding of common multivariate statistical techniques as applied to research in education and the social sciences. Assumptions, limitation of techniques, and interpretation of findings are also stressed. Prerequisites: QRM 4920, 4930.
- QRM 4952 Correlation and Regression** 4 qtr. hrs
This course focuses on the study of correlation and multiple regression research designs and their application to educational and social science problems. Prerequisites: QRM 4920, 4930
- QRM 4955 Topics in Statistics I** 1-3 qtr. hrs
Topics vary by quarter, but may include analysis or longitudinal data, or techniques for dealing with missing data. Prerequisites: QRM 4952
- QRM 4956 Hierarchical Linear Modeling** 3 qtr. hrs
This course introduces models that extend multiple regression to analysis of nested data structures common in education and other social sciences. Application of these methods to various forms of multilevel data, including repeated measure (growth trajectory) data is emphasized. Prerequisites: QRM 4952.
- QRM 4960 Analysis of Variance** 5 qtr. hrs
This course examines one-way analysis of variance through factorial nested designs, and multivariate analysis of variance. Prerequisites: QRM 4920, 4930
- QRM 4980 Program Evaluation Theory** 3 qtr. hrs
This course reviews theories of program evaluation designs and analysis, and current trends in evaluation.
- QRM 4981 Practicum in Program Evaluation** 3 qtr. hrs
This course provides a supervised experience in designing, conducting, analyzing,

and disseminating results of a program evaluation.

QRM 4991 Master's Independent Study 1-17 qtr. hrs

This course allows Master's students in QRM to study a topic area independently in conjunction with cooperating faculty member.

QRM 4992 Directed Study 1-10 qtr. hrs.

A permanent catalog course delivered on an individual basis when the course is not offered that term. Directed studies are approved under extenuating circumstances to provide an opportunity to complete a required course.

Prerequisite: approval of instructor and faculty advisor, credit hours vary according to the catalog course taken.

QRM 4995 Thesis Research 1-15 qtr. hrs.

This course is for Master's students in QRM who are engaged in completing their thesis. Prerequisites: Advanced standing in the program.

COMPREHENSIVE EXAMINATION

Purpose

The purpose of the comprehensive examination is to allow students to demonstrate ability to integrate the information and knowledge of curriculum theory and practice (including research design and methods) acquired during the degree program.

Format

The test will be taken over a five-hour time period on either a Friday or Saturday, 8:30-1:30. You are expected to organize your writing to give equal time to each question and to include time to proof your answers. Some questions will be required and there will be some choice among others.

Exam Schedule

Comprehensive exams are offered only during Fall, Spring, and Summer quarters. No comprehensive exams are offered during Winter quarter. Registration deadlines are on the MCE website. Once you have registered and paid the fee, the Office of Admissions and Enrollment Services will inform you of the time and location for you to take your exam. Exams are held on Friday (8:30 a.m. - 1:30 p.m.) and Saturday (8:30 a.m – 1:30 p.m.)

Evaluation Criteria

Accuracy in addressing the questions

In writing your responses to the question it is important to address the questions that are asked, without omitting parts of a question and without answering questions that were not asked.

Skill in defining issues

Each of the questions presented will relate to a particular problem area in quantitative research methods. In order to give focus to your response you must be able to identify the particular issue or issues you are addressing.

Clarity in stating your position

While few questions can be answered by a simple yes or no as an expert in quantitative research methods you are often required to take what seems to be the best and or most responsible position in terms of the evidence you have available at that time. In writing your responses in this examination ask yourself if a reader is able to identify clearly and directly the point of view you are developing.

Competence in applying information

To take a position on an issue is more than to repeat your own biases. You need to provide evidence in the form of bibliographic references specific data and quotations (direct or indirect) from authorities to substantiate the points you make. As a scholar in the field you are expected to be able to demonstrate that your opinions are well informed.

Clarity in writing

At this level of study you should be able to express yourself in clear and direct prose. Are you developing your responses logically and coherently? Poorly stated and illogically

presented responses obscure rather than illuminate. Can a reader follow the structure of your argument? Do you use correct grammar construction and form?

Overall adequacy

Do you address the issues, reveal insight into problems, and document your position adequately?

