Training Course on Implementing and Managing Research Data Management Services

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's rapidly evolving research landscape, effective **Research Data Management (RDM)** is no longer an option but a critical necessity. The exponential growth of data, coupled with increasing funder mandates, regulatory requirements, and the drive for **Open Science** and **FAIR Data principles**, necessitates a robust framework for managing research data throughout its entire **data lifecycle**. Training Course on Implementing and Managing Research Data Management Services is meticulously designed to equip research institutions, universities, and individual researchers with the essential knowledge, practical skills, and strategic approaches required to establish, implement, and sustainably manage comprehensive RDM services, ensuring **data integrity**, **reproducibility**, and maximizing the **impact of research**.

This program delves into the practicalities of building an **RDM ecosystem**, from developing **data policies** and **governance frameworks** to selecting appropriate **data infrastructure** and fostering a culture of **data stewardship**. Participants will gain a deep understanding of **best practices** in data planning, organization, storage, preservation, and sharing, with a strong emphasis on addressing **ethical data handling**, **data privacy (GDPR compliance)**, and **intellectual property rights**. The course integrates real-world **case studies** and interactive exercises to bridge theoretical knowledge with practical application, empowering participants to drive impactful change in their respective research environments

Programme Curriculum

Training Course on Implementing and Managing Research Data Management Services

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13 Objectives with Strong Trending Keywords

Upon completion of this course, participants will be able to:

1. Formulate comprehensive Research Data Management Plans (DMPs) aligned with evolving funder requirements and institutional policies.
2. Implement FAIR Data Principles (Findable, Accessible, Interoperable, Reusable) across diverse research disciplines and data types.
3. Develop robust Data Governance frameworks for institutional-level oversight and compliance .
4. Establish effective Data Stewardship roles and responsibilities within research organizations.
5. Design and manage secure research data storage and backup solutions, emphasizing data security and disaster recovery.
6. Apply advanced metadata standards for enhanced data discoverability and reusability.
7. Navigate legal and ethical considerations in RDM, including GDPR, data privacy, informed consent, and intellectual property.
8. Evaluate and select appropriate data repositories for long-term data preservation and open access.
9. Develop strategies for data sharing and citation, promoting research transparency and reproducibility.
10. Implement data curation and quality control processes to ensure data integrity and reliability.
11. Leverage emerging technologies and tools for efficient research data lifecycle management.
12. Build a culture of data literacy and advocacy among researchers and support staff.
13. Measure the impact and value proposition of RDM services within their institutions.

Organizational Benefits

- Ensures scientific rigor and builds trust in research outcomes.
- Avoids penalties and secures future funding opportunities.
- Facilitates data sharing and reuse, leading to new discoveries and collaborations.
- Reduces redundant data collection and storage costs.
- Protects valuable research assets from cyber threats and accidental loss.
- Establishes clear responsibilities for data ownership and management.

- Positions the organization as a leader in responsible and innovative research practices.
- Provides researchers with the necessary support and infrastructure for cutting-edge work.
- Enables seamless data exchange and integration across different fields.
- Safeguards research data for future generations and secondary analysis.

Target Audience

1. Research Librarians and Information Professionals
2. Research Administrators and Grant Managers.
3. Data Stewards and Data Managers
4. IT Professionals Supporting Research.
5. Early Career Researchers (Ph.D. Students, Postdocs)
6. Principal Investigators (PIs) and Research Group Leaders
7. Ethics Review Board Members
8. Policy Makers and Institutional Leadership.

Course Outline

Module 1: Foundations of Research Data Management (RDM)

- Defining RDM: Scope, importance, and key terminology.
- The Research Data Lifecycle: From planning to preservation and reuse.
- Benefits of RDM: Why robust data management matters for individuals and institutions.
- Global Landscape of RDM: Funder mandates, institutional policies, and international initiatives.
- Challenges in RDM: Common pitfalls and how to overcome them.
- **Case Study:** Analyzing a university's initial struggle with decentralized data storage and how RDM initiatives led to improved efficiency.

Module 2: Data Management Planning (DMPs)

- Components of a comprehensive DMP: What to include and why.
- Utilizing DMP tools and templates (e.g., DMPTool, DMPonline).
- Aligning DMPs with funder requirements (e.g., NIH, ERC, Wellcome Trust).
- Iterative nature of DMPs: Adapting plans throughout the research lifecycle.
- Practical exercises in drafting DMPs for hypothetical research projects.
- **Case Study:** A bio-medical research team successfully securing a grant by submitting a detailed and well-structured DMP.

Module 3: FAIR Data Principles in Practice

- Deep dive into Findable, Accessible, Interoperable, and Reusable data.
- Strategies for making data Findable: Persistent Identifiers (PIDs), rich metadata.
- Ensuring data Accessibility: Access protocols, authentication, and authorization.
- Promoting data Interoperability: Standard vocabularies, ontologies, and data formats.
- Maximizing data Reusability: Clear licenses, provenance information, and documentation.
- **Case Study:** A climate science dataset becoming widely reused due to its adherence to FAIR principles, leading to new collaborative research.

Module 4: Data Governance and Institutional Policy

- Principles of Data Governance in a research context.
- Developing institutional RDM policies, roles, and responsibilities.
- Establishing data ownership, accountability, and decision-making processes.

- Data classification and sensitivity levels: Handling restricted data.
- Compliance frameworks: Aligning with national and international regulations.
- **Case Study:** A university implementing a new data governance framework to address concerns about sensitive patient data.

