1st Conference on Research Data Infrastructure

Spreading RDM

https://doi.org/10.52825/CoRDI.v1i.209

Published: 07 Sept. 2023

Research Data Management Curriculum of the Research Data Services at the University Library Duisburg-Essen

Sophia Leimer[1][https://orcid.org/0000-0001-6272-204X], Sonja Hendriks[1][https://orcid.org/0000-0002-3460-4131], Lisa Korte[1][https://orcid.org/0000-0003-3650-2558], Jessica Stegemann[1][https://orcid.org/0000-0002-4149-1825], Sarah Ann Stock[1][https://orcid.org/0000-0003-4965-1085], Henning Timm[1][https://orcid.org/0000-0002-5345-7122], and Stephanie Rehwald[1][https://orcid.org/0000-0002-5884-4471]

[1] Research Data Services (RDS), University Library, University of Duisburg-Essen, Duisburg, Germany (email: rds.ub@uni-due.org, web: www.uni-due.de/rds)

Abstract. Reproducible and transparent science requires good research data management (RDM). However, researchers are often not familiar with how to appropriately handle research data, publication options, legal aspects, and the multitude of available software tools. To support scientists at the University of Duisburg-Essen in gaining RDM knowledge and competencies, the Research Data Services developed a structured teaching program – the RDM Curriculum – for researchers from different disciplines and career levels.

The RDM Curriculum is separated into a basic and an advanced module. In the basic module, participants can select from three full-day courses that address the basics of RDM with different disciplinary focus. The advanced module consists of various 2 hour online hands-on courses on diverse RDM topics and tools. As incentive to attend multiple courses, participants can earn the RDM Badge of the University Library Duisburg-Essen. The curriculum program is complemented by specialized RDM courses and self-learning materials.

With the RDM Curriculum, we created an easily accessible and individually selectable RDM course offer that enables researchers to gain discipline-specific and individually relevant RDM knowledge. The curriculum structure can gradually be expanded to further target groups (e.g. students) and allows for continuously adding new contents in the advanced module. The high request for the RDM Badge after the first iteration of the RDM Curriculum in the winter semester 2022/2023 confirmed the positive effect of incentives. Consequently, we are planning to establish a Data Champion Award as appreciation of RDM achievements and to showcase best-practice examples at the University of Duisburg-Essen.

Keywords: Training, Data Literacy, FAIR, Open Science

1. Introduction

Since practices of reproducible and transparent science are neither easy to apply nor self-explanatory, good training is indispensible for implementing good research data management (RDM). Researchers are often not familiar with how to appropriately handle research data, publication options, legal aspects, and the multitude of available software tools. At the same time, RDM methods and procedures vary between scientific disciplines. To support scientists at the University of Duisburg-Essen (UDE) in gaining RDM knowledge and competencies, the Research Data Services (RDS) developed a structured teaching program – the RDM Curriculum – for researchers from different disciplines and career levels. The Curriculum is

designed to teach general competencies in research data management as well as practical skills for RDM tools. In particular, RDM tools provided by the RDS are always accompanied by hands-on training to ensure a convenient and proper usage [1].

2. RDM Curriculum

2.1 Curriculum objectives

Following the university didactics method of constructive alignment [2], we first formulated curriculum objectives based on [3]. These represent the competencies and learning outcomes that participants will successively gain in the course program of the RDM Curriculum. We defined the following qualification goals:

- Participants know the different aspects of RDM along the research data life cycle.
- Participants are aware of local and national contact points (e.g. NFDI consortia) and consulting services (e.g. RDS).
- Participants are motivated to make their data FAIR and know methods, tools, and services to do so.
- In every-day research, participants can apply the different aspects of good RDM and handle individual subject-specific challenges.
- Participants actively exchange with other researchers about RDM.
- Participants can apply RDM methods and tools that are appropriate for their discipline and research.
- Participants have the ability to try out and apply new RDM methods.
- Participants can judge if an RDM tool or method is suitable for their research.