Examples of Comprehensive Exam Questions for Master's Students

1. Differentiate among experimental, quasi-experimental, and correlational research designs in terms of control of extraneous variables and the validity of drawing causal inferences. Illustrate each design with an example.
2. Compare and contrast multiple regression, canonical correlation, ANCOVA, and factor analysis in relation to the following:
 - a. Type of research question(s) appropriately addressed by each technique
 - b. Numbers and types of variables appropriate for the technique
 - c. Important assumptions (if any)
 - d. Important mathematical similarities and differences
3. Identify and differentiate three approaches to multiple regression and give an example of when each might be most appropriate to use.
4. Samuel Messick argues that and concept of test validity can be subsumed under one overarching idea. The APA/AERA/NCME Standards continue to refer to multiple types of validity. Present an argument for your perspective regarding the utility of thinking of validity as one concept or whether multiple sub-concepts are more useful.
5. Describe Lincoln and Guba's model of program evaluation and state your position with respect to if and how you would implement an evaluation using that model.

PROCEDURES FOR APPROVAL AND COMPLETION OF THE MASTER'S THESIS

The following are recommended steps to take toward completing and defending your thesis. There is a publication that explains in detail the College's and the University's proper procedures and policies. You can pick up the most recent version of *Doctoral Dissertation Instructions* from the Office of Graduate Studies in University Hall or access it at www.du.edu/grad/grad_cs.html. The policies applying to dissertations also apply to theses. The Morgridge College of Education also has a publication to assist you. Students must follow the University of Denver *Doctoral Dissertation: Guidelines for Students*, available at http://www.du.edu/education/current_students/dissertations.html. This handbook lists requirements for the format of your thesis, including such things as margins, spacing, page numbering, and the abstract and is regarded as the definitive word

on MCE dissertation policies and procedures.

Select Topic, Chairperson, and Committee Members

In consultation with your advisor, you will select a three-person committee to work with you on developing your research ideas and to assist in conducting your thesis research. Two of your three committee members must be Morgridge College of Education faculty. The third committee member may be an approved faculty from outside the College.

Write Thesis Proposal

The student, with the guidance of his or her advisor, composes the proposal for the study. The proposal shall include a statement of the problem, a sufficient review of the literature, and a detailed discussion of methodology. Students are expected to have an understanding of the skills necessary for the completion of the study. Students may employ clerical assistance in writing their proposal, but are expected to demonstrate a thorough understanding of the methods used in their work and must be able to defend the choices they have made.

Defend Thesis Proposal

The student must coordinate schedules of committee members and reserve a room for the proposal defense. At least two of the three committee members must attend the defense (although it is recommended that all three members attend), which typically takes no more than two hours. Obtain two proposal signature pages to bring to the proposal defense from the Morgridge College of Education Office of Admissions and Enrollment Services. After tentative approval of the thesis proposal, the committee members will sign both signature pages. The approval page will be held by the thesis chair until all modifications to the proposal have been completed. This form should then be filed in the Morgridge College of Education Office of Admissions and Enrollment Services, Ammi Hyde Building Room 124, along with a disk/CD copy of the proposal. The student delivers a paper copy of the proposal with modifications to the thesis chair.

Institutional Review Board (IRB)

The Master's candidate should obtain an Institutional Review Board Review Application and a Procedures Guideline from the Office of Sponsored Programs (www.du.edu/osp). Formal approval needs to be obtained from the committee prior to any involvement of human participants in the research. Formal approval will be withheld until all committee concerns have been addressed satisfactorily. The review committee's letter of approval should be included as an appendix to the completed thesis text.

Write Thesis

The Master's candidate will complete the study, conferring with the advisor(s) as needed. If there are changes in the design during the execution of the study, the student must approve alterations with the committee members and submit an addendum to the Review Board for approval. If the study is no longer feasible, a new proposal may need to be submitted.

Graduate students are expected to have an understanding of the writing skills, statistics, computer skills, languages, and research tools necessary for the completion of the study. Students may use assistance for clerical tasks and proofreading, but are expected to demonstrate a thorough understanding of the methods used in their work and must be able to defend the choices they have made.

The student must also select a style manual and use this one style consistently. (APA is most commonly used in the Morgridge College of Education).

A final draft of the thesis must be reviewed and approved by the advisor(s) before the oral examination can be scheduled. All committee members must have a final copy of the thesis two weeks before the oral examination.

