RESEARCH METHODS AND INFORMATION SCIENCE

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Doctor of Philosophy in Research Methods and Statistics

The goal of the Research Methods and Statistics (RMS) PhD is to prepare graduate students with the state-of-the-art skills needed to conduct research in education and the social and health sciences. The faculty members equip students with cutting#edge research skills, creative educational vision, social responsibility, and sufficient experience in the application of these skills and knowledge to achieve mastery. The faculty are committed to shaping a safe, sustainable, democratic, and just world and believe that high-quality research is one approach to achieving this goal.

The education and social and health sciences fields have a growing need for professionals with strong skills in research design, statistics, qualitative and mixed methods, and data analysis. The RMS PhD course plan provides the courses and experiences necessary to conduct and supervise effective social science research.

Graduates with RMS PhD degrees hold leadership positions in testing and program evaluation companies, universities, school districts, and state agencies, among others.

Doctor of Philosophy in Research Methods and Statistics with a Concentration in Institutional Research

The RMS concentration in Institutional Research is targeted towards professionals with career goals in institutional research in applied settings including higher education, K-12 schools, non-profits, government settings, and business. Foundational coursework will equip Institutional Research students with strong quantitative, qualitative, and mixed research methods skills. Students will specialize in higher education or library and information science and take institutional research content knowledge courses in management, business intelligence, and public policy.

Doctor of Philosophy in Research Methods and Statistics with a Concentration in Qualitative Research

The RMS concentration in Qualitative Research primarily focuses on preparing students with strong, versatile, qualitative research methods skills to be utilized in different fields.

Master of Arts in Research Methods and Statistics

The goal of the Research Methods and Statistics (RMS) MA is to enhance student development and use of research in education and the social and health sciences with a specific focus on program evaluation. The faculty equip students with cutting#edge research skills, creative educational vision, social responsibility, and sufficient experience in application of your skills and knowledge to achieve mastery. RMS is committed to shaping a safe, sustainable, democratic and just world and believe that high-quality research is one approach to doing this.

The education and social and health sciences fields have a growing need for professionals with strong skills in research design, statistics, qualitative and mixed methods, and data analysis. The RMS MA degree requirements provide the courses and experiences necessary for graduates to conduct effective social science research.

Graduates with RMS MA degrees hold professional positions in program evaluation at non-profit organizations, service agencies, school districts, and state agencies, among others.

(Online) Master of Arts in Research Methods and Statistics

Designed with working professionals in mind, our online M.A. option is self-paced and flexible. Whether you're looking to advance your career or simply have a passion for data science – you'll have the opportunity to learn on your terms and earn a degree from a Top 100 college. Applications are currently being accepted.

The program **learning outcome**s for the Master of Arts in Research Methods and Statistics are as follows:

- Students will design research projects with faculty members and community partners using knowledge of the strengths and limitations of diverse modes of inquiry.
- Students will create and evaluate quantitative and/or qualitative instruments/protocols.
- Students will communicate research design and methods in writing according to APA format and orally.
- Students will apply research ethics and adhere to an ethical code of conduct when engaging with professional and local communities.

Master of Library and Information Science / MLIS@Denver

Library and Information Science (LIS) has developed a distinctive program of study to serve the rapidly changing needs of future librarians, archivists and information professionals in the Rocky Mountain region. There are a number of areas of focus including: Archives and Special Collections, Digital Libraries, Academic Libraries, Public Libraries, Special Libraries, and Web Services Librarianship.

With a dedicated faculty, we get to know our students very well through face-to-face interaction so that we can connect them to the highly regarded professional network in the region (and beyond). Practitioners speak highly of our students and are eager to have DU MLIS students as interns and employees.

Program Accreditation
American Library Association

Master of Library and Information Science with a Concentration in Research Data Management
Research Data Management responds to the emerging need for well-trained information professionals in the digital environment. The concentration prepares professionals to support the research data life-cycle in the areas of scholarly communication, open access, copyright advice, and research data management, providing bridging coursework in information science and research methods and statistics. It prepares information professionals to manage research data at academic libraries, research service centers, research centers, government agencies, and non-profit organizations.

Certificate in Library and Information Science with a Concentration in Research Data Management
The knowledge students gain in our library information science certificate program can prepare them to provide support in many areas in research data management. Research data expertise can be invaluable in scholarly communication, open access, copyright advice and research data management. Students take part in rigorous coursework in information science, research methods and statistics, collaborating with classmates as part of this comprehensive 28-credit program.

Our students can learn how to manage research data at a variety of settings, including academic libraries, research service centers, scientific and research organizations, government agencies and non-profit organizations. Graduates can enter into fields with significant needs for well-trained information professionals who can manage, preserve and share data generated throughout the research process.

Doctor of Philosophy in Research Methods & Statistics
Degree and GPA Requirements
Bachelor's degree: All graduate applicants must hold an earned baccalaureate from a regionally accredited college or university or the recognized equivalent from an international institution.

Master's degree: This program requires a master's degree as well as the baccalaureate.

University GPA requirement: The minimum grade point average for admission consideration for graduate study at the University of Denver must meet one of the following criteria:

- A cumulative 2.5 on a 4.0 scale for the baccalaureate degree.
- A cumulative 2.5 on a 4.0 scale for the last 60 semester credits or 90 quarter credits (approximately two years of work) for the baccalaureate degree.
- An earned master's degree or higher from a regionally accredited institution or the recognized equivalent from an international institution supersedes the minimum GPA requirement for the baccalaureate.
- A cumulative GPA of 3.0 on a 4.0 scale for all graduate coursework completed for applicants who have not earned a master's degree or higher.

Other Required Materials
Additional requirements for this program: Virtual interview may be required.

English Language Proficiency Test Score Requirements
The minimum TOEFL/IELTS/C1 Advanced/Duolingo English Test score requirements for this degree program are:

- Minimum TOEFL Score (Internet-based test): 80
- Minimum IELTS Score: 6.5
- Minimum C1 Advanced Score: 176
- Minimum Duolingo English Test Score: 115

Master of Arts in Research Methods and Statistics
Degree and GPA Requirements
Bachelor's degree: All graduate applicants must hold an earned baccalaureate from a regionally accredited college or university or the recognized equivalent from an international institution.

University GPA requirement: The minimum grade point average for admission consideration for graduate study at the University of Denver must meet one of the following criteria:

- A cumulative 2.5 on a 4.0 scale for the baccalaureate degree.
- A cumulative 2.5 on a 4.0 scale for the last 60 semester credits or 90 quarter credits (approximately two years of work) for the baccalaureate degree.
- An earned master's degree or higher from a regionally accredited institution or the recognized equivalent from an international institution supersedes the minimum GPA requirement for the baccalaureate.
- A cumulative GPA of 3.0 on a 4.0 scale for all graduate coursework completed for applicants who have not earned a master's degree or higher.

English Language Proficiency Test Score Requirements

The minimum TOEFL/IELTS/C1 Advanced/Duolingo English Test score requirements for this degree program are:

- Minimum TOEFL Score (Internet-based test): 80
- Minimum IELTS Score: 6.5
- Minimum C1 Advanced Score: 176
- Minimum Duolingo English Test Score: 115

Master of Library and Information Science/MLIS@Denver, Master of Library and Information Science with a Concentration in Research Data Management

Degree and GPA Requirements

Bachelor's degree: All graduate applicants must hold an earned baccalaureate from a regionally accredited college or university or the recognized equivalent from an international institution.

University GPA requirement: The minimum grade point average for admission consideration for graduate study at the University of Denver must meet one of the following criteria:

- A cumulative 2.5 on a 4.0 scale for the baccalaureate degree.
- A cumulative 2.5 on a 4.0 scale for the last 60 semester credits or 90 quarter credits (approximately two years of work) for the baccalaureate degree.
- An earned master's degree or higher from a regionally accredited institution or the recognized equivalent from an international institution supersedes the minimum GPA requirement for the baccalaureate.
- A cumulative GPA of 3.0 on a 4.0 scale for all graduate coursework completed for applicants who have not earned a master's degree or higher.

English Language Proficiency Test Score Requirements

The minimum TOEFL/IELTS/C1 Advanced/Duolingo English Test score requirements for this degree program are:

- Minimum TOEFL Score (Internet-based test): 80
- Minimum IELTS Score: 6.5
- Minimum C1 Advanced Score: 176
- Minimum Duolingo English Test Score: 115

Certificate in Library and Information Science with a Concentration in Research Data Management

Degree and GPA Requirements

Bachelor's degree: All graduate applicants must hold an earned baccalaureate from a regionally accredited college or university or the recognized equivalent from an international institution.

University GPA requirement: The minimum grade point average for admission consideration for graduate study at the University of Denver must meet one of the following criteria:

- A cumulative 2.5 on a 4.0 scale for the baccalaureate degree.
- A cumulative 2.5 on a 4.0 scale for the last 60 semester credits or 90 quarter credits (approximately two years of work) for the baccalaureate degree.
- An earned master's degree or higher from a regionally accredited institution or the recognized equivalent from an international institution supersedes the minimum GPA requirement for the baccalaureate.
- A cumulative GPA of 3.0 on a 4.0 scale for all graduate coursework completed for applicants who have not earned a master's degree or higher.

English Language Proficiency Test Score Requirements

The minimum TOEFL/IELTS/C1 Advanced/Duolingo English Test score requirements for this degree program are:

- Minimum TOEFL Score (Internet-based test): 80
- Minimum IELTS Score: 6.5
- Minimum C1 Advanced Score: 176
- Minimum Duolingo English Test Score: 115

Doctoral Programs

Doctor of Philosophy in Research Methods and Statistics

Degree requirements

Coursework requirements

Beyond the earned master's degree, a minimum of 90 credit hours are required. No credit hours from the earned master's degree can be transferred into the Ph.D.