2.2 Structure of the RDM Curriculum

The RDM Curriculum is separated into a basic and an advanced module (Figure 1). In the basic module, participants can select from three courses that address the basics of RDM with different disciplinary focus: 1. (Bio-)Medicine with focus on electronic lab notebooks and sensitive data, 2. Education, Humanities, Social, and Economic Sciences with focus on sensitive data, text, audio, and video data, 3. STEM with focus on electronic lab notebooks, scripts, and code. These basic courses take place in person to facilitate exchange between participants. In 7 hours, an interactive introduction to RDM aspects along the research data life cycle, i.e. data management plans, metadata, data organization, storage, publication, and the respective focus topics, is given. The main target group are PhD students to establish basic RDM knowledge in the early scientific career. Other interested persons (e.g. Postdocs) are also welcome.

The advanced module consists of various 2 hour online courses on a diverse selection of specialized RDM topics and tools (e.g. RDM with Git and GitLab, Reproducible analyses with R Notebook). In these courses, we put high priority on introducing a specialized RDM topic or tool with hands-on and practical exercises and application examples. Accordingly, we expect active participation in course exercises (e.g. camera on, contributions). The target group for the advanced courses comprises PhD students, researchers, and interested persons (e.g. Master students, lab technicians) and does not require the prior participation in a basic course. Together with the relatively succinct online format, this should lead to an easily accessible and individually selectable course offer.

