Metadata Standards for Research Data Interoperability Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s data-driven world, metadata has become the cornerstone of research data management, accessibility, and integration. As scientific collaboration and open data sharing continue to expand, the need for standardized metadata has grown exponentially. This course on Metadata Standards for Research Data Interoperability Training Course equips researchers, data stewards, librarians, and technologists with the tools, techniques, and knowledge needed to create and manage interoperable research data systems. Participants will gain a comprehensive understanding of metadata schemas, ontologies, FAIR data principles (Findable, Accessible, Interoperable, and Reusable), and implementation strategies that facilitate seamless data exchange and integration across disciplines and platforms.

This training addresses key challenges in metadata harmonization and showcases international standards such as Dublin Core, DataCite, ISO 19115, and schema.org. Participants will engage with real-world case studies and hands-on exercises to design metadata workflows that support research data lifecycle management, data curation, and digital preservation. Whether you are building data repositories, working in open science initiatives, or supporting interdisciplinary research, mastering metadata interoperability is essential for ensuring long-term usability, discoverability, and impact of your data assets.

Programme Curriculum

Metadata Standards for Research Data Interoperability Training Course

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Course Objectives

By the end of this course, participants will be able to:

1. Understand the role of metadata in enhancing data discoverability and reusability.
2. Apply FAIR principles in designing metadata frameworks for open research data.
3. Identify and implement key international metadata standards (e.g., Dublin Core, ISO 19115, DataCite).
4. Evaluate metadata schemas and their suitability for different disciplinary contexts.
5. Develop workflows for metadata generation, validation, and transformation.
6. Utilize semantic technologies and ontologies to improve data interoperability.
7. Design interdisciplinary metadata frameworks that support cross-platform integration.
8. Leverage controlled vocabularies and taxonomies for enhanced data annotation.
9. Integrate linked data and RDF (Resource Description Framework) into metadata practices.
10. Assess data quality and metadata completeness using standardized evaluation tools.
11. Implement tools for automated metadata extraction and mapping.
12. Apply metadata governance principles in institutional and project-level settings.
13. Collaborate in designing metadata-rich data management plans (DMPs).

Target Audiences

This course is designed for:

1. Research data managers and stewards
2. University and institutional librarians
3. IT professionals and data architects
4. Open science practitioners
5. Policy makers in research data governance
6. Academic researchers across disciplines
7. Digital repository developers
8. Data governance and compliance officers

Course Duration: 5 days

Course Modules

Module 1: Introduction to Metadata and Interoperability

- Definition and functions of metadata
- Types of metadata (descriptive, administrative, structural, etc.)
- Interoperability challenges in research data
- Introduction to FAIR data principles
- Metadata lifecycle in data management
- **Case Study**: Metadata challenges in global climate research networks

Module 2: Overview of International Metadata Standards

- Dublin Core and metadata simplicity
- DataCite for scholarly datasets
- ISO 19115 for geospatial metadata
- schema.org for web-based data discovery
- Standard selection criteria for research domains
- **Case Study**: Implementing ISO 19115 in a national geographic database

Module 3: Designing Metadata Frameworks

- Principles of good metadata design
- Customizing metadata elements
- Aligning metadata with research objectives
- Creating metadata profiles and crosswalks
- Validating and transforming metadata
- **Case Study**: Metadata framework for a multidisciplinary health data repository

Module 4: Metadata and Semantic Technologies

- Introduction to ontologies and taxonomies
- RDF and Linked Data in metadata
- SPARQL and querying semantic metadata
- Mapping metadata to ontologies
- Linked Open Data (LOD) and its benefits
- **Case Study**: Using semantic technologies for agricultural research data

Module 5: Tools and Platforms for Metadata Management

- Metadata editing tools (e.g., OpenRefine, Metavist, CEDAR)
- Automated metadata extraction
- Metadata validation and consistency checkers
- Open-source metadata repositories
- Integration with digital object identifiers (DOIs)
- **Case Study**: Building a metadata-rich data portal using CKAN

Module 6: Metadata for Data Repositories and Publishing

- Metadata in digital repositories and archives
- Data citation and persistent identifiers
- Licensing and access rights metadata
- Enhancing discoverability in search engines
- Metadata for data journals and publishing platforms
- **Case Study**: Enhancing research visibility with rich metadata in Figshare

Module 7: Metadata Quality, Evaluation, and Governance

- Measuring metadata quality (accuracy, completeness, consistency)
- Metadata assessment tools and metrics
- Common metadata errors and how to avoid them
- Metadata policy and standard operating procedures
- Governance frameworks for metadata lifecycle
- **Case Study**: Institutional metadata governance at a major research university

Module 8: Developing Metadata-Rich Data Management Plans

- DMPs and their metadata components

- Funders' metadata requirements (e.g., NSF, Horizon Europe)
- Metadata planning in collaborative projects
- Aligning metadata with institutional policies
- Monitoring and updating metadata in DMPs
- **Case Study**: DMP design in an EU-funded cross-border health research project

Training Methodology

- Interactive presentations and expert-led lectures
- Hands-on workshops using real metadata tools
- Group discussions and metadata mapping exercises
- Analysis of case studies from global research initiatives
- Participant-driven project design with peer feedback
- Post-course assignments and mentorship for implementation

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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