

# Activity Sheet 1

**Reporter :**

**Speaker :**

## Section 1.1

1. Consider the courses that each of the students in this class is taking. Assume that all these courses will have a final exam. We want to figure out how many different time slots we would need to use. Two courses *cannot* go in the same time slot if they are in the same department, or if a student is taking both of them.
  - a. Draw a graph whose vertices are to be the different courses, and where we draw an edge between two graphs if they *cannot* go in the same time slot because of the two reasons above.
  - b. Using the graph, determine what the smallest number of time slots we would need is, and justify your answer.

- c. Can we abstract away the key elements in this problem, so we can apply them to other settings? Can you express this problem purely in terms of graphs?

## Section 1.2

- 2. Describe at least three different proper subgraphs of the graph in question 1. At least one of these should be an *induced* subgraph, and at least one should not.
- 3. Is the graph we constructed in question 1 connected? Did it necessarily *have* to be connected? Explain.
- 4. What is the diameter of the graph in question 1?