Module 5: Data Stewardship and Roles

- Defining the role of a Data Steward: Responsibilities and competencies.
- Different models for Data Stewardship: Centralized vs. distributed.
- Building a Data Stewardship community: Training, support, and collaboration.
- Data Stewardship as a career path: Skills and professional development.
- Integrating Data Stewards into research workflows.
- **Case Study:** How a dedicated data steward transformed data quality and accessibility within a large-scale genomics project.

Module 6: Data Organization, Documentation, and Metadata

- Best practices for file naming conventions and folder structures.
- Creating effective README files and data dictionaries.
- Introduction to metadata standards (e.g., Dublin Core, DataCite, domain-specific schemas).
- Automated metadata generation and tools.
- Ensuring data provenance and version control.
- **Case Study:** A social science research project overcoming data confusion through consistent file naming and comprehensive metadata.

Module 7: Secure Data Storage, Backup, and Transfer

- Evaluating different storage options: Cloud, institutional servers, local storage.
- Implementing robust backup and disaster recovery strategies.
- Data encryption, access controls, and cybersecurity best practices.
- Secure data transfer protocols and tools.
- Addressing data retention policies and legal requirements for storage.
- **Case Study:** A research group experiencing a data loss incident and how implementing robust backup procedures prevented future recurrences.

Module 8: Ethical Data Handling and Data Privacy

- Informed consent for data collection, use, and sharing.
- Anonymization, pseudonymization, and de-identification techniques.
- Understanding GDPR and other data protection regulations (e.g., CCPA, HIPAA).
- Managing sensitive data: Ethical review processes and secure environments.
- Responsible data re-use and the ethical implications of data linking.
- **Case Study:** A research study navigating complex ethical approvals for sharing sensitive health data while ensuring participant privacy.

Module 9: Intellectual Property Rights and Licensing

- Understanding copyright, patent, and database rights in research data.
- Selecting appropriate data licenses (e.g., Creative Commons licenses).
- Data ownership and agreements: Collaborations and institutional policies.
- Managing data access and reuse agreements.
- Open licensing for data vs. software vs. publications.
- **Case Study:** A collaborative research project successfully negotiating data ownership and licensing agreements before data collection began.

Module 10: Data Repositories and Archiving

- Types of data repositories: Institutional, disciplinary, generalist.
- Criteria for selecting a trustworthy and sustainable repository.
- Depositing data: Formats, metadata, and submission processes.
- Long-term preservation strategies for research data.
- Repository policies for access, preservation, and curation.
- **Case Study:** A research team successfully depositing a large genomic dataset in a domain-specific repository, making it publicly discoverable.

Module 11: Data Sharing and Citation

- Benefits and challenges of data sharing.
- Strategies for maximizing data discoverability and accessibility.
- Best practices for data citation: Linking data to publications.
- Data journals and data publications as new avenues for dissemination.
- Metrics and impact of data sharing: Tracking data reuse.
- **Case Study:** A research paper gaining significant citations due to the accompanying, openly shared dataset, leading to new research avenues.

Module 12: Data Curation and Quality Control

- Principles of data curation: Enhancing data value and usability.
- Data cleaning, validation, and error detection techniques.
- Developing data quality assurance workflows.
- Documentation of curation processes and data transformations.
- Tools and software for data curation and quality checks.
- **Case Study:** A social science dataset undergoing rigorous curation to correct inconsistencies and improve its overall quality for secondary analysis.

Module 13: Research Data Management Tools and Technologies

- Overview of RDM platforms and software solutions.
- Tools for data collection, annotation, and analysis.
- Electronic Lab Notebooks (ELNs) and Laboratory Information Management Systems (LIMS).
- Data visualization tools for exploring and communicating data.
- Emerging technologies: AI/ML in RDM, blockchain for data provenance.
- **Case Study:** A biology lab integrating an ELN and a LIMS to streamline their experimental data capture and management.

Module 14: Promoting RDM and Building a Data Culture

- Advocacy and outreach strategies for RDM services.
- Training and education programs for researchers and support staff.
- Building communities of practice for RDM.
- Incentivizing good data management practices.
- Measuring the impact and value of RDM initiatives.
- **Case Study:** A university launching a successful RDM awareness campaign that significantly increased DMP submissions and data deposits.

Module 15: Future Trends and Challenges in RDM

- The evolving landscape of funder policies and mandates.

- Increased emphasis on reproducibility and open science.
- Challenges of big data, sensitive data, and interdisciplinary data.
- Role of AI and machine learning in automating RDM tasks.
- Global collaboration and interoperability in RDM.
- **Case Study:** Discussing how a national research infrastructure is adapting its RDM services to accommodate increasingly large and complex datasets from diverse scientific domains.

Training Methodology

This training course employs a blended learning approach to maximize engagement and knowledge retention:

- **Interactive Lectures:** Concise presentations of core concepts with opportunities for Q&A.
- **Upcoming Scheduled Sessions**

Start Date	End Date	Location	Price
07 Sep 2026	18 Sep 2026	Physical	$3,000
14 Sep 2026	25 Sep 2026	Physical	$3,000
21 Sep 2026	02 Oct 2026	Physical	$3,000
28 Sep 2026	09 Oct 2026	Physical	$3,000
05 Oct 2026	16 Oct 2026	Physical	$3,000
12 Oct 2026	23 Oct 2026	Physical	$3,000
19 Oct 2026	30 Oct 2026	Physical	$3,000
26 Oct 2026	06 Nov 2026	Physical	$3,000

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