Code	Title	Credits
The Research Methods & Statistics (RMS) Core		
A. Qualitative Methods		
RMS 4941	Introduction to Qualitative Research	4
RMS 4942	Qualitative Data Collection and Analysis	4
B. Quantitative Methods		
RMS 4910	Introductory Statistics	4
RMS 4911	Correlation and Regression	4
RMS 4912	Analysis of Variance	4
RMS 4921	Psychometric Theory	3
RMS 4930	Quantitative Research Design	3
C. Transdisciplinary Methods		
RMS 4931	Survey and Design Analysis	3
RMS 4951	Mixed Method Research Design	4
RMS 4952	Research Ethics	3
RMS 4960	Introduction to Evaluation Research	3
D. Practicum		
RMS 4980	Practicum in Research	3
E. Independent Research		
RMS 5995	Independent Research	3
RMS 5771	RMS Dissertation Research Seminar	7
or RMS 5995	Independent Research	
F. Specialization		**38**
Total Credits		**90**

[1] *In order to maintain degree candidacy, MCE doctoral students who have finished all requested course work will register for one dissertation or doctoral research credit or other credit for consecutive terms fall through spring (summers not required) until the student graduates.*

Non-coursework requirements

- Doctoral comprehensive exam
- Dissertation and oral defense
- Alternative Dissertation Option - The Journal Article Format - with oral defense

Specializations

Code	Title	Credits
Specialization in Qualitative Research Methods		
RMS 4940	Structural Foundations of Research in Social Sciences	3
RMS 4946	Advanced Qualitative Research	4
RMS 4945	Community-Based Research	3-4
or RMS 4947	Arts-Based Research	
or RMS 4948	Criticism and Connoisseurship: Qualitative research and the enhancement of practice	
or RMS 4949	Topics in Qualitative Research	

RMS 4914	Structural Equation Modeling	3
or RMS 4915	Hierarchical Linear Modeling	
or RMS 4916	Latent Growth Curve Modeling	
or RMS 4922	Item Response Theory	
or RMS 4924	Advanced Measurement	
or RMS 4963	Evaluation Research Practice I	
or RMS 4964	Evaluation Research Practice II	
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**24-25**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**38**

Code	Title	Credits
Specialization in Quantitative Research Methods		
RMS 4914	Structural Equation Modeling	4
RMS 4915	Hierarchical Linear Modeling	4
RMS 4916	Latent Growth Curve Modeling	4
RMS 4922	Item Response Theory	3
RMS 4924	Advanced Measurement	4
RMS 4946	Advanced Qualitative Research	3-4
or RMS 4945	Community-Based Research	
or RMS 4947	Arts-Based Research	
or RMS 4948	Criticism and Connoisseurship: Qualitative research and the enhancement of practice	
or RMS 4949	Topics in Qualitative Research	
or RMS 4963	Evaluation Research Practice I	
or RMS 4964	Evaluation Research Practice II	
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**14-15**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**38**

Code	Title	Credits
Specialization in Transdisciplinary Research Methods		
Quantitative Methods		
RMS 4914	Structural Equation Modeling	4
RMS 4922	Item Response Theory	3
RMS 4924	Advanced Measurement	4
Qualitative Methods		
RMS 4946	Advanced Qualitative Research	4
RMS 4945	Community-Based Research	3-4
or RMS 4947	Arts-Based Research	
or RMS 4948	Criticism and Connoisseurship: Qualitative research and the enhancement of practice	
or RMS 4949	Topics in Qualitative Research	
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**19-20**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**38**

Code	Title	Credits
Specialization in Institutional Research - Higher Education		
The Institutional Research (IR) Core		
MGMT 4201	Fundamentals of Managing and Leading	4
or MGMT 4202	Leading Self	

or MGMT 4301	Organizational Behavior	
or MGMT 4303	Negotiating with Power	
or MGMT 4304	Project Management for Leaders	
RMS 4914	Structural Equation Modeling	4
RMS 4922	Item Response Theory	3
RMS 4924	Advanced Measurement	4
Higher Education Courses		
HED 4211	Applied Contemporary Issues in Higher Education	4
HED 4212	Introduction to Public Policy and Higher Education	4
HED 4214	History American Higher Ed	4
HED 4220	Organizational Theory in Higher Education	4
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**7**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**38**

Code	Title	Credits
Specialization in Institutional Research - Information Science		
The Institutional Research (IR) Core		
MGMT 4201	Fundamentals of Managing and Leading	4
or MGMT 4202	Leading Self	
or MGMT 4301	Organizational Behavior	
or MGMT 4303	Negotiating with Power	
or MGMT 4304	Project Management for Leaders	
RMS 4914	Structural Equation Modeling	4
RMS 4922	Item Response Theory	3
RMS 4924	Advanced Measurement	4
Information Science		
LIS 4010	Organization of Information	3
LIS 4206	Web Content Management	3
LIS 4404	Metadata Architectures	3
LIS 4702	Type of Library: Topics	1-3
LIS 4820	Digitization	3
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**8-10**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**38**

Code	Title	Credits
Specialization in Institutional Research - Disciplinary Methods (e.g., Business Analytics)		
The Institutional Research (IR) Core		
MGMT 4201	Fundamentals of Managing and Leading	4
or MGMT 4202	Leading Self	
or MGMT 4301	Organizational Behavior	
or MGMT 4303	Negotiating with Power	
or MGMT 4304	Project Management for Leaders	
RMS 4914	Structural Equation Modeling	4
RMS 4921	Psychometric Theory	3
RMS 4924	Advanced Measurement	4
Customized Specialization in Disciplinary Methods		**23**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		

For example, a specialization in business analytics might include INFO 4140 Business Databases, INFO 4240 Data Warehousing, INFO 4340 Predictive Analytics, INFO 4340 Data Mining and Visualization, INFO 4360 Complex Data, or INFO 4610 Business Statistics.

Total Credits	**38**

Master's Degree Programs

Research Methods and Statistics

Master of Arts in Research Methods and Statistics

Degree requirements

Coursework requirements

Code	Title	Credits
The Research Methods & Statistics Master's Degree (RMS-MA)		
A. Qualitative Methods		
RMS 4941	Introduction to Qualitative Research	4
RMS 4942	Qualitative Data Collection and Analysis	4
B. Quantitative Methods		
RMS 4900	Education Research and Measurement	4
RMS 4910	Introductory Statistics	4
RMS 4911	Correlation and Regression	4
RMS 4912	Analysis of Variance	4
RMS 4921	Psychometric Theory	3
C. Transdisciplinary Methods		
RMS 4931	Survey and Design Analysis	3
RMS 4952	Research Ethics	3
RMS 4960	Introduction to Evaluation Research	3
D. Practicum		
RMS 4980	Practicum in Research	3
E. Independent Research		
None. Students on this coursework plan do not complete independent research via thesis. Students interested in conducting independent research should formally change their program of study to the RMS MA with a Thesis.		
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**6**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**45**

Minimum number of credits required for degree: 45 credits

Non-coursework Requirements

- MA comprehensive exam

Master of Arts in Research Methods and Statistics with a Thesis

Degree requirements

Coursework requirements

Code	Title	Credits
The Research Methods & Statistics Master's Degree (RMS-MA +Thesis)		
A. Qualitative Methods		
RMS 4941	Introduction to Qualitative Research	4
RMS 4942	Qualitative Data Collection and Analysis	4
B. Quantitative Methods		
RMS 4900	Education Research and Measurement	4
RMS 4910	Introductory Statistics	4
RMS 4911	Correlation and Regression	4
RMS 4912	Analysis of Variance	4
RMS 4921	Psychometric Theory	3
C. Transdisciplinary Methods		
RMS 4931	Survey and Design Analysis	3

RMS 4952	Research Ethics	3
RMS 4960	Introduction to Evaluation Research	3
D. Practicum		
RMS 4980	Practicum in Research	3
E. Independent Research		
RMS 4995	Independent Research	5
Students must complete a minimum of 5 credits of independent research via thesis. These credits can be completed in increments across multiple terms in collaboration with the thesis director.		
Cognate: Any Graduate-Level Course to Meet the Credit Minimum		**6**
Credits must be completed in graduate-level courses approved by an RMS coursework advisor for the cognate. All College of Professional Studies courses require pre-approval from the MCE Dean's Office.		
Total Credits		**50**

Minimum number of credits required for degree: 50 credits

Non-coursework Requirements

- Thesis

Master of Arts in Research Methods and Statistics (Online)

Degree requirements

Coursework requirements

Code	Title	Credits
The Research Methods & Statistics Master's Degree (RMS-MA Online)		
A. Qualitative Methods		
RMS 4941	Introduction to Qualitative Research	4
RMS 4942	Qualitative Data Collection and Analysis	4
B. Quantitative Methods		
RMS 4900	Education Research and Measurement	4
RMS 4910	Introductory Statistics	4
RMS 4911	Correlation and Regression	4
RMS 4921	Psychometric Theory	3
C. Transdisciplinary Methods		
RMS 4931	Survey and Design Analysis	3
RMS 4952	Research Ethics	3
RMS 4960	Introduction to Evaluation Research	3
D. Practicum		
RMS 4980	Practicum in Research	1
E. Independent Research		
None. Students on this coursework plan do not complete independent research via thesis. Students interested in conducting independent research should formally change their program of study to the RMS MA with a Thesis.		
F. Specialization		**12**
Students select one specialization area from the following options.		
Total Credits		**45**

Specializations:

Code	Title	Credits
Specialization in Quantitative Research Methods		
RMS 4912	Analysis of Variance	4
RMS 4915	Hierarchical Linear Modeling	4
RMS 4924	Advanced Measurement	4
Specialization in Information Science Methods		
LIS 4210	Data Visualization	3
LIS 4220	Data Curation	3

LIS 4230	Database Management Systems	3
LIS 4700	Topics in LIS	3

Minimum number of credits required for degree: 45 credits

Non-coursework Requirements

- MA comprehensive exam

Master of Arts in Research Methods and Statistics with a Concentration in Data Analytics

Degree requirements

Coursework requirements

Minimum number of credits required for degree: 45 credits

Code	Title	Credits
Research Methods & Statistics Master's Degree Concentration in Data Analytics (RMS-MA-CONC-DA)		
RMS Core Coursework		
RMS 4900	Education Research and Measurement	4
RMS 4910	Introductory Statistics	4
RMS 4911	Correlation and Regression	4
RMS 4931	Survey and Design Analysis	3
RMS 4952	Research Ethics	3
RMS 4980	Practicum in Research	3
Data Analytics Concentration Coursework		
RMS 4970	Introduction to Data Analytics	4
LIS 4250	AI for Information Extraction and Analysis	4
LIS 4210	Data Visualization	3
LIS 4220	Data Curation	3
LIS 4235	Scripting for Large Databases	4
Electives (Choose 2)		**6**
RMS 4921	Psychometric Theory	
RMS 4930	Quantitative Research Design	
RMS 4960	Introduction to Evaluation Research	
LIS 4135	Scholarly Communication	
LIS 4230	Database Management Systems	
LIS 4700	Topics in LIS	
Total Credits		**45**

Non-coursework Requirements

- MA comprehensive exam

Library and Information Science

Master of Library and Information Science

Degree Requirements

Coursework Requirements

Code	Title	Credits
LIS CORE and REQUIRED COURSES		**22**
LIS 4000	Libraries, Information and Society	3
LIS 4010	Organization of Information	3
LIS 4015	User and Access Services	3
LIS 4040	Management of Information Organizations	3
LIS 4050	Library and Information Technologies	3
RMS 4900	Education Research and Measurement	4
LIS 4910	Culminating Internship	3
or LIS 4901	Capstone Course	

Elective requirements	**36**
Total Credits	58

Non-coursework Requirements

- Portfolio

Master of Library and Information Science with a Concentration in Academic Libraries

