

## **Course Handbook**

# Data, Design and Society (INFRo8o24)

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Semester 2, 2015-16

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# I Course Overview

**Data, Design and Society** is a new sort of course that combines interdisciplinary teamwork with practice-based challenges. It is a collaboration between the Schools of Informatics, Social and Political Studies, and Design Informatics.

In today's economy, students need the skills to work together with people across different disciplines, and are likely to be confronted by multi-dimensional challenges with complex social, legal, political and technological dimensions. This *learning-by-developing* course will introduce you to ways of combining modern tools for data analysis with design-based approaches. It will encourage you to develop innovative ideas and communicate them effectively in different social arenas.

In the **Data** strand of the course, you will learn to collect, assess and present data as social and scientific evidence, and to use it as a resource for design. The **Design** element asks you to challenge existing practices by creating prototype social interventions. The **Society** strand introduces the 'social life of data' and shows how data and design can be used to shape society for the better within the framework of existing social and political processes. The course will give you the opportunity to take your learning out of the classroom into the University community.

**Data, Design and Society** ([INFRo8o24](#)) is a 20pt Level 8 course. There are no prerequisites, but you should be prepared to ask lots of questions, to go out and talk to people, to work with simple data analysis tools, and to experiment with change.

## 2 Preparation

### 2.1 Key Dates

Course start: **Wednesday, 13th January** Team formation: **Wednesday, 20th January**

### 2.2 Description

In this phase, you will be introduced to the main ideas and goals of the DDS course. It will explain our intended ways of working, and why we might want to do something that looks so different to a typical university course. Overall, we are using a “hack methodology” in conjunction with tools and techniques from design, the social sciences, and informatics.

#### 2.2.1 What is a Hack?

A hack (or hackathon) originally referred to a team of programmers, designers, and other technology experts engaging in a short period of intensive development (e.g., “build an app/game in a weekend!”). Now the term is often used more broadly, to refer to any period of focused, intensive collaboration between experts and stakeholders. Hacks may be about solving a particular problem (e.g. making dementia-friendly bathrooms), or more generally exploring a topic (e.g., what can you make with available open data sets?). For example, the recent [Walk Hack](#) (October 2015) brought together researchers, designers, technologists, Edinburgh Council representatives, local organisations and interested residents in order to work together on ideas for promoting walking in the Edinburgh city centre. How could it be made safer, more interesting, more appealing, “better”?

We also take inspiration from the notion of a *Jam*, as described in the [Global Sustainability Jam](#):

*You'll be working with people you might never have met before, bouncing ideas off one another and building on what bounces back. And it's not just talking—you are here to **turn your ideas into a concrete design or plan of action which you or somebody else might want to make real**. Perhaps it will be a service, a physical device, an initiative, a network, or something no-one has thought of yet—can you describe and plan it in a way that someone could go out and make it real, knowing what resources they would need, what they should do, and who they should talk to? That's the challenge of the Jam.*

As part of the DDS hack method, you will work in small interdisciplinary teams, and are required to involve community stakeholders in your project at several points during the course. All teams will be presenting to one another and giving each other feedback throughout the course. Part of the point of a hack is to exchange expertise, viewpoints and ideas, to make mistakes, and to try new things.

There will be two separate hacks as a part of DDS: a [Fast Hack \(Phase 1\)](#) intended to explore our theme (below), identify specific problems and generate ideas, and a [Slow Hack \(Phase 3\)](#) intended to develop a single design in more depth, over a longer period of time.

As described in [Project Overview](#), DDS will have a “Food and Sustainability” theme, focused on the University of Edinburgh community. In Phase 0, several speakers will present on food and sustainability issues, and we will also look at University and EUSA policy on this issue.

### 2.2.2 Orientation to Skills and Content

We do not expect you to start DDS with all the skills you will need to carry out your projects successfully. Between lecture content, activities, and homework, we will introduce four key topics in preparation for the Fast Hack phase:

- food and sustainability issues;
- introduction to design thinking;
- introduction to data and information;
- introduction to observation, ethnography, and ethics.

We will revisit these topics in [Digging Deeper \(Phase 2\)](#). **It is very important to attend class and keep up with homework in the first weeks**, as these cover information essential to participating in the next phases of the course. You will find it very difficult to catch up on this information later.

Starting in Phase 0 and continuing throughout the course, we will also work on writing, presenting, and teamwork skills. Individuals and teams will be pushed to explain and justify their work. We see these as central to course success, and as major transferable skills that students can take away from DDS.

