

# Introductory Course - For new ResearchSpace users

## Introduction

This course is designed to provide subject experts with practical familiarity with the technical concepts used on the digital knowledge platform, ResearchSpace. In some cases it can be used to establish a simple first basic version of a RS application that can be used for further learning and/or development. ResearchSpace is a sophisticated Semantic Linked Data and Web based system designed to support heterogeneous knowledge base projects which have the capability of being synthesised with other ResearchSpace projects and linked data systems. The course will allow researchers to perform basic tasks on the system and a starting point for either self learning or an intermediate ResearchSpace course. The steps are interconnected in that each step reinforces other ones. The course is designed to be performed one to one on the cloud.

## Data Normalisation (approx 2 - 3 hours)

This session identifies common data issues using real data examples. It is designed to help people organise data when using pragmatic non-semantic formats to make it easier to transform to a semantic format or any broader application. It will use a spreadsheet format (csv) as a basis for this (preferably data that the researcher wants to develop). It will provide an introduction to **Regular Expressions** to allow simple global programmatic changes to data. The session is designed to show how data might be collected by individual researchers using tools like spreadsheets but to explain the difference between those formats and semantic data. The researcher will make the required changes to the data before the next session.

## Linked Data and SPARQL (approx 2 hours)

Using an example graph this session will explain how Linked Data works, how it is stored, and some of the conventions used. It will provide an introduction to the **SPARQL query language**, showing how data is queried, but also inserted and deleted from a graph, and how to avoid data loss. It provides an initial orientation necessary to create data "patterns" required for ResearchSpace tools. This will make use of ResearchSpace instances and external online SPARQL endpoints, like Wikidata.

## Migrating from non-Semantic to Semantic (approx 3 hours)

Using another example of non-semantic data this part of the course will introduce **TARQL** - a utility from transferring csv data to Linked Data allowing researchers to transfer their spreadsheet data to the ResearchSpace system. It will also introduce the researcher to 3M a more sophisticated tool for transforming and transferring to linked data from XML data which provides an open standards configuration file that is used to mediate the transfer and provide an open robust set of instructions that can be shared.

## Overview of the ResearchSpace System (approx 4 hours)

This part of the course will provide an overview of how the system works and put the outputs gained earlier in the course to produce workable structured input forms. The output of this step will create the basic forms required by the researcher for their current project creating a first version of their ResearchSpace system.

## Conclusion (1 hour)

Since the data inserted has been collected using a non semantic dataset this brief session reviews the information and its position within a wider historical context with a view to remodelling the data. In addition instructions on data backup will be provided.

## Optional - ResearchSpace Styling (approx 1 - 1.5 hours)

An introduction to the concept of custom applications and applying css, scss and sass for styling .

**Scheduling** - The scheduling can be agreed to fit in with schedules. It is recommended that researchers take time to internalise sessions before moving to the next step. In a condensed 2 day course exercises are incorporated.

The course will use MS Visual Code.