Degree Requirements

Coursework Requirements

Code	Title	Credits
LIS Core and Required Courses		
LIS 4000	Libraries, Information and Society	3
LIS 4010	Organization of Information	3
LIS 4015	User and Access Services	3
LIS 4040	Management of Information Organizations	3
LIS 4050	Library and Information Technologies	3
RMS 4900	Education Research and Measurement	4
LIS 4910	Culminating Internship	3
or LIS 4901	Capstone Course	
Concentration Requirements		
LIS 4060	Reference	3
LIS 4135	Scholarly Communication	3
LIS 4220	Data Curation	3
LIS 4321	Collection Management	3
LIS 4330	Information Literacy Instruction	3
LIS 4702	Type of Library: Topics	3
LIS 4900	Library and Information Science Research	3
RMS 4910	Introductory Statistics	4
or RMS 4941	Introduction to Qualitative Research	
Elective Requirements		11
Total Credits		**58**

Non-coursework Requirements

- Portfolio

Master of Library and Information Science with a Concentration in Research Data Management

Degree Requirements

Coursework Requirements

Code	Title	Credits
LIS Core and Required Courses		
LIS 4000	Libraries, Information and Society	3
LIS 4010	Organization of Information	3
LIS 4015	User and Access Services	3
LIS 4040	Management of Information Organizations	3
LIS 4050	Library and Information Technologies	3
LIS 4910	Culminating Internship	3
or LIS 4901	Capstone Course	
Concentration Requirements		
LIS 4210	Data Visualization	3
LIS 4220	Data Curation	3
LIS 4135	Scholarly Communication	3
LIS 4230	Database Management Systems	3

LIS 4235	Scripting for Large Databases	4
RMS 4910	Introductory Statistics	4
RMS 4930	Quantitative Research Design	3
RMS 4931	Survey and Design Analysis	3
RMS 4941	Introduction to Qualitative Research	4
Elective Requirements		5
Total Credits		**53**

Non-coursework Requirements

- Portfolio

Master of Library and Information Science in Library and Information Science: MLIS@Denver

Degree Requirements

Coursework Requirements

Code	Title	Credits
LIS CORE and REQUIRED COURSES		
LIS 4000	Libraries, Information and Society	3
LIS 4010	Organization of Information	3
LIS 4015	User and Access Services	3
LIS 4040	Management of Information Organizations	3
LIS 4050	Library and Information Technologies	3
RMS 4900	Education Research and Measurement	4
LIS 4910	Culminating Internship	3
or LIS 4901	Capstone Course	
Elective requirements		**36**
Total Credits		58

Non-coursework Requirements

- Portfolio

Certificate Programs

Certificate in Library and Information Science with a Concentration in Research Data Management

Coursework Requirements

Code	Title	Credits
RDM Post-Master' Certificate		
LIS 4135	Scholarly Communication	3
LIS 4210	Data Visualization	3
LIS 4220	Data Curation	3
LIS 4230	Database Management Systems	3
LIS 4235	Scripting for Large Databases	4
RMS 4910	Introductory Statistics	4
RMS 4930	Quantitative Research Design	3
RMS 4941	Introduction to Qualitative Research	4
Elective		1
Total Credits		**28**

Library & Information Science (LIS)

LIS 4000 Libraries, Information and Society (3 Credits)

The course will examine the major historical, socio-cultural, political, and technological forces that affect the current state and the future of libraries and information organizations. The main focus will be placed on the diversity of library and information professions, professional values and ethics, intellectual freedom, the evolving nature of community engagement in different information contexts, and the organizational structure of different types of libraries and information organizations. The course will also lay the foundation for students' professional development and growth through the program and beyond.

LIS 4001 Immersion (0 Credits)
This on-campus experience is for students in the MLIS@Denver online program.

LIS 4005 Privilege & Equity (3 Credits)
This course is a reflection and discussion-guided exploration of various societal privileges and how they affect equity in library, archives, and other information professions. The topics of race, ethnicity, gender, socio-economic status, and education will be considered.

LIS 4010 Organization of Information (3 Credits)
This course introduces basic concepts in the theoretical, practical, and technological aspects of information organization. It provides an overview of the methodologies for organizing and representing information resources in the library, archives, and museum settings.

LIS 4011 Information Access & Retrieval (3 Credits)
Information retrieval is defined as the process of searching for (and retrieving) relevant information within a document collection. The document collection could be textual (bibliographic records), structured and unstructured data, library databases, web based information resources, multimedia resources, and numerical data. This course introduces students to important access and retrieval tools and technologies used to retrieve information that are relevant to a user's information need. In addition to the underlying principles and processes revolving around access and retrieval such as text operations, indexing, query languages, and searching, the course covers relevant topics such as library discovery systems, web based information retrieval technologies, and enterprise search systems.

LIS 4015 User and Access Services (3 Credits)
Overview of human information processing and user services in the changing information environment and different communities of practice. This course introduces the concepts of user information needs, seeking, and processing as a foundation for understanding users and designing user-centered information services. The course examines both traditional reference and current/emerging information services in different settings and populations. Course also introduces the concepts of information literacy, user education, and assessment of information services.

LIS 4040 Management of Information Organizations (3 Credits)
An introduction to current theory and practice of management in information organizations through the study of organizations, communications, decision making, planning, leadership, human resources and budgeting. Prerequisite: LIS 4000 or instructor approval.

LIS 4043 Advocacy and Marketing in LIS (3 Credits)
An overview of advocacy and marketing foundations as they relate to libraries. The course examines practical tools and applications of both marketing and advocacy. It helps to distinguish the difference between the two disciplines and when the two should be used together.

LIS 4050 Library and Information Technologies (3 Credits)
A foundation course on the applications of information and communications technology in libraries and information agencies. Integrated library systems and the acquisition, evaluation, and implementation of library automation solutions, including electronic resource management systems are explored. The course further introduces database design, Internet technology, web services, cloud computing, computer networks, telecommunications, and computer security. Hardware, software, and other productivity tools and utilities from organizations such as OCLC, Amazon, and Google are discussed.

LIS 4060 Reference (3 Credits)
Information resources include a number of different kinds of reference materials in a wide variety of formats. These include guidebooks, encyclopedias and dictionaries, indexes and abstracts, handbooks, bibliographies, biographical finding tools and biographies, data sets and much more. Many of these resources are available on-line, as well as in print and other digital formats. This course will help students identify and evaluate the most likely resources for information queries in particular settings. It will also provide the opportunity to find answers to real research questions. The course will cover the primary resources for the broad disciplines of business, humanities, sciences, social sciences and government publications in print and electronic formats. Class exercises will reflect the multidisciplinary and multicultural interests and characteristics of library users. Prerequisite: LIS 4015. Recommended prerequisites: LIS 4000 and LIS 4011.

LIS 4070 Cataloging & Classification (3 Credits)
Theory and practice of bibliographic control including the study of representative cataloging using Anglo American Cataloging Rules, 2d ed., rev. with amendments and Library of Congress Rule Interpretations, machine-based representation using the USMARC formats and other standards, and subject analysis and classification using Library of Congress Subject Headings, Dewey Decimal Classification, and Library of Congress Classification, with principle focus on monographs, major media, sound recordings, and serials. Prerequisite: LIS 4010 or instructor approval.

LIS 4135 Scholarly Communication (3 Credits)
This course will provide a broad understanding of scholarly communication systems regarding the creation, dissemination, and evaluation of scientific information. The concept of scholarly communication refers to the ways researchers publish and disseminate their research findings in the digital environment and encompasses formal and informal channels of communication among scholars. Traditionally, scholarly dissemination systems have involved conference presentations and publication of books and articles in subscription-based journals. Digital technology has transformed scholarly communication by introducing open access publishing models and alternative ways of measuring scholarly impact. This course will explore the changing nature of scholarship and will examine the topics of scholarly publishing, peer review, intellectual property, the open access movement, digital repositories, bibliometrics, and altmetrics.

LIS 4206 Web Content Management (3 Credits)
This course will include instruction in web page creation, selection, and evaluation of web content as well as web site management. Selection of web page content will be discussed in the context of organizational knowledge management and competitive intelligence needs. Differences in information needs for provision of public information and competitive intelligence on Internet pages versus the organizational information needs of Intranets in knowledge management will be explored. This course also will address human-computer interface design to allow web page designers to create effective web pages according to established principles of design.

LIS 4208 Usability (3 Credits)
This course provides an overview of usability analysis and user experience research and introduces students to practical methods and techniques in conduction usability evaluation. The focus of the course will be on the selection of appropriate evaluation methods, as well as planning, designing, and conduction usability evaluations of information services. In addition, the course will discuss the methods and tools of user-experience research, the theoretical underpinnings of usability, and the role of usability in iterative design and the development of information systems.

LIS 4209 Information Architecture (3 Credits)
The web is a complex information environment consisting of billions of web pages, users, and clicks and interaction every single day. This course introduces students to the fundamentals of web information architecture (IA) - a discipline that aims to understand the information needs and activities of web visitors and create design elements to help users find their way around in the complex information environment with ease. The course will cover various strategies and skills, in which information architects structure, organize, label, navigate, and search for information on large websites. A service learning component is built into this course so that students can transfer their IA knowledge and skills to a real-world project. The course is designed following a project management approach and students will be exposed to different activities from start to finish.

LIS 4210 Data Visualization (3 Credits)
This course provides a practical introduction to the principles, theories, and applications of information visualization in the research data context. This course contextualizes modern practices in information visualization by examining historical approaches to visualization with an eye on theories that inform contemporary visualization best practices. Using a hands-on component, students will get real-world experience in visualizing datasets, and building visualization dashboards that integrate multiple visualizations.

LIS 4220 Data Curation (3 Credits)
Across the academic domains, digital data are becoming more visible as critical products of scholarly work. Digital technologies, such as sensor networks in the environmental sciences, social networking tools in the social sciences, and the digitization of cultural artifacts in the humanities, allow researchers to produce far greater volumes and complexities of digital data than were possible in the past. Digital technologies, and the data that they produce, offer tremendous opportunity for researchers in every academic discipline to ask questions that were previously impossible to study. Some digital technologies enable researchers to study very local phenomena in great detail. Others enable the integration of many diverse data streams in order to conduct synthesis and longitudinal studies. But while the possibilities of digital data are exciting, they also present tremendous challenges: how to best organize and manage data, how to make data discoverable and accessible to diverse user communities, and how to store and preserve data over the long term.

LIS 4230 Database Management Systems (3 Credits)
This is a foundation course on the principles of database design and the use of database management systems for information professionals. The course covers database systems, data modeling, relational models, relational algebra, SQL, emerging NoSQL systems, data storage and querying, query languages, query optimization, OLAP, transaction management, data warehousing, and data mining. In addition, fundamentals on systems analysis and the database application lifecycle will be reviewed.