## 2.3 By the End of this Phase

You should have a clear idea of what the DDS course will be about and what you will do for the rest of term. You should have participated in class and homework activities to orient yourself to the four key topics. You should have signed the DDS ethics agreement.

Your team should have formed, chosen **one** of the four sub-themes, and discussed different team members’ interests within that sub-theme as a preparation for the Fast Hack.

## 3 Food & Sustainability Fast Hack

### 3.1 Key Dates

**Fast Hack event:** Beginning Wednesday January 27th, 2016 **Team Presentations:** Class time, Friday January 29th, 2016 **Fast Hack individual report** (formative assignment 1): due 16:00 Monday, February 8th, 2016

### 3.2 Description

In this phase, you and your team will conduct a preliminary investigation on a sub-theme related to food and sustainability. This is the first step to identifying a specific problem or question that your team will work on for the rest of term, designing a possible solution. You will need to put into practice the skills and knowledge introduced in the [Preparation Phase](#). Participating fully in the Fast Hack and being engaged with your team is the best possible preparation for the rest of the course.

The Fast Hack has two main tasks for each team: 1. Gather information about your chosen sub-theme and its state at the University of Edinburgh, right now 2. Identify specific problems/questions within your sub-theme, and generate ideas for how to address those problems/questions

#### 3.2.1 Task 1: Information-gathering

In order to propose a design-led solution to a problem, you must first identify a specific problem, and understand the context in which you are working. What is happening (or not happening) right now with respect to your sub-theme? What do people want, think, do, or say in relation to the sub-theme?

During the Fast Hack, you are a detective. Just as a detective must go to places and speak to people in order to understand “what happened” and why, you must leave the classroom and spend time in the university community to understand what’s happening (and why) on your chosen sub-theme. While DDS students already have experiences around food and sustainability at the university, it is very important not to **only** rely on your team’s pre-existing ideas. Try to look at familiar things with “fresh eyes”, as though you were visiting an unknown place or culture. Question things that seem given, or obvious.

The [DDS sub-themes](#) are still very big. Your team will need to think about your interest and priorities within the sub-theme. Your team will need to plan:

- Where to go during Fast Hack
- Who to talk to — may be teams, individuals, organisations
- What you want to find out (types of information to collect)
- Practicalities: any equipment needed, staying in touch on the day, storing information...

At the same time as planning how to use your time, you should be ready to follow up on interesting, unexpected things you might stumble across during your investigation.

Some starting information for the Fast Hack is available here:

- Food and sustainability: e.g. university policy...
- Data sets:
- Other???

### 3.2.2 Task 2: Identify problems and generate ideas

Once you have some done some information-gathering from relevant locations and people, you can start to identify specific problem areas. What are smaller challenges, within the sub-topic, to which you might be able to design a proof-of-concept solution? At this stage, your team does not have to (and **SHOULD NOT**) choose only one problem and solution. You should show that you have identified several possible problems and solutions, based on the Fast Hack.

At this stage, you do not need to have worked out all the details of an idea, and do not need to worry about financial viability or building anything. Focus on generating and communicating ideas that could potentially help solve your identified problem. What would you do, and why? What impact might this idea have on food and sustainability?

## 3.3 Your Presentation

We're asking your presentation to address three questions, using as many forms of information as you can reasonably collect during the Fast Hack:

- What is the current state of your food and sustainability sub-theme at the University? Where are we starting from — what is happening (or not happening) right now?
- What are some of the specific food and sustainability problems you might be able to address, within this sub-theme?
- What are some possible ideas for addressing each problem (i.e. improving some aspect of food-related sustainability)?

In the presentation, your team needs to be able to explain what information you collected (and/or looked up), what kind of information it is, and how the answers to your three questions (current state, possible problems, possible ideas) are based on your Fast Hack information. Be ready to explain how, where, and when you collected this information.

You are encouraged to make your presentations visual—use photos, drawings, videos, animations, graphs, maps (etc) to help communicate about the information you collected, and your design ideas.

## 3.4 By the End of this Phase:

You should have started your summative individual report (due early in next phase) including commenting specifically on your contribution to the Fast Hack ideas and presentation.



Your team should have created a presentation of the information gathered in Fast Hack, and your initial ideas, and be able to clearly explain what you have done so far and why.

Your team should have stored any collected data in accordance with approved DDS and university data management and privacy requirements.

### 3.5 Learning Outcomes for this Phase:

- Synthesize and communicate the information from two or more datasets using appropriate analytic, presentation and visualisation techniques.
- Interpret and evaluate data in a way that demonstrates its relevance to selected communication and/or policy objectives.
- Demonstrate an ability to work in an interdisciplinary team and to act in a professional manner when interacting with stakeholders and the public.

