Basics of the RESEARCH DATA MANAGEMENT (BRDM)

3 ECTS Course for doctoral students and postdoc teachers

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About the BRDM course

- 3 ECTS Research Data Management Course for Doctoral Students and Post Doc Researchers at the University of Turku (UTU) and at Åbo Akademi University (ÅA), Finland, in Spring 2019-22.
- The Curriculum is informed by an interview study about doctoral students' educational needs and current competencies in RDM:
- https://doi.org/10.2218/ijdc.v16i1.684
- https://docs.lib.purdue.edu/iatul/2019/fair/5/

Course Structure

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HEALTH SCIENCES In finnish	SURVEY RESEARCH In finnish	QUALITATIVE RESEARCH In english	NATURAL SCIENCES In english	TEACHERS
Introductory Lecture (Background and concepts; Characteristics of a high quality research plan; Course practicalities;)				Head of library services; Data librarian; Grant writer
Research plan: 1. Objective 2. Design 3. Implementation 4. Expected results	Research plan: 1. Objective 2. Design 3. Implementation 4. Expected results	Research plan: 1. Objective 2. Design 3. Implementation 4. Expected results	Research plan: 1. Objective 2. Design 3. Implementation 4. Expected results	Researchers; Lectors; University Teachers
Data management plan (DMP) 1. Basics of DMP 2. DMP-Tuuli Tool	Data management plan 1. Basics of DMP 2. DMP-Tuuli Tool	Data management plan 1. Basics of DMP 2. DMP-Tuuli Tool	Data management plan 1. Basics of DMP 2. DMP-Tuuli Tool	Data Librarians
IPR, permits and licences		IPR, permits and licences		Lawyer; Legal advisor; Data librarian
Data privacy		Data privacy		Data protection officer
RedCap (building form based database)	RedCap (building survey form)	NVIVO (organizing and coding data)	RedCap (building form based database)	Head of biostatistician team; Lector
Data storage, protection, processing, describing and IT Service solutions		Data storage, protection, processing, describing and IT Service solutions		IT system architect
Data preservation, sharing and citing; Open data repositories		Data preservation, sharing and citing; Open data repositories		Data librarian
DMP peer-review	DMP peer-review	DMP peer-review	DMP peer-review	Head of library services; Data librarian
Assessing, rating and giving general level feedback on DMPs				Head of library services

Learning Objectives

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General Learning Objectives of the BRDM course

- Know what is "research data" and "research data management” (RDM).
- Be able to create high quality research plan and data management plan (DMP).
- Understand the significance of planning RDM.
- Understand the significance of documenting the research data lifecycle and describing the data.
- Recognize the sound RDM practices that are required to produce high quality research.
- Recognize the value of data not only for the ongoing research project but also for other potential use and users after the current research project.
- Have an understanding of the role of intellectual property rights (IPR) for the use and reuse of research data.
- Recognize the need for safe and secure practices in collecting, storing, processing, preserving, and sharing the data.
- Recognize the concept of “FAIR” and know how to prepare FAIR (meta)data.
- Be able to assess and use data archives and repositories for discovering external data sets and for depositing and sharing data sets.

Module 0: Introductory lecture

- Know the meaning of the concepts "research data" and "research data management".
- Recognize the value of data - not only for their own research project but also for other potential use and users after the current research project.
- Be familiar with the generic phases of a typical data lifecycle.
- Understand the significance of beginning the planning of data management before a research project starts.
- Be aware of the learning objectives of the course, and how the four study programmes, seven modules and their contents are mapped with the generic research data lifecycle and RDM.
- Be familiar with practical procedures like study methods, mandatory participation, how to compensate non-attendance, how to get credit, etc.
- Understand why teachers use cases and examples from research plans to illustrate principles in different practical contexts (participants are expected to write their own research plan and DMP during the course).
- Be familiar with the contents and structure of a high-quality research plan
- Understand the importance of a high-quality research plan.

Module 1: Research plan

- Understand the lifecycle of the research process
- Be familiar with the structure of a research plan
- Identify the aspects of research data to be written in a research plan
- Understand the relevance of research data as part of the research project lifecycle
- Identify the aspects of samples, data gathering methods, measures, and background variables that need to be written down in a research plan
- Understand the central viewpoints in building a research population

Module 2: Data management plan

- Understand what a DMP is and why it is needed
- Identify the typical lifecycle of research data. Be able to plan, write and update a DMP
- Be familiar with basic RDM concepts like research data, data management, documentation, metadata, storage, preservation, sharing, and citing
- Understand the importance of metadata

Module 3: IPR, permits and licenses

- Understand the meaning and impact of IPR, agreements, permits, and licenses on research data gathering, processing, storing, and sharing
- Identify the basics of data ownership, and how the ownership affect different data management principles and practices

Module 4: Data privacy

- Understand the importance of data protection for the collection, processing, storing and sharing of research data, and be able to prepare the data privacy statement and the risk analysis when it is needed.
- Be familiar with anonymization and pseudonymization, and recognize when they are needed.
- Identify the basic methods of anonymization.

Module 5: Data collecting, organizing (REDCap), coding, and analysing (NVivo)

- Understand the relevance of a database as a data collecting, organizing, maintaining, and analyzing tool. Be able to build REDCap database for one's own research data (Health Sciences, Survey, and Natural Sciences Study Programme).
- Be familiar with NVivo software for the organizing, coding, documenting, describing, and analysis of qualitative research data (Qualitative Research Studey Programme).
- Recognize the meaning and importance of documentation and metadata, and be able to create documentation and structural metadata to one's research data.

Module 6: Data storage, protection, processing, describing and IT Service solutions

- Be able to consider the storage and backup requirements of data and to plan actions for these needs based on the existing UTU/ÅA IT's service offering.
- Have a practical understanding of what kind of storage services are available at UTU, ÅA, and CSC for different needs during the research project, and have knowledge of available IT services for research.
- Understand the importance of study level, dataset level and variable level descriptions and overall documentation as a part of research data management and be able to identify the methods (scripts/documentations) as a specific research output. To be aware of the possibilities of publishing the methodological outputs.

Module 7: Data preservation, sharing, and citing. General and discipline specific open data repositories

- Understand that the data may have value beyond one's own project.
- Know how to discover and reuse published data sets.
- Understand the FAIR principles in publishing data sets.
- Be familiar with the public services supporting data publication.
- Be able to publish citable datasets in relevant repositories.

Prepare, and assess a high quality DMP

- Understand how the different phases and aspects of RDM are combined together in the DMP
- Be able to prepare and assess a high quality DMP utilizing the knowledge gained in the modules 1 to 7, following DMP-Tuuli guidance (https://dmptuuli.fi/), and the General Finnish DMP rubric and performance criteria https://doi.org/10.5281/zenodo.5454663.

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