LIS 4235 Scripting for Large Databases (4 Credits)
This course will introduce students to the basics of data storage and acquisition as part of a multi-step data gathering, processing, analysis and visualization effort. The logic and structure of relational databases will be reviewed, exploring the more common databases like SQL Server and Postgres. along with exploration of JSON and NoSQL based data stores. Techniques and methods for automation and scalable data processing will be introduced under the Python programming language with a focus on using Pandas and other libraries to simplify data tasks. These skills will be integrated and applied by the student through the use of prepared data sources, along with use of APIs and web scraping technique to acquire data through internet sources.

LIS 4250 AI for Information Extraction and Analysis (4 Credits)
This course introduces students to the fundamentals of artificial intelligence for information extraction, classification, and regression, with a focus on practical applications using large language models and custom neural networks. The course is designed to be accessible to students with a basic understanding of Python and will include hands-on projects, covering topics such as API access, data preprocessing, architecture design, and model training. Special emphasis will be placed on the ethical considerations and practical challenges of using AI in information science.

LIS 4320 Outreach (3 Credits)
Outreach as a library service is evolving at a rapid pace. This course will examine the history, current practice, and future promise of outreach across all kind of library organizational settings. Topics addressed in this course will include competencies for outreach librarianship; practices in outreach services; definition and scope; planning, designing and budgeting for services; environmental scanning, key performance indicators, and barriers; developing and maintaining partnerships.

LIS 4321 Collection Management (3 Credits)
Topics addressed in this course include collection development and access policies, selection methods and practices, collection assessment, preservation and conservation, de-selection, treatment of rare material, manuscripts and archives, U.S. government publications, non-book and digital formats management, juvenile, and other special materials.

LIS 4330 Information Literacy Instruction (3 Credits)
This course provides an introduction to the principles of library instruction and information literacy including a historical overview of their place within the profession. Emphasis is on instruction within an academic setting, but students will learn important educational theories that can be applied to a variety of settings. ACRL and AASL standards will be examined as well as types of instruction, instructional design, collaboration with faculty, various competencies, assessment, and lifelong learning. The class has a strong emphasis on public speaking, communication skills, and the practical application of educational theory.

LIS 4355 The Reading Experience in LIS (3 Credits)
Working with readers has always been a cornerstone of library practice. Traditionally referred to as readers' advisory, reading work has expanded beyond book displays, individual requests for a good read, and book clubs. It has become a foundation of extensive library programming, meaningful leisure, and personal enjoyment, and an instrument of building healthy and engaged communities; it has turned from monolingual to multilingual; and it has claimed its place in the virtual library environment. No longer limited to public libraries, reading work comprises a growing area of interest in academic and special libraries, book publishing, and book trade. This course will introduce students to the selected theories of reading behaviors; practical skills of engaging readers, developing reader services, programming, and advocacy; the major genres and sub-genres of fiction and nonfiction materials; a wide array of print and electronic tools facilitating this practice; electronic reading and online reading communities; and foundations of bibliotherapy. This course is focused on adult readers. For other audiences, see LIS 4510 Children's Materials & Services & LIS 4520 Young Adult Materials & Services.

LIS 4370 Database Searching (2 Credits)
Nearly all historic, traditional search and retrieval tools such as library catalogs, indexes, microform guides, and archival findings aids have migrated to web-based systems. This course explores the complexities of searching for materials in an online environment. Topics to be covered include database and field structures; controlled vocabularies and indexing schema; search syntaxes, reference linking; data exploring and manipulation; non-textual database searching including numerical, image, and multimedia data; metasearch and web-scale discovery technologies.

LIS 4404 Metadata Architectures (3 Credits)
Provides an overview of the principles and theories of metadata development in the digital environment. Focuses on the design and application of metadata schemas for distinct domains and information communities, issues in metadata interoperability, vocabulary control, quality control and evaluation. Examines international standards, activities and projects. Prerequisite: LIS 4010.

LIS 4510 Children's Materials and Services (3 Credits)
This course is designed to prepare librarians to work with children (ages birth to 12 years) in school and public libraries. Topics covered include children's development, reading interests and needs, materials selection, collection development (including print and non-print materials), discussions of specific genres, reading motivation skills, designing a children's area, and developing various programming ideas. Students read/view/listen to and evaluate a wide variety of materials for and about this age group, prepare and present booktalks and stories, become familiar with review sources, and design a one-year plan for youth services in a school or public library.

LIS 4520 Young Adult Materials & Services (3 Credits)
This course prepares librarians to work with young adults (ages 12-18) in school and public libraries. Topics covered include young adult development, reading interests and needs, materials selection, collection development (including print and non-print materials), and discussions of specific genres, reading motivation skills, designing a YA area, programming, and intellectual freedom issues. Participants will read/view/listen to and evaluate a wide variety of materials for and about this age group, prepare and present booktalks, become familiar with review sources, and design a one-year plan for a YA department in a small school or public library.

LIS 4610 Career Development (3 Credits)
This course addresses issues in career planning and professional development. Key skills that graduate professional students build are: using self-assessment and reflection to understand existing skills and expertise; identifying the expectations of the LAIS profession; acquiring skills related to finding a professional position; and, developing a career plan.

LIS 4700 Topics in LIS (1-5 Credits)
This flexible library and information science course will provide students with the opportunity to explore issues of current importance in the field. Topics and credit hours will vary and will address subjects such as emerging technologies, new methodologies, specific reader services, standards and practices, and social and economic trends in the profession. Prerequisite courses may be recommended or required as determined by the content of the specified course.

LIS 4701 Reference Topics (1 Credit)
This course provides the student with an opportunity to explore information resources in specific subject materials. Lecture, readings, class discussions, and exercises will address all formats of materials including print, electronic, and web resources.

LIS 4702 Type of Library: Topics (1-3 Credits)
This course is a study of specific types of libraries, such as public libraries, academic libraries, and special libraries, and the characteristics that make them different from other types of libraries. Specific topics covered will depend on the type of library, but may include collections, management, budgets and funding, as well as professional competencies.

LIS 4800 Introduction to Archives (3 Credits)
This course provides an introduction to the objectives and methods of the archival and records management professions including an overview of terminology, issues, and common practices. The systematic control of records throughout their life cycle from creation through processing, distribution, organization, retrieval and archival disposition will be covered. Prerequisites: LIS 4000 and LIS 4010; or instructor permission.

LIS 4805 Records Management (3 Credits)
This course covers the establishment of information maintenance plans, evaluations and audits of records and information management Programs, the records and information survey, retention policies and legal requirements, and techniques for integrating automation to records and information management.

LIS 4806 Advanced Archives (3 Credits)
In this course, students will be given the opportunity to put into practice basic archival principles and functions. Students will perform the actions of appraisal, accessioning, arrangement, description, and access solution review for both analog and digital archival collections. Additionally, students will be given the task of providing solutions for new paradigms in archival processing such as creating a web archive, processing email collections, and capturing social media content. The course will be a combination of lecture, demonstration, lab time, discussion, and projects.

LIS 4810 Digital Libraries (3 Credits)
This course provides a theoretical foundation for the study of digital libraries and discusses the technological, organizational, social, and legal issues associated with the development and use of digital libraries. Through this course students develop an understanding of digital library components and explore theoretical and practical approaches to constructing, maintaining, and evaluating digital libraries. Topics examined include digital library definitions, design and architecture of digital libraries. Topics examined include digital library definitions, design and architecture of digital libraries, information access in the digital library environment, digital library users and user services, data repositories, digital curation, digital preservation, digital library evaluation, and digital librarianship.

LIS 4820 Digitization (3 Credits)
The course offers an introduction to issues and trends in planning, developing and managing digitization projects at libraries, archives, and museums. The focus of the course is on the conversion process of analog materials into the digital format, online delivery, and preservation of master files. The course discusses collection development policy for digital projects, copyright, digital imaging technology, digitization standards and best practices for text, images, audio, and video, metadata for cultural heritage collections, delivery platforms, preservation, project management, sustainability, documentation, promotion, and evaluation of digital projects.

LIS 4850 Digital Preservation (3 Credits)
Students will learn the principles and practices of preserving access to information encoded in digital form. They will learn how to assess digital preservation needs within an institution, write digital preservation policies, and how to collect and present data to make a case for acquiring funds for digital preservation activities. Students will learn the basics of digital information encoding as it applies to the technological aspects of digital preservation, and will learn about current tools and practices used to preserve access to digitally encoded information over time. The course will be a combination of lecture, discussion, and problem solving. It requires participants to conduct independent research and writing. Critical reading of course materials is essential to stimulate active participation in class discussions.

LIS 4900 LIS Research (3 Credits)
The Library and Information Science Research course examines types of studies and methodologies relevant to research in the library and information science field, focusing on research methods applicable to academic library work. Upon completion of the course, students will be able to interpret and evaluate existing research, apply research to the analysis of professional concerns, develop a research agenda, describe how empirical research advances the knowledge and practice of library and information science, and design a research study.

LIS 4901 Capstone Course (3 Credits)
Students in this course will design and complete a project to demonstrate the ability to integrate and synthesize their master's course work and apply their knowledge to a topic. The class meets with an instructor regularly over the nine-week summer quarter. The instructor monitors and guides the students to ensure that they complete the phases of the project in accordance with the proposed timeline and goals. Evaluation will be based on individual performance, with respect to the quality and professionalism of the research, the management of the project, and analytical and writing skills. Prerequisite: Minimum of 45 quarter hours of graduate LIS course work completed, including all core courses, a proposal approved by the academic advisor and faculty permission.

LIS 4902 Internship (1-4 Credits)
This course will offer up to 4 credits for an internship position in libraries and archives. Students are encouraged to gain practical experience.

LIS 4910 Culminating Internship (3 Credits)
This course is designed to supplement the classroom experience by giving students practical experience working in a library or information agency. Various options are available to students depending on their areas of interest and specialization. Opportunities for experience include fields of medicine, law, art, public, and academic libraries. It is the student's responsibility to select a practicum site and a field supervisor, who must be approved by LIS faculty. Seventy-five hours of service over a 10-week quarter are required. The student, faculty, and field supervisor will determine specific requirements for the final paper or report. Students must notify the LIS academic advisor one quarter before enrolling in Culminating Internship. Prerequisites: Completion of a minimum of 38 quarter hours of graduate LIS coursework, including all core courses.

LIS 4920 Service Learning in LIS (1-4 Credits)
This course is designed to supplement the classroom experience by giving students an opportunity to participate in a service learning project. Students will propose an independent study component highlighting the learning aspects of the project. The experience should provide practical work in a library or information agency. Various options are available to students depending on their areas of interest and specialization. Opportunities for experience include many areas related to the information needs of an underserved population. It is the students responsibility to select a site and a field supervisor. The student, faculty coordinator, and field supervisor will work together to establish the goals and objectives of the experience. A minimum of 40 hours of service is required for two quarter hours of credit.