## 4 Digging Deeper

### 4.1 Key Dates

Stakeholder focus groups: to be scheduled in week of February 1–5 Fast Hack individual reporting (formative assignment 1): due 16:00 Monday, February 8th, 2016 Peer feedback on Fast Hack individual reports: due February..... Innovative Learning Week (no class): February 15–19th

### 4.2 Description

This phase is the transition between the initial information-gathering and problem exploration in the [Fast Hack](#), and developing a single, more nuanced problem solution during the [Slow Hack \(Phase 3\)](#). Your group will continue to discuss, process and build on the information gained in the Fast Hack, through a combination of individual, group, and class activities.

To gain the skills and information needed to conduct a larger and more sophisticated version of the Fast Hack, we will “dig deeper” into the topics we introduced in Phases 0 and 1. These topics include data types, management, and data vs information, and also ethics, privacy, and methods for working with stakeholders (and analysing the results). This will involve a combination of class exercises and lectures, videos, readings, and interactive iPython online notebooks.

All groups need to further explore the possible problems/solutions they identified in the Fast Hack, and collect more information about their sub-theme. At the end of Fast Hack, groups will not be ready to go directly into the Slow Hack. That is why we have a specific transition phase.

#### 4.2.1 Stakeholder focus groups

As part of the exploration and information-gathering process, each group will hold a small focus group with university stakeholders during Phase 2. This is essentially a discussion around specific questions, moderated by a researcher (in this case, a member of your group). Through stakeholders’ discussion with each other and the group members, there will be an opportunity to gain more information about the problem area, generate new ideas, and get preliminary feedback about ideas from the Fast Hack. Even if your group likes an idea, stakeholders may not understand the idea, or think it meets their needs!

The course staff will help you to organise the stakeholder focus group, and recruit participants. There will be a supported, in-class data analysis session to help you make sense of the information you collect. Your group will need to organise your own, additional design session with stakeholders during the Slow Hack. You will be expected to be much more independent during the Slow Hack, so it is essential to fully participate in the phase 2 focus group and analysis sessions in order to learn these skills.

### 4.3 By the End of this Phase

You should have completed all class and homework activities to equip yourself with the skills needed for the Slow Hack, including the basic skills needed to work with stakeholders.

Your group should have completed a stakeholder focus group and analysed the resulting data.

Your group should have narrowed down their ideas and identified a specific question or problem area within your sub-topic. The group can give a clear explanation of what the problem is, and explain how this choice was justified by information you have collected, including information from the stakeholder focus group.

Your group should have stored any newly collected data in accordance with approved DDS and university data management and privacy requirements.

### 4.4 Learning Outcomes for this Phase

- Identify and apply relevant strategies for data collection and related prototype ‘interventions’ which address the interests and needs of a specified community of stakeholders.
- Demonstrate an ability to work in an interdisciplinary team and to act in a professional manner when interacting with stakeholders and the public

## 5 Slow Hack

### 5.1 Key Dates

Last day for data collection: Friday March 11th PD activity with stakeholders: your team must schedule this between February 24th and March 11th

### 5.2 Description

In this phase, your team will start with the design idea identified during the [Digging Deeper](#) phase, and flesh out this idea into a proof-of-concept solution to your problem. Your idea will likely evolve over the Slow Hack as you discuss it further, consult stakeholders, and collect new data—it might look very different at the end of this process than at the start. This is good!

In class, we will continue working on skills around interpreting data and using it to tell stories and build convincing arguments. There will also be in-class tutorial help available for your team, to help you plan your activity in this phase and work with the data you are collecting.

#### 5.2.1 How is this different than the Fast Hack?

In one sentence, [Fast Hack](#) was broad but shallow, while the Slow Hack is narrower, deeper, and more concerned with details. The Fast Hack was trying to find out as much as possible, as quickly as possible because you didn't know yet what might be particularly interesting or useful within your sub-theme. A main goal was to identify several problems or questions, for which your team might propose several initial ideas. By the start of the Slow Hack, you should have narrowed down to **one** problem area or question, by continuing to build on and refine work started in the Fast Hack. You should now have an idea about a possible solution, and during the Slow Hack your team will develop this initial idea into a proof-of-concept design.