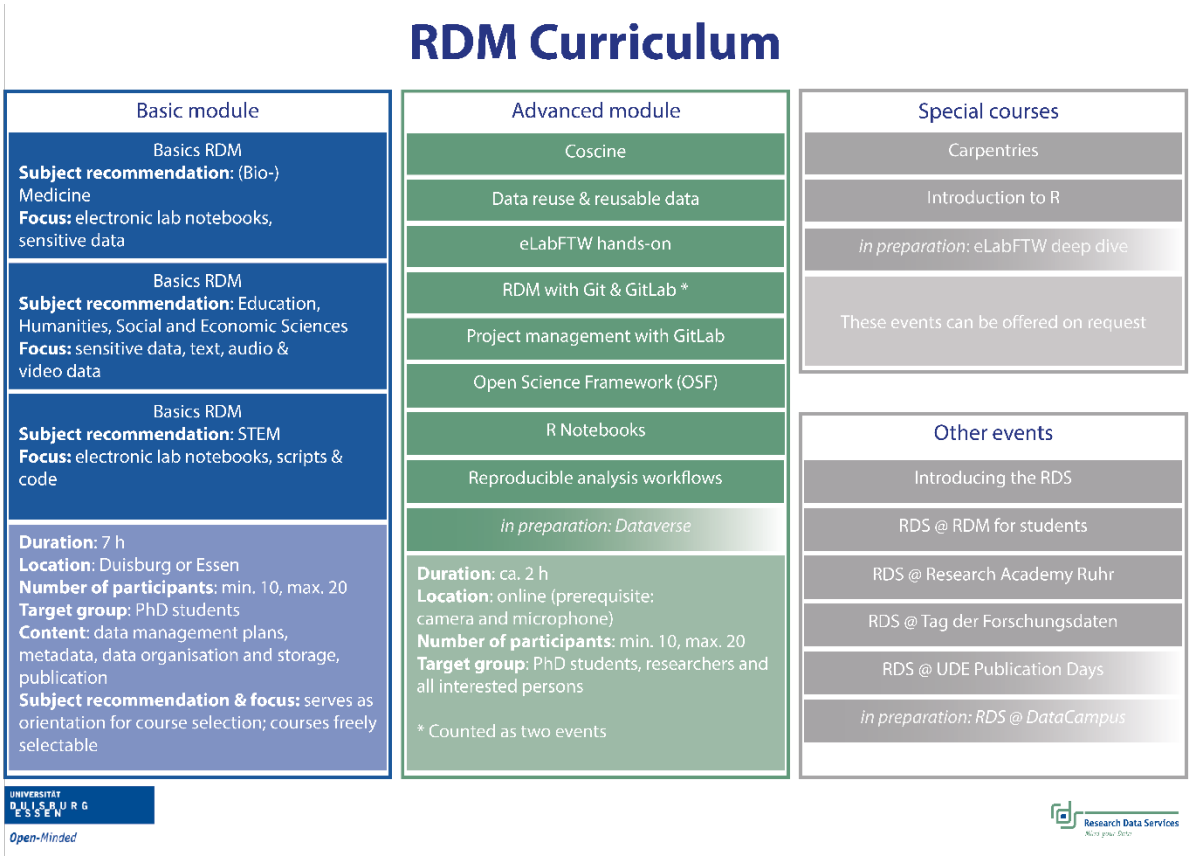

Figure 1. Overview of modules and courses of the Research Data Management (RDM) Curriculum.

After attending one course from the basic module and two courses from the advanced module, participants receive a certificate of attendance – the RDM Badge of the University Library Duisburg-Essen (Figure 2). The RDM Badge is intended to serve as incentive to deepen the RDM knowledge by participating in multiple courses and as demonstration of RDM training efforts.

The courses of the RDM Curriculum are usually offered once per semester for 10 to 20 participants per course. For information and course registration, we provide a comprehensive website (https://www.uni-due.de/rds/en/rdmcurriculum.php). Additionally, we offer specialized RDM courses on request (e.g. Data Carpentry, Introduction to R) and self-learning materials (e.g. RDM course on UDE's e-learning platform Moodle).

Figure 2. Research Data Management Badge of the University Library at the University of Duisburg-Essen (UDE), issued by the Research Data Services (RDS).

3. Conclusions and Outlook

The RDM Curriculum was offered the first time in the winter semester 2022/2023 and the second round of courses is currently ongoing. The number of course registrations was, as expected, lower in the initial phase, but increased with progressing advertisement. We especially experienced that promotion of the RDM Curriculum during the courses was very effective in increasing the number of registrations for upcoming courses. The group of participants ranged from PhD students from coordinated research programs to individual researchers from all career levels and also included Master students. Already at the end of the first round, we received several requests for the RDM Badge. This confirmed that the RDM Badge, as an incentive, indeed increased the willingness to learn about RDM. Consequently, we are planning to establish a Data Champion Award as appreciation of RDM achievements and to showcase best-practice examples at the University of Duisburg-Essen.

With the RDM Curriculum, we created an easily accessible and individually selectable RDM course offer that enables researchers to gain discipline-specific and individually relevant RDM knowledge and competencies. The structure of the RDM Curriculum can gradually be expanded to further target groups (e.g. Bachelor or Master students) and allows for continuously adding new contents in the advanced module.

Data availability statement

This work is conceptual and thus, there is no data necessary for replication.

Author contributions

SL: Writing – original draft; SH, LK, JS, SAS, HT, SR: Writing – review & editing; all authors: Conceptualization; SL, JS: Visualization; SR: Supervision

Competing interests

The authors declare that they have no competing interests.

Acknowledgement

We thank the University Library Duisburg-Essen for their support, e.g. with course registration. Special thanks go to J. Pott for designing the RDM Badge. We are thankful to all people who gave constructive feedback during the curriculum development.

References

1. S. Rehwald and J. Stegemann, “Roadmap zur Servicestelle für Forschungsdatenmanagement am Beispiel der Universitätsbibliothek Duisburg-Essen,” *Information - Wissenschaft & Praxis*, vol. 72, no. 4, pp. 194–203, Jul. 2021. doi: 10.1515/iwp-2021-2161.
2. J. Biggs and C. Tang, *Teaching for Quality Learning at University*, 4th ed. New York, NY, USA: Open University Press: 2011.
3. B. Petersen et al., “Lernzielmatrix zum Themenbereich Forschungsdatenmanagement (FDM) für die Zielgruppen Studierende, PhDs und Data Stewards,” Sep. 2022, doi: 10.5281/ZENODO.7034478.