LIS 4991 MA Independent Study (1-10 Credits)
Independent study projects allow students more in-depth investigation of the many facets of library and information science. Students must work with an approved faculty advisor and submit a proposal outlining the objectives, scope, outcomes, and evaluation criteria. The faculty advisor and the department director must approve proposals. Prerequisites: Completion of a minimum of 30 quarter hours of graduate LIS coursework, including all core courses and a minimum GPA of 3.0.

LIS 4995 Independent Research (1-10 Credits)

Research Methods and Statistics (RMS)

RMS 4900 Education Research and Measurement (4 Credits)
This course is intended for Master's degree students in the College of Education. Quantitative research designs, empirical methods of data collection and interpretation, and measurement issues in research are examined.

RMS 4910 Introductory Statistics (4 Credits)
This beginning statistics course examines use and interpretation of statistics in educational and human services research, including descriptive and inferential techniques. Cross listed with SOWK 5930.

RMS 4911 Correlation and Regression (4 Credits)
This course focuses on the study of correlation and multiple regression research designs and their application to educational and social science programs. Cross listed with SOWK 5202. Prerequisite: RMS 4910.

RMS 4912 Analysis of Variance (4 Credits)
Conceptual and applied analyses of one-way through factorial nested analysis of variance designs and multivariate analysis of variance are presented. Prerequisite: RMS 4910.

RMS 4914 Structural Equation Modeling (4 Credits)
This course covers 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 are appropriate. Prerequisite: RMS 4921.

RMS 4915 Hierarchical Linear Modeling (4 Credits)
This course introduces models that extend multiple regression to analysis of nested data structures common in education and other social sciences. Application of those methods to various forms of multilevel data, including repeated measure (growth trajectory) data is emphasized. Prerequisite: RMS 4911.

RMS 4916 Latent Growth Curve Modeling (4 Credits)
This course covers advanced issues in longitudinal data analysis using structural equation modeling and hierarchical linear modeling with latent variables. It involves both conceptual development and practical implementation of longitudinal data analysis. This course is intended to be a hands-on approach to working with data and addressing research questions that can be best answered by longitudinal data. Prerequisite: RMS 4914.

RMS 4918 Propensity Score Analysis (3 Credits)
Propensity score analysis provides a conceptual understanding of the rationale and importance of controlling for biases that might emerge during the selection process in experimental research. The common procedures of fitting a propensity score model and estimating the effect of the treatment after correction for biases are demonstrated.

RMS 4919 Topics in Statistics (1-5 Credits)
Topics vary by quarter but may include log-linear analysis, factor analysis, or missing data analysis.

RMS 4920 Educational Measurement (3 Credits)
This course examines the meaning, characteristics, and processes of educational measurement and evaluation. Development and interpretation of both standardized and informal tests are considered.

RMS 4921 Psychometric Theory (3 Credits)
This course examines major psychometric theories (e.g., classical, item response) as related to reliability, generalizability, validity, and item analysis methods. Prerequisite: RMS 4910.

RMS 4922 Item Response Theory (3 Credits)
Theory and methods for the educational and psychological measurement of latent variables using item response theory are covered in this course. Prerequisite: RMS 4910, RMS 4921.

RMS 4924 Advanced Measurement (4 Credits)
This course instructs students in advanced measurement models and techniques are employed in the social sciences. Prerequisites: RMS 4921 & RMS 4911.

RMS 4929 Topics in Psychometrics (1-3 Credits)
Topics vary, but include: large scale testing, computer applications of item response theory, affective measure construction, generalizability theory, additive conjoint measurement, and standing testing. Prerequisite: RMS 4921 or instructor permission.

RMS 4930 Quantitative Research Design (3 Credits)
This course provides in depth study of empirical research methods involved in experimental, quasi-experimental, single-subject, and non-experimental quantitative research designs.

RMS 4931 Survey and Design Analysis (3 Credits)
Survey techniques, needs assessment, item construction, sampling, maximizing response rates and data analysis; survey construction and data analysis are required. Prerequisite: RMS 4910.

RMS 4932 Meta-Analysis Social Science Research (3 Credits)
This course examines meta analytic techniques in the social sciences. Included are discussions of review of critical data bases, coverage of all major methods of data collection and analysis, and coverage of how best to present meta analytic findings for publication. Prerequisite: RMS 4911, RMS 4930, and preferred RMS 4912.

RMS 4939 Topics in Quantitative Research Methods (1-5 Credits)
Topics vary, but include minimization as an alternative to randomization, propensity score modeling as an alternative to experimental control, and analysis of data from single-subject designs. Prerequisites: RMS 4930 or instructor permission.

RMS 4940 Structural Foundations of Research in Social Sciences (3 Credits)
This introductory course on epistemology and research Includes discussion of identification and development of problems for research; introduction to basic quantitative and qualitative methods of conducting research in social science settings, ethnographic, and criticism methods.

RMS 4941 Introduction to Qualitative Research (4 Credits)
This course is designed to provide students with more in-depth understanding of naturalistic, qualitative research methods. It is assumed that students enrolling in this course have already completed an introductory research methods course in either education or another discipline. Purposes and questions posed in their course include: Why should a researcher choose to conduct a qualitative study? How are data collection strategies carried out in a qualitative research design? What are some of the ethical concerns that impact qualitative research?.

RMS 4942 Qualitative Data Collection and Analysis (4 Credits)
In this intermediate level qualitative research course students learn about design, purposeful sampling, field work, observational approaches, and interviews, with special attention directed to the skills and competencies needed to gather and analyze high quality data. Prerequisite: RMS 4941 or instructor permission.

RMS 4945 Community-Based Research (4 Credits)
This class introduces the emerging philosophical and methodological issues that arise when university faculty students collaborate on research with community-based organizations. Prerequisites: RMS 4942 and RMS 4930 or instructor permission.

RMS 4946 Advanced Qualitative Research (4 Credits)
This course introduces exemplary qualitative studies and consideration of implications for education and the social sciences, and considers the types of questions asked by qualitative researchers and methods they use, particularly observation and interviewing. Students undertake their own qualitative study to consider application of theory, techniques, and practice to their dissertation research. Prerequisite: RMS 4941 and RMS 4942 or instructor permission.

RMS 4947 Arts-Based Research (3 Credits)
In this course students explore the ground upon which arts-based research is built and become acquainted with salient issues regarding this kind of research. We practice interviewing, observations and a few arts-based practices. Prerequisites: RMS 4941 or instructor permission.

RMS 4948 Criticism and Connoisseurship: Qualitative research and the enhancement of practice (3 Credits)
Qualitative inquiry in educational settings takes many forms: ethnography, grounded theory, case-study research, and more. What these methods have in common is a framework built upon social science. Criticism and connoisseurship, however, draws its conceptual underpinnings from the arts and humanities. What does it mean to have a conceptual framework dependent upon the arts? How are the methods of educational criticism different from other research methods? This class teaches students how to conduct research using this method and it provides responses to these types of questions in order that students can defend this type of research as well as others that depend on the arts and humanities as their basis. Prerequisite: RMS 4941.

RMS 4949 Topics in Qualitative Research (1-5 Credits)
This seminar builds on the content of other qualitative research courses offered in the RMS program and meets the students where they are on their dissertation journey; thus learning opportunities are tailored to individual needs as far as possible. Assignments focus on the issues pertinent to the design of dissertation proposals and writing, including ethical issues and IRB preparation, theoretical/conceptual framework, literature review, methodology, data collection and analysis strategies, and various forms of representation. Prerequisite: RMS 4941.

RMS 4950 Qualitative Research Methodologies (3 Credits)
Each year this course examines three qualitative research methods. The methods that might be covered in any given year include: phenomenology, grounded theory, narrative, case study, and ethnography. For each method, the following is addressed: philosophical and historical foundations, various ways the method has been utilized, and practical recommendations for conducting research utilizing this method. Prerequisite: RMS 4941.

RMS 4951 Mixed Method Research Design (4 Credits)
This course is designed as a fundamental exploration of mixed model and mixed method approaches. Students design mixed model and mixed method research studies with a particular emphasis on multi-site and longitudinal designs that are especially suited to educational issues. Students learn analysis approaches that incorporate previously learned quantitative and qualitative skills, and apply these in practice problem examples. Prerequisites: RMS 4910, RMS 4930 and RMS 4941, and one of the following: RMS 4947, or RMS 4948, or instructor permission.

RMS 4952 Research Ethics (3 Credits)
This course introduces ethical theory and a selection of current issues in research ethics.

RMS 4953 Topics in Data Management (1-3 Credits)
This is a preparatory course emphasizing the manipulation and analysis of data in electronic form.

RMS 4959 Topics in Research Design (1-5 Credits)
Topics vary, but include single subject design issues, minimization as an alternative to randomization, advances in quasi-experimental design. Prerequisite: RMS 4930.

RMS 4960 Introduction to Evaluation Research (3,4 Credits)
This course provides an introduction to frameworks for designing evaluation research studies.

RMS 4963 Evaluation Research Practice I (3 Credits)
This service learning course provides part 1 of a 2-part introductory experience in the practical craft of evaluation. Students who enroll in RMS 4963 must take RMS 4964 in the following quarter. The course is not a traditional lecture course; it is a course-embedded experiential learning course.

RMS 4964 Evaluation Research Practice II (3 Credits)
This service learning course provides part 2 of a 2-part introductory experience in the practical craft of evaluation. Students who enroll in RMS 4964 must have take RMS 4963 in the preceding quarter.

RMS 4969 Topics in Program Evaluation (1-5 Credits)
Topics vary, but include advocacy and policy change, assessment in higher education, multi-level evaluation, cost effectiveness analysis, data visualization and reporting, assessment in distance education, and evaluation in the arts and culture. Prerequisite: RMS 4960.

RMS 4970 Introduction to Data Analytics (4 Credits)
This course offers a practical introduction to data analytics for students in Non-Stem fields. Students will learn foundational concepts in data collection, cleaning, visualization, and analysis, with a focus on real-world applications across education, information science, and social research. Using accessible tools such as Excel, R, and Tableau, students will develop skills in interpreting data patterns, generating insights, and communicating results effectively. No prior programming experience is required. The course emphasizes hands-on learning and critical thinking to prepare students to use data analytics ethically and effectively in diverse professional settings.

RMS 4978 Practicum in Qualitative Research (1-4 Credits)
Students may complete the Practicum in Qualitative Research with an individual professor or with a community partner. The goal of this practicum is to provide further experiences in thinking about, conceptualizing, designing, conducting, and/or presenting qualitative research. Prerequisites: RMS 4941, RMS 4942, and at least two of the following classes RMS 4945, RMS 4946, RMS 4947, RMS 4948.