#### 5.2.2 Determining what to do is a main part of “the work” in Slow Hack!

In Phases 0–2, different DDS teams will likely have been doing similar things and will have had specific instructions about how to proceed. In this phase your team has more choice and more responsibility for determining what you need to do. It is up to each team to use their experience and the course resources from Phases 0–2 in order to develop their starting idea into a more detailed, proof-of-concept design. Unlike earlier phases, there will not be specific instructions on exactly what information to look for, or what to do. Developing and justifying your team's course of action—out of the many possibilities—is a main part of the work in this stage. For example, it might be very important for one team to be building and critiquing prototypes of a physical object, but that might make no sense for another team's idea, which features a website.

### 5.2.3 Participatory design with stakeholders

All teams are required to have at least one more participatory design session with stakeholders (most teams may only have time for one, but are welcome to do more). Unlike in Phase 2, there will now be several options for what type of session to do. Your team will need to choose which option makes most sense for your project, and will get you the feedback and information you need. Do not underestimate the amount of planning required for this to be successful. Your team is encouraged to discuss their goals and options, and start organising a session as soon as they can.

## 5.3 By the End of this Phase

- You should understand and be able to explain what your team has done in the Slow Hack and why those actions were chosen, out of the available possibilities.
- Your team should have conducted an additional participatory design session with University stakeholders, abiding by the DDS and university [ethics requirements](#). Data analysis may still be in progress.
- Your team should have engaged in whatever other activities are necessary to develop your initial idea into a proof-of-concept scale idea. This will definitely include discussion, reflection, and critique within the team. It may include creating sketches, maps, physical prototypes, a website, or some other representation of your idea; it may include additional data collection or seeking out existing data; it may include additional participatory design.
- **Your team does *not* need to have “solved” your problem.** In the next phase, you will need to show that your idea has the potential to solve or at least affect the problem.
- You and your team should have stored any newly collected data in accordance with approved DDS and university data management and privacy requirements.

## 5.4 Learning Outcomes for this Phase

- Identify and apply relevant strategies for data collection and related prototype ‘interventions’ which address the interests and needs of a specified community of stakeholders.
- Demonstrate an ability to work in an interdisciplinary team and to act in a professional manner when interacting with stakeholders and the public

## 6 Reporting

### 6.1 Key Dates

Design critique, team mini-presentations: Class time, **Wednesday 16th March** Team Slow Hack presentations (worth 25%): Class time, **Wednesday 23rd March** Feedback (unclear on syllabus what this is): Class time, **Friday 25th March** Individual reports (Assignment 2, worth 75%): due **16:00 Friday, 1st April** (not a joke!)

### 6.2 Description

The big goal of this phase is to bring all of your team's information together and use it to tell a clear, convincing, easy-to-understand story about a particular problem related to Food and Sustainability, and how your proof-of-concept idea has the potential to solve this problem. You will have stopped collecting new data. In this phase, you are analysing and making sense of the information you already have (through qualitative description, statistics, visualisations, connection to policy documents and other data sets...).

In class, there will be tutorial help available (similar to Phase 3), to help your team work with data (summarisation, visualisation, statistics) and use it a part of your overall argument. These skills on understanding and presenting data, and using it as a way to “tell stories” about a phenomenon, are some of the most versatile transferable skills we will cover in this course.

The “reporting” part of this phase includes a team presentation (worth 25%) and an individual report (worth 75%). The presentation and report are similar to the format and requirements of the Fast Hack presentation/report completed earlier in the semester, and for which you will have already received formative feedback.

### 6.3 Design critique, peer feedback team mini-presentations

To help teams work on their data interpretation and their explanations of their project, we will have an in-class design critique and feedback session. Each team will briefly present some of their Slow Hack findings and data to the rest of the class, and have a chance to discuss these. This presentation is **not graded** and is not expected to be “finished” in any way. It is about discussing, more than presenting. Having fresh input can also be very valuable, as members of other teams may suggest new, previously unseen connections and implications. An overall idea—or the explanation of an idea—can be substantially strengthened after outside input. Professional researchers and designers definitely engage in this type of critique and peer feedback and find it very valuable, which is why we are doing it here.

## 6.4 Your Presentation

We're expecting your presentation to address the following three broad questions, using the information you have collected over the course of the semester (all phases):

- Briefly, what is the current state of your food and sustainability sub-theme at the University? Where are we starting from—what is happening (or not happening) right now? Focus on the sub-theme as it relates to the specific question your team addressed.
- What is the specific question or problem that your team has investigated? Why focus on this question?
- How does your team propose to address this problem? Describe the design of your proof-of-concept solution. What is the idea, how would it work? Convince us that your idea has the potential to solve the problem.
- Connections to university policy?

