

1 Schedule

1.1 Course Times and Locations

All class meetings will take place in 7 Bristo Square (building next to Potterrow). We will be based in Room 1.203. However, this room will be undergoing refurbishment in the first week of semester, so we will have to use two other rooms during that week.

Class meeting times

Wednesdays	9:00–11:00
Fridays	10:00–12:00

Class Locations

Wednesday, 13th January 2016	7 Bristo Square, Lecture Theatre 5
Friday, 15th January 2016	7 Bristo Square, Lecture Theatre 1
All other class meetings	7 Bristo Square, Room 1.203

1.2 Course Schedule

Unlike many standard pre-Honours courses at the University, Data, Design and Society (DDS) will be organised around team-based projects. The project work will be broken down into five phases, which are indicated in the table below. The structure of the projects is described in more detail in the Project Overview.

The week-by-week schedule is available online.

2 Project Overview

2.1 Food and Sustainability in the University

The **theme** of the course this year is Food and Sustainability — how can we make the production, consumption and disposal of food within the University more sustainable?

The University of Edinburgh is currently in the process of drafting its first sustainable food policy. In this course, your main objective is to work in a small team to develop a project that engages with this policy goal, by designing, building and measuring experimental innovations

In order to narrow down the scope of what you do, we ask you focus your project on one of the following **sub-themes**:

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<div class="medium-panel">
    Reducing wastage of food served in Pollock Halls Dining Hall
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<div class="medium-panel">
    Reducing packaging waste at any point in the production and consumption of food on campus.
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<div class="medium-panel">
    Increasing the rate at which students select healthy / sustainable food options, either on campus.
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Your project work will be divided into five phases over the course of the semester. Descriptions of the phases can be found by following the links below:

1. Preparation
2. Fast Hack
3. Digging Deeper
4. Slow Hack
5. Reporting

2.2 Design and Design Methods

The core of a DDS project is closely related to how we think about design. Here, design is about the processes of identifying and solving problems, often with input from other people affected by those problems, and often by trial and error. We adopt the broad definition of design by Herbert Simon, namely “devising courses of action aimed at changing existing situations into preferred ones”.

Design methods are a form of exploring the world, often via trial and error: considering options—even options that sound strange, uncomfortable or impossible—and then developing “interventions” as experiments to see how we can change the current situation. In DDS, we will use participatory design; this is a design process which aims at involving all stakeholders (e.g., students, teaching staff, catering staff) in defining problems, helping focus on solutions, and evaluating the effectiveness of interventions.

Design, as a discipline and a collection of processes, has no requirement to use technology. There is also no requirement to build physical or digital artifacts. Design may be mostly about ideas, and imagining how something could potentially work very differently than it does now. Many designs may involve technology, or make physical objects, but only where this seems appropriate for the problem at hand.

2.3 Data

Data plays an important role in our approach to design. First, we need to **understand** “the existing situation”, and we use data as an essential tool to reach this understanding. Second, in order to **evaluate** the effectiveness of an intervention, we need to collect data that will help us measure this.

What is Data? gives a quick overview of different kinds of data that we will use in the course. One important distinction is between subjective and objective data. Although it’s hard to give a completely watertight definition, subjective data will involve people’s thoughts, emotions and values, while objective data is based on observations of physical phenomena.

2.3.1 Two kinds of data

As part of your DDS project, you are required to use both **subjective** and **objective** data. In addition, you are required to use some **existing** data and also to **collect** some new data. So your project should involve at least one of the data scenarios shown in these diagrams:

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  <li>
    
  </li>
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3 Preparation

3.1 Key Dates

Course start: Wednesday, 13th January 2016

Team formation: Wednesday, 20th January 2016

3.2 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.

3.2.1 What is a Hack?

A hack event (or hackathon) sometimes refers to a team of programmers, designers, and other technology experts engaging in a short period of intensive development (e.g., “build a phone app 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, City of 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.

3.2.2 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, presentation, 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.

3.3 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.

4 Fast Hack

4.1 Key Dates

Fast Hack event: Beginning Wednesday 27th January 2016

Team Presentations (Assignment GP1): Class time, Friday 29th January 2016

Fast Hack individual report (Assignment R1): due 16:00 Monday, 8th February 2016

4.2 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 in identifying a specific problem or question that your team will work on for the rest

of semester. 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 current state at the University of Edinburgh.
2. Identify specific problems/questions within your sub-theme, and generate ideas for how to address them.

4.2.1 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 you and your team members will 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.