RMS 4980 Practicum in Research (1-5 Credits)
This course provides a supervised experience in design and implementation of an empirical research or evaluation study. Organization of research proposals, completion of human subjects applications, collection, and analysis of data are emphasized. Students are expected to prepare a written report of their project which is suitable for professional presentation or publication.

RMS 4981 Community-Based Research Practicum (1-5 Credits)
Students provide community-based research assistance to a community partner (non-profit, school, community based organization, etc). Student researchers are supervised by DU faculty. This course is an excellent opportunity to match the student's research expertise with the real needs of community partners. Prerequisite: RMS 4945.

RMS 4982 Practicum in Evaluation Research (1-6 Credits)
Students provide evaluation assistance to a university or community partner (non-profit, school, community-based organization, etc.). Student researchers are supervised by DU faculty. This course is an excellent opportunity to match the student's evaluation and research expertise with the real needs of university or community partners. Prerequisite: RMS 4960.

RMS 4991 Independent Study (1-10 Credits)
This course allows Masters students in RMS to study a topic area independently in conjunction with a cooperating faculty member.

RMS 4995 Independent Research (1-10 Credits)
This course is for Masters students in RMS whose program requires completion of a Master's thesis.

RMS 5771 RMS Dissertation Research Seminar (1-3 Credits)
This course is for Ph.D. students in RMS who are engaged in completing their doctoral dissertation.

RMS 5991 Independent Study (1-10 Credits)
This course allows Ph.D. students in RMS to study a topic area independently in conjunction with a cooperating faculty member.

RMS 5995 Independent Research (1-18 Credits)
This course is for Ph.D. students in RMS who are engaged in completing their doctoral dissertation.

Library Information Science Courses

LIS 4000 Libraries, Information and Society (3 Credits)
The course will examine the major historical, socio-cultural, political, and technological forces that affect the current state and the future of libraries and information organizations. The main focus will be placed on the diversity of library and information professions, professional values and ethics, intellectual freedom, the evolving nature of community engagement in different information contexts, and the organizational structure of different types of libraries and information organizations. The course will also lay the foundation for students' professional development and growth through the program and beyond.

LIS 4001 Immersion (0 Credits)
This on-campus experience is for students in the MLIS@Denver online program.

LIS 4005 Privilege & Equity (3 Credits)
This course is a reflection and discussion-guided exploration of various societal privileges and how they affect equity in library, archives, and other information professions. The topics of race, ethnicity, gender, socio-economic status, and education will be considered.

LIS 4010 Organization of Information (3 Credits)
This course introduces basic concepts in the theoretical, practical, and technological aspects of information organization. It provides an overview of the methodologies for organizing and representing information resources in the library, archives, and museum settings.

LIS 4011 Information Access & Retrieval (3 Credits)
Information retrieval is defined as the process of searching for (and retrieving) relevant information within a document collection. The document collection could be textual (bibliographic records), structured and unstructured data, library databases, web based information resources, multimedia resources, and numerical data. This course introduces students to important access and retrieval tools and technologies used to retrieve information that are relevant to a user's information need. In addition to the underlying principles and processes revolving around access and retrieval such as text operations, indexing, query languages, and searching, the course covers relevant topics such as library discovery systems, web based information retrieval technologies, and enterprise search systems.

LIS 4015 User and Access Services (3 Credits)
Overview of human information processing and user services in the changing information environment and different communities of practice. This course introduces the concepts of user information needs, seeking, and processing as a foundation for understanding users and designing user-centered information services. The course examines both traditional reference and current/emerging information services in different settings and populations. Course also introduces the concepts of information literacy, user education, and assessment of information services.

LIS 4040 Management of Information Organizations (3 Credits)
An introduction to current theory and practice of management in information organizations through the study of organizations, communications, decision making, planning, leadership, human resources and budgeting. Prerequisite: LIS 4000 or instructor approval.

LIS 4043 Advocacy and Marketing in LIS (3 Credits)
An overview of advocacy and marketing foundations as they relate to libraries. The course examines practical tools and applications of both marketing and advocacy. It helps to distinguish the difference between the two disciplines and when the two should be used together.

LIS 4050 Library and Information Technologies (3 Credits)
A foundation course on the applications of information and communications technology in libraries and information agencies. Integrated library systems and the acquisition, evaluation, and implementation of library automation solutions, including electronic resource management systems are explored. The course further introduces database design, Internet technology, web services, cloud computing, computer networks, telecommunications, and computer security. Hardware, software, and other productivity tools and utilities from organizations such as OCLC, Amazon, and Google are discussed.

LIS 4060 Reference (3 Credits)
Information resources include a number of different kinds of reference materials in a wide variety of formats. These include guidebooks, encyclopedias and dictionaries, indexes and abstracts, handbooks, bibliographies, biographical finding tools and biographies, data sets and much more. Many of these resources are available on-line, as well as in print and other digital formats. This course will help students identify and evaluate the most likely resources for information queries in particular settings. It will also provide the opportunity to find answers to real research questions. The course will cover the primary resources for the broad disciplines of business, humanities, sciences, social sciences and government publications in print and electronic formats. Class exercises will reflect the multidisciplinary and multicultural interests and characteristics of library users. Prerequisite: LIS 4015. Recommended prerequisites: LIS 4000 and LIS 4011.

LIS 4070 Cataloging & Classification (3 Credits)
Theory and practice of bibliographic control including the study of representative cataloging using Anglo American Cataloging Rules, 2d ed., rev. with amendments and Library of Congress Rule Interpretations, machine-based representation using the USMARC formats and other standards, and subject analysis and classification using Library of Congress Subject Headings, Dewey Decimal Classification, and Library of Congress Classification, with principle focus on monographs, major media, sound recordings, and serials. Prerequisite: LIS 4010 or instructor approval.

LIS 4135 Scholarly Communication (3 Credits)
This course will provide a broad understanding of scholarly communication systems regarding the creation, dissemination, and evaluation of scientific information. The concept of scholarly communication refers to the ways researchers publish and disseminate their research findings in the digital environment and encompasses formal and informal channels of communication among scholars. Traditionally, scholarly dissemination systems have involved conference presentations and publication of books and articles in subscription-based journals. Digital technology has transformed scholarly communication by introducing open access publishing models and alternative ways of measuring scholarly impact. This course will explore the changing nature of scholarship and will examine the topics of scholarly publishing, peer review, intellectual property, the open access movement, digital repositories, bibliometrics, and altmetrics.

LIS 4206 Web Content Management (3 Credits)
This course will include instruction in web page creation, selection, and evaluation of web content as well as web site management. Selection of web page content will be discussed in the context of organizational knowledge management and competitive intelligence needs. Differences in information needs for provision of public information and competitive intelligence on Internet pages versus the organizational information needs of Intranets in knowledge management will be explored. This course also will address human-computer interface design to allow web page designers to create effective web pages according to established principles of design.

LIS 4208 Usability (3 Credits)
This course provides an overview of usability analysis and user experience research and introduces students to practical methods and techniques in conduction usability evaluation. The focus of the course will be on the selection of appropriate evaluation methods, as well as planning, designing, and conduction usability evaluations of information services. In addition, the course will discuss the methods and tools of user-experience research, the theoretical underpinnings of usability, and the role of usability in iterative design and the development of information systems.

LIS 4209 Information Architecture (3 Credits)
The web is a complex information environment consisting of billions of web pages, users, and clicks and interaction every single day. This course introduces students to the fundamentals of web information architecture (IA) - a discipline that aims to understand the information needs and activities of web visitors and create design elements to help users find their way around in the complex information environment with ease. The course will cover various strategies and skills, in which information architects structure, organize, label, navigate, and search for information on large websites. A service learning component is built into this course so that students can transfer their IA knowledge and skills to a real-world project. The course is designed following a project management approach and students will be exposed to different activities from start to finish.

LIS 4210 Data Visualization (3 Credits)
This course provides a practical introduction to the principles, theories, and applications of information visualization in the research data context. This course contextualizes modern practices in information visualization by examining historical approaches to visualization with an eye on theories that inform contemporary visualization best practices. Using a hands-on component, students will get real-world experience in visualizing datasets, and building visualization dashboards that integrate multiple visualizations.

LIS 4220 Data Curation (3 Credits)
Across the academic domains, digital data are becoming more visible as critical products of scholarly work. Digital technologies, such as sensor networks in the environmental sciences, social networking tools in the social sciences, and the digitization of cultural artifacts in the humanities, allow researchers to produce far greater volumes and complexities of digital data than were possible in the past. Digital technologies, and the data that they produce, offer tremendous opportunity for researchers in every academic discipline to ask questions that were previously impossible to study. Some digital technologies enable researchers to study very local phenomena in great detail. Others enable the integration of many diverse data streams in order to conduct synthesis and longitudinal studies. But while the possibilities of digital data are exciting, they also present tremendous challenges: how to best organize and manage data, how to make data discoverable and accessible to diverse user communities, and how to store and preserve data over the long term.

LIS 4230 Database Management Systems (3 Credits)
This is a foundation course on the principles of database design and the use of database management systems for information professionals. The course covers database systems, data modeling, relational models, relational algebra, SQL, emerging NoSQL systems, data storage and querying, query languages, query optimization, OLAP, transaction management, data warehousing, and data mining. In addition, fundamentals on systems analysis and the database application lifecycle will be reviewed.

LIS 4235 Scripting for Large Databases (4 Credits)
This course will introduce students to the basics of data storage and acquisition as part of a multi-step data gathering, processing, analysis and visualization effort. The logic and structure of relational databases will be reviewed, exploring the more common databases like SQL Server and Postgres. along with exploration of JSON and NoSQL based data stores. Techniques and methods for automation and scalable data processing will be introduced under the Python programming language with a focus on using Pandas and other libraries to simplify data tasks. These skills will be integrated and applied by the student through the use of prepared data sources, along with use of APIs and web scraping technique to acquire data through internet sources.

LIS 4250 AI for Information Extraction and Analysis (4 Credits)
This course introduces students to the fundamentals of artificial intelligence for information extraction, classification, and regression, with a focus on practical applications using large language models and custom neural networks. The course is designed to be accessible to students with a basic understanding of Python and will include hands-on projects, covering topics such as API access, data preprocessing, architecture design, and model training. Special emphasis will be placed on the ethical considerations and practical challenges of using AI in information science.

LIS 4320 Outreach (3 Credits)
Outreach as a library service is evolving at a rapid pace. This course will examine the history, current practice, and future promise of outreach across all kind of library organizational settings. Topics addressed in this course will include competencies for outreach librarianship; practices in outreach services; definition and scope; planning, designing and budgeting for services; environmental scanning, key performance indicators, and barriers; developing and maintaining partnerships.

LIS 4321 Collection Management (3 Credits)
Topics addressed in this course include collection development and access policies, selection methods and practices, collection assessment, preservation and conservation, de-selection, treatment of rare material, manuscripts and archives, U.S. government publications, non-book and digital formats management, juvenile, and other special materials.

