



HDR Digital Research Program

The **Intersect Digital Research Program** is a learning program designed to equip you with competencies in key digital research techniques.

The Program complements your postgraduate research degree by broadening the digital expertise you acquire when studying at Southern Cross University.

The Program focuses on a series of fundamentals webinars, applicable to both humanities and science higher degree research students:

- Introduction to Digital Research
- Research Data Management
- Your Digital Footprint
- Big Data research
- Citizen Science
- Database concepts

The webinars introduce the topics, present case studies demonstrating relevance to all research disciplines, and highlight what tools and technologies are applicable. The Program builds your capacity to find, use and disseminate information, using appropriate digital approaches.

The Program is localised to the SCU environment, ensuring you gain awareness of local resources available to you during your candidature. Additionally, the skills imparted through the Program are designed to be transferable to any future workplace, given that digital competency skills are often both required and expected by potential future employers.

The Intersect approach to training

At Intersect, we work closely with our member university students to develop and deliver training that targets the day-to-day software and technology problems that researchers face. The HDR Digital Research Program is available online through a series of webinars delivered by knowledgeable eResearch analysts who bridge the industry / academia divide.

Introduction to Digital Research

This course introduces students to the exciting potential of digital research. Participants will learn what new methodologies digital research features and how these are used to complement and enhance the traditional research process.

The course introduces the ways digital research techniques can be embedded in research workflows and the importance of effectively managing research data.

Also outlined are avenues for digital research support, software and facilities available to HDRs at their institution.

Course outline

- What is digital research and how is it different?
- The future of research in a digital world
- Integrating with traditional methods
- Digital research techniques and processes
- Exemplars of digital research
- Available support, software and facilities

Your Digital Footprint

This course highlights the importance of developing and curating a strong digital public profile.

Maintaining a strong, interlinked profile is an increasingly important aspect of a researcher's career, especially in the age of social media. It also provides benefits to the researcher such as a means to engage the public in the research, and a competitive advantage in career advancement.

The course helps to create responsible researchers by delivering invaluable skills for navigating a research world in which a digital presence is essential.

Course outline

- What is a Digital Footprint?
- Impact and Engagement
- Altmetrics
- Benefits of a Digital Footprint
- Creating a Digital profile
- Managing Online Risks

Recommended follow-on courses

- Research Data Management
- Citizen Science



Research Data Management

The Research Data Management course is invaluable to anyone managing digital information. In particular, research data often possesses characteristics that make management challenging - approaches and technology options to help participants be more productive in their research activities are described.

Funding body requirements and legislative compliance elements are introduced, and the course also educates participants on the latest approaches to increase collaboration and engagement around data, and heighten its impact.

The course helps to create responsible researchers by delivering invaluable skills for managing digital information

Course outline

- Benefits of Research Data Management
- Data Management in the Research Lifecycle
- Responsibilities and Organisation
- Data Storage, Retention, Backup & Security
- Collaborating with Data
- Metadata
- Data Re-use

Recommended follow-on advanced courses

- Introduction to Version Control with Git
- Using Databases & SQL



Big Data Science

Big Data seems to be all around us these days, but what exactly is it and how can researchers take advantage?

This foundational course caters for students across a range of research areas, demonstrating the prospects and challenges of Big Data research. Topics ranging from capturing, cleaning, integration and analytics will be covered, as well as tips on how to get started.

It is ideal for HDRs interested in considering taking a data-intensive approach to their research projects.

Course outline

- Getting Started
- What is Big Data?
- Using Big Data in research
- The Big Data pipeline
- Data science in the big data process

Recommended follow-on advanced courses

- Cleaning & Exploring your data with Open Refine
- Excel Fu
- Powerful text searching and matching with Regexes
- Data Visualisation with Google Fusion Tables
- Programming in R, Python or Matlab
- Intro to Unix for High Performance Computing
- Using Databases & SQL



Citizen Science

The Citizen Science course introduces participants to the concept, describes how the approach impacts on science and community and highlights what platforms and projects have achieved in advancing areas of scientific research.

Citizen scientists are laypersons who volunteer to help professional researchers advance areas of scientific research. This course empowers participants with the skills and knowledge required to engage in the untapped potential of citizen science for their own research and/or professional purposes.

Course outline

- Case Studies
- Community Engagement and Outreach
- Incentives, Benefits & Motivations
- Quality Considerations
- Digital Platforms
- Ownership and Privacy of Data

Recommended follow-on courses

- Website Development
- Research Data Management Techniques

Database Concepts

Databases provide an efficient way to store, retrieve and analyse data, which is important for research. Are you concerned about your database knowledge before you can use a database management system efficiently?

This Database Concepts course is aimed at researchers who have little database expertise so as to equip them with the skills required to manage databases. The course covers basic terminologies in the database world, including attributes, keys, constraints, schema, relational database, ER model, etc. The course also introduces and compares the advantages and disadvantages of various existing database management systems.

Course outline

- What is a Database?
- Types of Databases (relational, nosql, etc.)
- Data Model Concepts: attributes, keys, relationship, constraints, business rules, entity instances, connectivity, schema etc.
- Relational Database: Entity Relationship (ER) model, normalisation, referential integrity etc.
- Database Management Systems Comparisons
- Case Studies

Recommended follow-on advanced courses

- Using Databases & SQL