Although we have identified a number of Food and Sustainability sub-themes, each of these is still pretty broad. Your team will need to think about your interest and priorities within your chosen sub-theme. You will need to plan:

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

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:

- Local Food and Sustainability initiatives
- Existing datasets
- Reading List

4.2.2 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-theme, for 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?

4.3 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 new data you collected and what existing data you located and used, 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 gathered 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.

4.4 By the End of this Phase

You should have started your individual report (due early in the next phase), including a description of your personal contribution to the Fast Hack ideas and to the group 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.

4.5 Learning Outcomes for this Phase

- LO2: Data
- LO3: Communication
- LO4: Professionalism

5 Digging Deeper

5.1 Key Dates

Stakeholder focus groups: to be scheduled in week commencing 1st February 2016

Fast Hack individual report (Assignment R1): due 16:00 Monday, 8th February 2016

Innovative Learning Week (no class): week commencing 15th February 2016

5.2 Description

This phase is the transition between the initial information-gathering and problem exploration in the Fast Hack, and developing a single, more thought-through solution during the Slow Hack (Phase 3). Your team 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 formats, data management, and extracting information from raw data; 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 teams need to further explore the possible problems/solutions they identified in the Fast Hack, and collect more information about their sub-theme. This period of “deepening” will provide a firmer foundation for launching into the Slow Hack.

5.2.1 Stakeholder focus groups

As part of the exploration and information-gathering process, each team 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 team). Through stakeholders' discussion with each other and the team 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 team really likes an idea, stakeholders may not understand it, or may feel that it fails to address 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 team 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.

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

Your team should have narrowed down their ideas and identified a specific question or problem area within your sub-topic. The team 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 team.

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

- LO2: Data
- LO4: Professionalism

6 Slow Hack

6.1 Key Dates

Last day for data collection: Friday 11th March 2016

PD activity with stakeholders: your team must schedule this between 24th February 24th and 11th March

6.2 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.

6.2.1 How is this different than the Fast Hack?

In one sentence, the Fast Hack was broad but shallow, while the Slow Hack is more tightly focussed, 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.

6.2.2 Determining *what to do* is a central to the 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. Relative to earlier phases, there will not fewer specific instructions on 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.

6.2.3 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.

6.3 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.

our 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.

6.4 Learning Outcomes for this Phase

- LO1: Interventions
- LO4: Professionalism

7 Reporting

7.1 Key Dates

Design critique, team mini-presentations: Class time, Wednesday, 16th March 2016

Team Slow Hack presentations (Assignment GP2): Class time, Wednesday, 23rd March 2016

Individual reports ((Assignment R2): due 16:00 Friday, 1st April 2016 (not a joke!)

7.2 Description

The 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 design 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 data you already have (through qualitative description, statistics, visualisations, connection to policy documents and other data sets, etc).

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 and an individual report, both of which will count towards your overall marks for this course. 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.

7.3 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 activity 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.

7.4 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 your proof-of-concept design idea. What is involved and how would it work? Convince us that your idea has the potential to solve the problem.
- How does your design idea connect to the University’s Food and Sustainability 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.

7.5 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 meta-data, as per DDS policies and your individual team's planning.

- Your team should provide documentation about the location of all other materials and digital content used in the course of your project.

7.6 Learning Outcomes for this Phase

- LO2: Data
- LO3: Communication

8 What Counts as Success?

Success in DDS is not about making a certain type of “thing”, using a certain amount of technology, or getting certain results. It is almost entirely about your team participating in and reflecting on different parts of a design process, as you develop a potential solution to a problem. Food and sustainability is a large and complex issue that doesn't admit easy solutions, let alone in one semester. Although much of our education encourages us to find the right answer, making the transition to a more sustainable food system isn't that kind of problem—there is no right answer. Instead, we are asking you do develop a design that could *potentially* make a difference on your chosen problem.

Suppose you experiment with an intervention, and it doesn't do what you expected. One way of thinking about this is that your design “failed”. Another way of thinking about it is that you have learned something, namely that some of your predictions and assumptions turn out to be incorrect. It is not so important whether your project succeeds or fails to do what you intended. What does matter is that you can show what you have learned from the outcomes and that you can show that you have thought carefully about the methods that you adopted.

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

1. 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.

2. 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.
3. 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

1. 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.
2. Be able 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.
3. 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

8.0.0.0.1 Engage in ongoing reflection and justification

1. 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.
2. 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

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

Relates to learning objectives:

- LO4: Professionalism

8.1 Anti-Success

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

1. 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.
2. 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.
3. 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.

4. 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 explain how you might have done them differently.