LIS 4330 Information Literacy Instruction (3 Credits)
This course provides an introduction to the principles of library instruction and information literacy including a historical overview of their place within the profession. Emphasis is on instruction within an academic setting, but students will learn important educational theories that can be applied to a variety of settings. ACRL and AASL standards will be examined as well as types of instruction, instructional design, collaboration with faculty, various competencies, assessment, and lifelong learning. The class has a strong emphasis on public speaking, communication skills, and the practical application of educational theory.

LIS 4355 The Reading Experience in LIS (3 Credits)
Working with readers has always been a cornerstone of library practice. Traditionally referred to as readers' advisory, reading work has expanded beyond book displays, individual requests for a good read, and book clubs. It has become a foundation of extensive library programming, meaningful leisure, and personal enjoyment, and an instrument of building healthy and engaged communities; it has turned from monolingual to multilingual; and it has claimed its place in the virtual library environment. No longer limited to public libraries, reading work comprises a growing area of interest in academic and special libraries, book publishing, and book trade. This course will introduce students to the selected theories of reading behaviors; practical skills of engaging readers, developing reader services, programming, and advocacy; the major genres and sub-genres of fiction and nonfiction materials; a wide array of print and electronic tools facilitating this practice; electronic reading and online reading communities; and foundations of bibliotherapy. This course is focused on adult readers. For other audiences, see LIS 4510 Children's Materials & Services & LIS 4520 Young Adult Materials & Services.

LIS 4370 Database Searching (2 Credits)
Nearly all historic, traditional search and retrieval tools such as library catalogs, indexes, microform guides, and archival findings aids have migrated to web-based systems. This course explores the complexities of searching for materials in an online environment. Topics to be covered include database and field structures; controlled vocabularies and indexing schema; search syntaxes, reference linking; data exploring and manipulation; non-textual database searching including numerical, image, and multimedia data; metasearch and web-scale discovery technologies.

LIS 4404 Metadata Architectures (3 Credits)
Provides an overview of the principles and theories of metadata development in the digital environment. Focuses on the design and application of metadata schemas for distinct domains and information communities, issues in metadata interoperability, vocabulary control, quality control and evaluation. Examines international standards, activities and projects. Prerequisite: LIS 4010.

LIS 4510 Children's Materials and Services (3 Credits)
This course is designed to prepare librarians to work with children (ages birth to 12 years) in school and public libraries. Topics covered include children's development, reading interests and needs, materials selection, collection development (including print and non-print materials), discussions of specific genres, reading motivation skills, designing a children's area, and developing various programming ideas. Students read/view/listen to and evaluate a wide variety of materials for and about this age group, prepare and present booktalks and stories, become familiar with review sources, and design a one-year plan for youth services in a school or public library.

LIS 4520 Young Adult Materials & Services (3 Credits)
This course prepares librarians to work with young adults (ages 12-18) in school and public libraries. Topics covered include young adult development, reading interests and needs, materials selection, collection development (including print and non-print materials), and discussions of specific genres, reading motivation skills, designing a YA area, programming, and intellectual freedom issues. Participants will read/view/listen to and evaluate a wide variety of materials for and about this age group, prepare and present booktalks, become familiar with review sources, and design a one-year plan for a YA department in a small school or public library.

LIS 4610 Career Development (3 Credits)
This course addresses issues in career planning and professional development. Key skills that graduate professional students build are: using self-assessment and reflection to understand existing skills and expertise; identifying the expectations of the LAIS profession; acquiring skills related to finding a professional position; and, developing a career plan.

LIS 4700 Topics in LIS (1-5 Credits)
This flexible library and information science course will provide students with the opportunity to explore issues of current importance in the field. Topics and credit hours will vary and will address subjects such as emerging technologies, new methodologies, specific reader services, standards and practices, and social and economic trends in the profession. Prerequisite courses may be recommended or required as determined by the content of the specified course.

LIS 4701 Reference Topics (1 Credit)
This course provides the student with an opportunity to explore information resources in specific subject materials. Lecture, readings, class discussions, and exercises will address all formats of materials including print, electronic, and web resources.

LIS 4702 Type of Library: Topics (1-3 Credits)
This course is a study of specific types of libraries, such as public libraries, academic libraries, and special libraries, and the characteristics that make them different from other types of libraries. Specific topics covered will depend on the type of library, but may include collections, management, budgets and funding, as well as professional competencies.

LIS 4800 Introduction to Archives (3 Credits)
This course provides an introduction to the objectives and methods of the archival and records management professions including an overview of terminology, issues, and common practices. The systematic control of records throughout their life cycle from creation through processing, distribution, organization, retrieval and archival disposition will be covered. Prerequisites: LIS 4000 and LIS 4010; or instructor permission.

LIS 4805 Records Management (3 Credits)
This course covers the establishment of information maintenance plans, evaluations and audits of records and information management Programs, the records and information survey, retention policies and legal requirements, and techniques for integrating automation to records and information management.

LIS 4806 Advanced Archives (3 Credits)
In this course, students will be given the opportunity to put into practice basic archival principles and functions. Students will perform the actions of appraisal, accessioning, arrangement, description, and access solution review for both analog and digital archival collections. Additionally, students will be given the task of providing solutions for new paradigms in archival processing such as creating a web archive, processing email collections, and capturing social media content. The course will be a combination of lecture, demonstration, lab time, discussion, and projects.

LIS 4810 Digital Libraries (3 Credits)
This course provides a theoretical foundation for the study of digital libraries and discusses the technological, organizational, social, and legal issues associated with the development and use of digital libraries. Through this course students develop an understanding of digital library components and explore theoretical and practical approaches to constructing, maintaining, and evaluating digital libraries. Topics examined include digital library definitions, design and architecture of digital libraries. Topics examined include digital library definitions, design and architecture of digital libraries, information access in the digital library environment, digital library users and user services, data repositories, digital curation, digital preservation, digital library evaluation, and digital librarianship.

LIS 4820 Digitization (3 Credits)
The course offers an introduction to issues and trends in planning, developing and managing digitization projects at libraries, archives, and museums. The focus of the course is on the conversion process of analog materials into the digital format, online delivery, and preservation of master files. The course discusses collection development policy for digital projects, copyright, digital imaging technology, digitization standards and best practices for text, images, audio, and video, metadata for cultural heritage collections, delivery platforms, preservation, project management, sustainability, documentation, promotion, and evaluation of digital projects.

LIS 4850 Digital Preservation (3 Credits)
Students will learn the principles and practices of preserving access to information encoded in digital form. They will learn how to assess digital preservation needs within an institution, write digital preservation policies, and how to collect and present data to make a case for acquiring funds for digital preservation activities. Students will learn the basics of digital information encoding as it applies to the technological aspects of digital preservation, and will learn about current tools and practices used to preserve access to digitally encoded information over time. The course will be a combination of lecture, discussion, and problem solving. It requires participants to conduct independent research and writing. Critical reading of course materials is essential to stimulate active participation in class discussions.

LIS 4900 LIS Research (3 Credits)
The Library and Information Science Research course examines types of studies and methodologies relevant to research in the library and information science field, focusing on research methods applicable to academic library work. Upon completion of the course, students will be able to interpret and evaluate existing research, apply research to the analysis of professional concerns, develop a research agenda, describe how empirical research advances the knowledge and practice of library and information science, and design a research study.

LIS 4901 Capstone Course (3 Credits)
Students in this course will design and complete a project to demonstrate the ability to integrate and synthesize their master's course work and apply their knowledge to a topic. The class meets with an instructor regularly over the nine-week summer quarter. The instructor monitors and guides the students to ensure that they complete the phases of the project in accordance with the proposed timeline and goals. Evaluation will be based on individual performance, with respect to the quality and professionalism of the research, the management of the project, and analytical and writing skills. Prerequisite: Minimum of 45 quarter hours of graduate LIS course work completed, including all core courses, a proposal approved by the academic advisor and faculty permission.

LIS 4902 Internship (1-4 Credits)
This course will offer up to 4 credits for an internship position in libraries and archives. Students are encouraged to gain practical experience.

LIS 4910 Culminating Internship (3 Credits)
This course is designed to supplement the classroom experience by giving students practical experience working in a library or information agency. Various options are available to students depending on their areas of interest and specialization. Opportunities for experience include fields of medicine, law, art, public, and academic libraries. It is the student's responsibility to select a practicum site and a field supervisor, who must be approved by LIS faculty. Seventy-five hours of service over a 10-week quarter are required. The student, faculty, and field supervisor will determine specific requirements for the final paper or report. Students must notify the LIS academic advisor one quarter before enrolling in Culminating Internship. Prerequisites: Completion of a minimum of 38 quarter hours of graduate LIS coursework, including all core courses.

LIS 4920 Service Learning in LIS (1-4 Credits)
This course is designed to supplement the classroom experience by giving students an opportunity to participate in a service learning project. Students will propose an independent study component highlighting the learning aspects of the project. The experience should provide practical work in a library or information agency. Various options are available to students depending on their areas of interest and specialization. Opportunities for experience include many areas related to the information needs of an underserved population. It is the students responsibility to select a site and a field supervisor. The student, faculty coordinator, and field supervisor will work together to establish the goals and objectives of the experience. A minimum of 40 hours of service is required for two quarter hours of credit.

LIS 4991 MA Independent Study (1-10 Credits)
Independent study projects allow students more in-depth investigation of the many facets of library and information science. Students must work with an approved faculty advisor and submit a proposal outlining the objectives, scope, outcomes, and evaluation criteria. The faculty advisor and the department director must approve proposals. Prerequisites: Completion of a minimum of 30 quarter hours of graduate LIS coursework, including all core courses and a minimum GPA of 3.0.

LIS 4995 Independent Research (1-10 Credits)

Research Methods and Stats Courses

RMS 4900 Education Research and Measurement (4 Credits)
This course is intended for Master's degree students in the College of Education. Quantitative research designs, empirical methods of data collection and interpretation, and measurement issues in research are examined.

RMS 4910 Introductory Statistics (4 Credits)
This beginning statistics course examines use and interpretation of statistics in educational and human services research, including descriptive and inferential techniques. Cross listed with SOWK 5930.

RMS 4911 Correlation and Regression (4 Credits)
This course focuses on the study of correlation and multiple regression research designs and their application to educational and social science programs. Cross listed with SOWK 5202. Prerequisite: RMS 4910.

RMS 4912 Analysis of Variance (4 Credits)
Conceptual and applied analyses of one-way through factorial nested analysis of variance designs and multivariate analysis of variance are presented. Prerequisite: RMS 4910.

RMS 4914 Structural Equation Modeling (4 Credits)
This course covers 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 are appropriate. Prerequisite: RMS 4921.