Schedule Oral Defense

Having cleared the date and time with all members of the orals committee, the Master's candidate shall submit to the Office of Admissions and Enrollment Services of the Morgridge College of Education and to the University Office of Graduate Studies (University Hall) a schedule of the oral examination. The oral examination schedule form is available in the Office of Admissions and Enrollment Services.

In order for a student to possibly graduate in a particular quarter, the oral examination must be held no later than two weeks prior to the end of the quarter. However, sufficient time should be allowed for more extensive revisions if necessary. *All committee members must have a final copy of the thesis at least two weeks before the oral examination.*

Oral Thesis Defense

The student should coordinate committee members' schedules and reserve a room for the oral defense. The defense normally takes about two hours. First, the student gives an oral presentation (approximately 15 minutes) of his or her study. For the remainder of the time, committee members may ask questions or make recommendations about the content of the thesis. After discussion, in the absence of the student, the committee members vote on the rating to apply. Ratings include Pass with no revisions, Pass with minor revisions, Pass with major revisions, or Fail.

Final Checklist Prior to Graduation

Make revisions, as necessary, to the thesis and verify with advisor for final approval. Print out required copies for the Office of Graduate Studies. Then have your advisor sign the approval page. Final changes in the manuscript must meet all University specifications and deadlines. A schedule of deadlines for each quarter is available in the Office of Admissions and Enrollment Services.

Check with the Morgridge College of Education Office of Admissions and Enrollment Services, Ammi Hyde Building Room 124, to verify that all records are current and complete. Confirm with the University Office of Graduate Studies in University Hall Room 216 that all your required paperwork is complete and up-to-date. They will have information regarding cap and gowns, announcements, and the date and time of your graduation ceremony.

STUDENT HANDBOOK CONTRACT

University of Denver
Morgridge College of Education
Quantitative Research Methods Program

I, _____ have received the QRM Master's Degree
Student Handbook for

the year _____.

I understand that I am responsible for knowing all the information contained in this
handbook and I affirm that I will abide by the policies and rules stated therein.
This is a living document; thus, throughout the year, material may be added or modified.

Name: _____ Date: _____

Student Annual Review Form—Master’s

The Annual Review must be completed each year. We will email it to you as an attachment so you can complete it in spring of your first year, then just update it yearly.

Student Name _____

Date _____

Your Course Work Advisor’s
Name _____

Instructions: We are asking students to take an active role in assessment by providing us with your self-assessment of (a) your progress in meeting educational goals and (b) your strengths and weaknesses as a developing research methodologist and program evaluator. Please complete and return this form along with the necessary additional typed pages to your advisor at the end of spring quarter of your first full year in the QRM MA program.

Program faculty will meet during the summer to review students’ self-evaluations. Based on your self-evaluations as well as faculty members’ observations of your progress in coursework and general professional development, you will receive a letter, email, or conversation with your coursework advisor about your progress in the program, and recommendations for the coming year.

Note: You will have to complete a similar form each year. We recommend you keep a hard copy as well as the original on disk so that you can revise as needed.

1. a) Current GPA _____

b) Total number of credits completed at DU including the academic year just ended

2. The program requires that students conduct an evaluation project (the evaluation practicum). Have you met your evaluation practicum requirement yet?

Yes _____ No _____ Partial _____

a) If “yes” or “partial,” indicate activity in which you participated.

b) If “no,” indicate a plan for completing this requirement.

3. Have you filed your **Course Work Plan**? Yes _____ No _____

4. Are you taking the comprehensive examination or will you write a master’s thesis?

Exam _____ Thesis _____

5. IF thesis, has your proposal been approved? Yes _____ No _____

If “yes,” list the Chairperson and the proposed title

_____ (chair)
_____ (title)
If “no,” do you have a proposal chairperson? Yes _____ No _____
If “yes,” list name of chairperson and topic
_____ (chair)
_____ (topic)

6. List professional organizations of which you are a member.

7. List all presentations you have made at meetings or conventions of professional associations since entering the program - or that have been accepted for presentation or publication (note the date, co-authors, title of presentation, name of the association, and the city in which it occurred.)

8. List all community engagement activities in which you participated during the year (e.g., program evaluation, volunteer, paid/unpaid consulting).