Slide 1

- Introduction
- A few real life examples of situations using networks
- Pure modules – Hard to relate theorems learnt to anything outside of class
- Networks – use every day

Slide 2

- Travelling – public transport – driving
    - Quickest route not always most direct. Take into account factors such as the time you are travelling when deciding optimal route
- Biological – maybe not everyday – A level bio - Metabolic pathways
    - Citric acid cycle,
    - Calvin cycle
- Social – Patterns in the interactions of people or groups of people
    - Small-world,
    - Websites – Many websites use networks
- Finance – Many different reasons why – easy to do calculations, visualise.

Slide 3

My project title – explain briefly the meaning of some of the words in title
Unsecured Loan – Overnight Loan Market

Banks are required to hold an adequate amount of liquid assets (e.g. cash) to manage any potential withdrawals from clients.

Slide4

- Describe the basics of the networks – UK CHAPS – interbank payment system.
  Not important – just shows same day fund transfers between banks.
- Weighted (Value or volume lent) and unweighted networks (just shows a connection exists) – here just shows borrowed – not how much, interest rate.

- Paper used looking at economic crisis. Show many of these looking at different dates – Identity of bank changed as looking as network as a whole rather than each individual node.

Slide 5

- What do they do with these networks? Calculations – learnt in class.
- Look at the adjacent matrix – Horizontal is node i and the vertical is node j

- So the matrix shows $l_{ij} = 1$ shows a link node i to node j (ie bank j BORROWED money from bank i)
- And if = 0 shows no link exists

Slide 6

- I have only coloured to make it easier to see on the screen (green=0 and red=1)
- Diagonals are all zero – cannot lend money to itself.
- From a directed network so shouldn't be symmetric.
- However from this we can see some have a 2 way link – ie node 2 and 7

Slide 7

- Shown in blue in this table. Think about the real life meaning in this – bank 2 is borrowing money from bank 7 and bank 7 is borrowing money from bank 2.

Slide 8

Talk about the core banks – keep brief and basic

The network showed a few slides ago with the numbered bank was repeated on several dates over the measured period. From that data they were able to show the core banks. On average there were 4.18 before the economic crisis and 4.67 during the crisis.

Slide 9

Back to the main network – with the numbered banks. May not be very clear but should be able to pick out the 4 core banks.
Take core = (4, 6, 7, 11) and all others non-core.

Slide 10

- Borrowing and lending between core and non-core banks.
- Possible reasons for this. Why people are looking – effects on the economy. What I would like to consider in my project.