In the presentation, your team needs to explain what data you collected (and/or retrieved from in existing datasets) and what kind of data it is. If asked, be ready to give details on how, where, and when it was collected. The answer to each broad question needs to clearly and explicitly state how the team's actions and decisions were informed by data.

You are encouraged to make your presentations very visual—use photos, drawings, videos, animations, graphs, visualisations, maps (etc) to help communicate about the data you collected, and your design ideas. You are also welcome to use physical objects, apps/websites, or to “role play” how your idea would work. It is up to your team how best to communicate your problem, your data, and the proof-of-concept solution.

## 6.5 By the End of this Phase

- You should have completed your summative individual reporting, including commenting specifically on your contribution to the final proof-of-concept design and the team presentation.
- Your team should be able to communicate the overall idea of your project (problem + solution) in a tweet (i.e. 140 characters).
- Your team should have created a presentation of your problem and your design solution, which tells a clear and compelling story based on the data collected in all phases.
- Your team should have archived, destroyed, or handed over your data and metadata, as per DDS policies and your individual team's planning.
- Your team should have.... other documentation, photos, text for web? Basically any other end-of-project reporting outwith presentation.

## 6.6 Learning Outcomes for this Phase

- Synthesize and communicate the information from two or more datasets using appropriate analytic, presentation and visualisation techniques.
- Interpret and evaluate data in a way that demonstrates its relevance to selected communication and/or policy objectives.

## 7 What Counts as Success?

Below, we spell out what your team should achieve in order for your project to count as successful for DDS.

Explore a sub-theme of food and sustainability issues at the University and propose a design-based solution to a current question or problem

- Over the course of the project, identify a clear question or problem within one DDS sub-theme and propose an intervention to solve the problem or answer the question.
- Using information from the world (e.g. stakeholder involvement, existing data, observation), be able to explain the current situation at the University with relation to the sub-theme and problem, and from that information identify a potential problem or question on which to focus your project.
- After considering multiple options, develop a design idea (intervention) with the potential to solve the problem.

Relates to learning objectives:

- [LO1: Interventions](#)

Effectively communicate about design and data

- Be able to explain your problem and design intervention in a way that a general (non-DDS) audience would be able to understand, and convince the audience that the design may be able to answer the team's particular question or solve the problem.
- Be able to show that you have used two types of required data in the project, and have analysed and presented them in an appropriate and relevant way that supports your design idea.
- Show an attempt to connect the group's problem choice and final design back to wider food and sustainability issues and policies (e.g. University and EUSA policy).

Relates to learning objectives:

- [LO2: Data](#)
- [LO3: Communication](#)

Engage in ongoing reflection and justification

- At all stages, document and reflect on the information collected and try to learn from it, feeding at least some of it back into their project.



- At all stages, your team is able to explain the decision-making process and justify (i.e. provide reasons and evidence for) those decisions, especially where there were multiple “good” options for what you could do.

Relates to learning objectives:

- [LO1: Interventions](#)
- [LO2: Data](#)
- [LO3: Communication](#)

Demonstrate consistent participation and professional working

- Participate in all the phases of the course, and all whole-class or centrally planned activities including lectures, workshops, participant engagement, writing activities etc.
- Complete participant engagement and any other tasks that individual teams have been assigned to organise.
- Show contribution and teamwork from all your team members.
- Actively consider ethical issues, and complied with course, University, and UK legal rules for data collection and handling.

Relates to learning objectives:

- [LO4: Professionalism](#)

## 7.1 Anti-Success

Having a successful project does **not** depend on:

- Pleasing DDS staff members and only choosing options or methods you think they like! The important thing is that your team can give a good explanation of what you have done, and why, and how. It is **your** project, and you have the final ownership and responsibility for it.
- Having “good” or “significant” results, or testing your final design with lots of people. DDS projects are intended to be small. You will have limited time to test your final design. This is OK. Much more important is being able to discuss and use the information that you do have, and to reflect on your design.
- Having the right answer. There is no one “right answer” to your team’s question, there may be hundreds! This is not the same as saying that all answers are equally good. An “answer” (or rather, a design) reached through observation, inclusion of participants, and iteration is a better answer than one that a team “made up” just because they liked it. Engaging with the design process is very important for the final quality of your project, and developing a design (course of action) that could get you from the existing state to your preferred state.
- Being perfect. Every team will make mistakes, forget things, or wish they had made different decisions. Professional researchers and designers do all of these things too. This does not make your project bad, but does mean that you should be learning from these things, and be ready to