

**Pre-Lesson Planning:**

Before planning your lesson, think about these questions, and write your answers in the boxes below.

**1.** Where is this course located within a specific program? (i.e. first year elective? 2<sup>nd</sup> semester of first year? Etc.)

This is a required course in the Liberal Arts Program and the General Arts Certificate Program.

**2.** What is the course outcome(s) that this lesson works/builds towards? \**Bloom's*

- 1) State all of the technical definitions covered in the course (such as a graph, tree, planar graph, colouring, digraph, and other terms).
- 2) Identify and solve graph theoretical problems based on principles of graph theory.
- 3) Apply graph theoretic models to solve real world problems (e.g., scheduling problems, delivering mail).

**3.** What are the objectives for this 1-hour lesson? (What will students be able to do by the end of this hour?) \**Bloom's*

- 1) State all of the technical definitions covered in the lesson (such as a graph, vertex, edge, degree, Eulerian graph, and other terms).
- 2) Apply graph theory based tools in solving practical problems.
- 3) Justify Eulerian graphs.

**4.** What week will this lesson occur during the semester?

First or second week

**5.** What was taught the week before?

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**6.** What will be taught next week?

Applications of Eulerian graphs in real world problems (e.g., delivering mail)

**7.** What accommodations / adaptations need to be considered/required in order to ensure an inclusive classroom? (i.e. captioning of videos, verbal and written instructions, extra handouts, slides posted in advance, UDL, etc.)

Captioning of videos, Clear verbal and written instructions, handouts, Large fonts in slides and handouts.

**8.** Back-up Plan – what will you do in case the photocopier is broken down? if the technology or internet isn't working? What if you have forgotten your USB key? Etc.

If the photocopier is broken down I will use board or I have a copy of materials on my email and can share with the class.

If the technology or Internet isn't working, I use boards in the class and use USB for needed files and videos.

I have handouts about the content, and if the technology or Internet didn't work, I will use them in the class.

**Stage 1: MOTIVATION** (Before teaching new content - prepares students for learning, activates prior knowledge, interest is created in the material, getting Ss engaged and ready for learning. For Ss, this stage answers the question: Why do I need/want to learn this???)

<b>Time</b>	<b>Objective(s)</b>	<b>What will the teacher do?</b>	<b>What will the students do?</b>	<b>Resources (handouts, weblinks, pwrpts, etc.)</b>	<b>Informal Assessment Feedback on learning</b>
10 min (2 min video, 5 min group work, 3 min brief discussion)	1) State all of the technical definitions covered in the lesson (such as a graph, vertex, edge, degree, Eulerian graph, and other terms). 2) Justify Eulerian graphs.	1) Plays a video including a question 2) Gives handouts to students for answering the question in video 3) Plays rest of video introducing the topic of course	1) Students make groups, each group contains 3 people 2) Students try to answer the question they watched in the video in the handouts	1) <a href="#">YouTube video</a> 2) Handouts	Students try to answer the question they watched in the video.

## Stage 2: COMPREHENSION (Content is taught using Active Learning strategies NOT traditional lecture)

Time	Objective(s)	What will the teacher do?	What will the students do?	Resources	Informal Assessment Feedback on learning
30 min	<p>1) State all of the technical definitions covered in the lesson (such as a graph, vertex, edge, degree, Eulerian graph, and other terms).</p> <p>2) Justify Eulerian graphs.</p>	<p>1) Teacher shows some slides about basic definitions in Graph Theory including: vertex, edge, degree, path, and route. Teachers asks some students to read the slides to provide a student-centred environment in the class, and then explains more about that.</p> <p>2) Teacher shows some quizzes on Nearpod about taught basic. Then, discusses with students about the answers.</p> <p>3) Teacher shows slides about main concepts (Eulerian graphs), states the relation with</p>	<p>1) Students answer the questions in Nearpod and discuss about the answers with the teacher.</p> <p>2) Some students reads the slides loudly for the class.</p>	Nearpod slides,	Teacher assesses students' learning by some quizzes provided on Nearpod.

		the video in motivation part.		
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**Stage 3: PRACTICE** (Learners DO SOMETHING with what they are learning)

Time	Objective(s)	What will the teacher do?	What will the students do?	Resources	Informal Assessment Feedback on learning
20 min	1) Justify Eulerian graphs.	1) Teacher divides students in group of 3 people. Gives each group one handout. 2) Teacher facilitates the students while they are working in the groups to solve the problems. 3) Teacher explains if students have questions about the problems.	1) Group discussion/Problem Solving 2) Students discuss and solve exercise in the handouts. 3) One volunteer from each group explains the group's final answer for other students.	Handouts, Nearpod slide	Students identify and explain the answers

**OPTIONAL**

**Stage 4: Application** (Students apply what they have learned to 'real-world' problems. This is where final evaluation takes place. Students demonstrate their competency, knowledge and skills. It answers the question: Have they achieved the course outcome?)

**1.** When will this evaluation take place? (Week #?)

Week 3, week 7, and week 14

**2.** How much is this evaluation worth? (Total marks out of 100)

Week 3 (5%), week 7 (30%), week 14 (40%)

**3.** What is the 'authentic assessment/evaluation' students will do in order to show what they know? (Revisit OBL Workshop #3 for some ideas.)

- 1) Students find some real world applications of Eulerian graphs and discuss about them online on the Blackboard. Next week in the class under supervision of teacher they apply the learned topics on the real world problems. (week 3)
- 2) Students' understanding will be checked by giving them writing assignment (formative assessment) to provide ongoing feedback that can be used by the teacher to improve her teaching and by students to improve their learning. (week 3)
- 3) Students' learning about the content will be evaluated at the end of week 7 by midterm exam (summative assessment) and at the end of week 14 by final exam (summative assessment).