RMS 4915 Hierarchical Linear Modeling (4 Credits)
This course introduces models that extend multiple regression to analysis of nested data structures common in education and other social sciences. Application of those methods to various forms of multilevel data, including repeated measure (growth trajectory) data is emphasized. Prerequisite: RMS 4911.

RMS 4916 Latent Growth Curve Modeling (4 Credits)
This course covers advanced issues in longitudinal data analysis using structural equation modeling and hierarchical linear modeling with latent variables. It involves both conceptual development and practical implementation of longitudinal data analysis. This course is intended to be a hands-on approach to working with data and addressing research questions that can be best answered by longitudinal data. Prerequisite: RMS 4914.

RMS 4918 Propensity Score Analysis (3 Credits)
Propensity score analysis provides a conceptual understanding of the rationale and importance of controlling for biases that might emerge during the selection process in experimental research. The common procedures of fitting a propensity score model and estimating the effect of the treatment after correction for biases are demonstrated.

RMS 4919 Topics in Statistics (1-5 Credits)
Topics vary by quarter but may include log-linear analysis, factor analysis, or missing data analysis.

RMS 4920 Educational Measurement (3 Credits)
This course examines the meaning, characteristics, and processes of educational measurement and evaluation. Development and interpretation of both standardized and informal tests are considered.

RMS 4921 Psychometric Theory (3 Credits)
This course examines major psychometric theories (e.g., classical, item response) as related to reliability, generalizability, validity, and item analysis methods. Prerequisite: RMS 4910.

RMS 4922 Item Response Theory (3 Credits)
Theory and methods for the educational and psychological measurement of latent variables using item response theory are covered in this course. Prerequisite: RMS 4910, RMS 4921.

RMS 4924 Advanced Measurement (4 Credits)
This course instructs students in advanced measurement models and techniques are employed in the social sciences. Prerequisites: RMS 4921 & RMS 4911.

RMS 4929 Topics in Psychometrics (1-3 Credits)
Topics vary, but include: large scale testing, computer applications of item response theory, affective measure construction, generalizability theory, additive conjoint measurement, and standing testing. Prerequisite: RMS 4921 or instructor permission.

RMS 4930 Quantitative Research Design (3 Credits)
This course provides in depth study of empirical research methods involved in experimental, quasi-experimental, single-subject, and non-experimental quantitative research designs.

RMS 4931 Survey and Design Analysis (3 Credits)
Survey techniques, needs assessment, item construction, sampling, maximizing response rates and data analysis; survey construction and data analysis are required. Prerequisite: RMS 4910.

RMS 4932 Meta-Analysis Social Science Research (3 Credits)
This course examines meta analytic techniques in the social sciences. Included are discussions of review of critical data bases, coverage of all major methods of data collection and analysis, and coverage of how best to present meta analytic findings for publication. Prerequisite: RMS 4911, RMS 4930, and preferred RMS 4912.

RMS 4939 Topics in Quantitative Research Methods (1-5 Credits)
Topics vary, but include minimization as an alternative to randomization, propensity score modeling as an alternative to experimental control, and analysis of data from single-subject designs. Prerequisites: RMS 4930 or instructor permission.

RMS 4940 Structural Foundations of Research in Social Sciences (3 Credits)
This introductory course on epistemology and research Includes discussion of identification and development of problems for research; introduction to basic quantitative and qualitative methods of conducting research in social science settings, ethnographic, and criticism methods.

RMS 4941 Introduction to Qualitative Research (4 Credits)
This course is designed to provide students with more in-depth understanding of naturalistic, qualitative research methods. It is assumed that students enrolling in this course have already completed an introductory research methods course in either education or another discipline. Purposes and questions posed in their course include: Why should a researcher choose to conduct a qualitative study? How are data collection strategies carried out in a qualitative research design? What are some of the ethical concerns that impact qualitative research?.

RMS 4942 Qualitative Data Collection and Analysis (4 Credits)
In this intermediate level qualitative research course students learn about design, purposeful sampling, field work, observational approaches, and interviews, with special attention directed to the skills and competencies needed to gather and analyze high quality data. Prerequisite: RMS 4941 or instructor permission.

RMS 4945 Community-Based Research (4 Credits)
This class introduces the emerging philosophical and methodological issues that arise when university faculty students collaborate on research with community-based organizations. Prerequisites: RMS 4942 and RMS 4930 or instructor permission.

RMS 4946 Advanced Qualitative Research (4 Credits)
This course introduces exemplary qualitative studies and consideration of implications for education and the social sciences, and considers the types of questions asked by qualitative researchers and methods they use, particularly observation and interviewing. Students undertake their own qualitative study to consider application of theory, techniques, and practice to their dissertation research. Prerequisite: RMS 4941 and RMS 4942 or instructor permission.

RMS 4947 Arts-Based Research (3 Credits)
In this course students explore the ground upon which arts-based research is built and become acquainted with salient issues regarding this kind of research. We practice interviewing, observations and a few arts-based practices. Prerequisites: RMS 4941 or instructor permission.

RMS 4948 Criticism and Connoisseurship: Qualitative research and the enhancement of practice (3 Credits)
Qualitative inquiry in educational settings takes many forms: ethnography, grounded theory, case-study research, and more. What these methods have in common is a framework built upon social science. Criticism and connoisseurship, however, draws its conceptual underpinnings from the arts and humanities. What does it mean to have a conceptual framework dependent upon the arts? How are the methods of educational criticism different from other research methods? This class teaches students how to conduct research using this method and it provides responses to these types of questions in order that students can defend this type of research as well as others that depend on the arts and humanities as their basis. Prerequisite: RMS 4941.

RMS 4949 Topics in Qualitative Research (1-5 Credits)
This seminar builds on the content of other qualitative research courses offered in the RMS program and meets the students where they are on their dissertation journey; thus learning opportunities are tailored to individual needs as far as possible. Assignments focus on the issues pertinent to the design of dissertation proposals and writing, including ethical issues and IRB preparation, theoretical/conceptual framework, literature review, methodology, data collection and analysis strategies, and various forms of representation. Prerequisite: RMS 4941.

RMS 4950 Qualitative Research Methodologies (3 Credits)
Each year this course examines three qualitative research methods. The methods that might be covered in any given year include: phenomenology, grounded theory, narrative, case study, and ethnography. For each method, the following is addressed: philosophical and historical foundations, various ways the method has been utilized, and practical recommendations for conducting research utilizing this method. Prerequisite: RMS 4941.

RMS 4951 Mixed Method Research Design (4 Credits)
This course is designed as a fundamental exploration of mixed model and mixed method approaches. Students design mixed model and mixed method research studies with a particular emphasis on multi-site and longitudinal designs that are especially suited to educational issues. Students learn analysis approaches that incorporate previously learned quantitative and qualitative skills, and apply these in practice problem examples. Prerequisites: RMS 4910, RMS 4930 and RMS 4941, and one of the following: RMS 4947, or RMS 4948, or instructor permission.

RMS 4952 Research Ethics (3 Credits)
This course introduces ethical theory and a selection of current issues in research ethics.

RMS 4953 Topics in Data Management (1-3 Credits)
This is a preparatory course emphasizing the manipulation and analysis of data in electronic form.

RMS 4959 Topics in Research Design (1-5 Credits)
Topics vary, but include single subject design issues, minimization as an alternative to randomization, advances in quasi-experimental design. Prerequisite: RMS 4930.

RMS 4960 Introduction to Evaluation Research (3,4 Credits)
This course provides an introduction to frameworks for designing evaluation research studies.

RMS 4963 Evaluation Research Practice I (3 Credits)
This service learning course provides part 1 of a 2-part introductory experience in the practical craft of evaluation. Students who enroll in RMS 4963 must take RMS 4964 in the following quarter. The course is not a traditional lecture course; it is a course-embedded experiential learning course.

RMS 4964 Evaluation Research Practice II (3 Credits)
This service learning course provides part 2 of a 2-part introductory experience in the practical craft of evaluation. Students who enroll in RMS 4964 must have take RMS 4963 in the preceding quarter.

RMS 4969 Topics in Program Evaluation (1-5 Credits)
Topics vary, but include advocacy and policy change, assessment in higher education, multi-level evaluation, cost effectiveness analysis, data visualization and reporting, assessment in distance education, and evaluation in the arts and culture. Prerequisite: RMS 4960.

RMS 4970 Introduction to Data Analytics (4 Credits)
This course offers a practical introduction to data analytics for students in Non-Stem fields. Students will learn foundational concepts in data collection, cleaning, visualization, and analysis, with a focus on real-world applications across education, information science, and social research. Using accessible tools such as Excel, R, and Tableau, students will develop skills in interpreting data patterns, generating insights, and communicating results effectively. No prior programming experience is required. The course emphasizes hands-on learning and critical thinking to prepare students to use data analytics ethically and effectively in diverse professional settings.

RMS 4978 Practicum in Qualitative Research (1-4 Credits)
Students may complete the Practicum in Qualitative Research with an individual professor or with a community partner. The goal of this practicum is to provide further experiences in thinking about, conceptualizing, designing, conducting, and/or presenting qualitative research. Prerequisites: RMS 4941, RMS 4942, and at least two of the following classes RMS 4945, RMS 4946, RMS 4947, RMS 4948.

RMS 4980 Practicum in Research (1-5 Credits)
This course provides a supervised experience in design and implementation of an empirical research or evaluation study. Organization of research proposals, completion of human subjects applications, collection, and analysis of data are emphasized. Students are expected to prepare a written report of their project which is suitable for professional presentation or publication.

RMS 4981 Community-Based Research Practicum (1-5 Credits)
Students provide community-based research assistance to a community partner (non-profit, school, community based organization, etc). Student researchers are supervised by DU faculty. This course is an excellent opportunity to match the student's research expertise with the real needs of community partners. Prerequisite: RMS 4945.

RMS 4982 Practicum in Evaluation Research (1-6 Credits)
Students provide evaluation assistance to a university or community partner (non-profit, school, community-based organization, etc.). Student researchers are supervised by DU faculty. This course is an excellent opportunity to match the student's evaluation and research expertise with the real needs of university or community partners. Prerequisite: RMS 4960.

RMS 4991 Independent Study (1-10 Credits)
This course allows Masters students in RMS to study a topic area independently in conjunction with a cooperating faculty member.

RMS 4995 Independent Research (1-10 Credits)
This course is for Masters students in RMS whose program requires completion of a Master's thesis.

RMS 5771 RMS Dissertation Research Seminar (1-3 Credits)
This course is for Ph.D. students in RMS who are engaged in completing their doctoral dissertation.

RMS 5991 Independent Study (1-10 Credits)
This course allows Ph.D. students in RMS to study a topic area independently in conjunction with a cooperating faculty member.

RMS 5995 Independent Research (1-18 Credits)
This course is for Ph.D. students in RMS who are engaged in completing their doctoral dissertation.