Lesson Plan Template

Note: *the candidate must engage in lesson planning and reviews for teaching sessions during the academic year.* ***For the assessment****, each candidate provides* ***four*** *completed lesson plans and reviews for a module(s) that they teach (two in semester 1 and a further two in semester 2).* ***You are required to upload outputs from your four lesson plans on the Moodle/VLE CRN 51389.***

TEACHING SESSION PLAN	
Module: Engineering Mathematics	**Level / Stage (6,7,8) Level 7** **Year: 1**
Title of session/ topic: Vectors – an introduction **Length of session: 1 hour**	
Mark the type of session: **Lecture** ☒ **Tutorial** ☐ **Lab** ☐ **Studio** ☐ **Workshop** ☐	
Module Outcome (What module outcome(s) is the class/session aligned to)**:** LO 4: Represent vectors analytically and geometrically and use them in simple applications.	
Class/Session Outcomes: Upon completion of this session, you should be able to: (Share with students e.g. Write on board /slide/ project image at beginning of lecture for students) Define and understand magnitude and direction. Complete component form in two dimensions. Demonstrate addition and subtraction of vectors using both triangle and parallelogram laws.	

Select & Prioritise Your Content:

For the session, decide what material is used in class and what material the students should study independently and/or online. To do this, think about the material and its relative importance and prioritise and list in the appropriate quadrant.

	In Class or in a Live Online Class **(Support Learning)**	**Independent Learning** **(student completes on their own)**
Priority **(Need to know)**	1 Define and understand magnitude and direction. Know vector notation Understand addition and subtraction of vectors using both triangle and parallelogram laws	2 Watch the video on One Note
Supplementary **Learning (Nice to** **know)**	3 Application of this notation	4 Application of this notation in other modules

Material in quadrants <u>1 and 3 typically become the focus during classes</u>. Quadrants 2 and 4 represent material students could study themselves and use the VLE/Moodle and online learning objects to support this learning.

Think about how you might incorporate *Technology Enhanced Learning Tools and Blended Online/Digital Learning Objects,* that will develop students learning and engagement with the module.

Time/Lesson Stage	Teacher Activity	Student Activity	Resource Used
0-5 minutes/Stage 1	Welcome class, introduce vectors, gauge understanding	Type in teams chat box or discuss	Teams
5-15minutes	What is a vector? Graphing a vector using Triangle law and parallelogram law	Watch/listen	Teams and One Note
15- 25minutes	Monitor break out room	Activity: Break out rooms – finish graphing activity	Teams/One Note
25 - 30	Correct answers	Self-correction	Teams /One Note
30 -40 mins	Working with coordinate vectors	Watch/Listen/Discuss	Teams/One Note
40- 45 mins	Adding, subtracting and scalar multiplication	Watch/Listen	Teams/One Note
45 - 50 mins	Exercise	Complete exercise	Teams/OneNote

Teacher Reflection:

What worked well?

I believe the in-class demos using One Note via Teams worked well. I think the use of colour and the interactive ruler on One Note made the graphing of vectors accessible and interesting. From Paula's observation, I think it's good to see that the rapport and familiarity I have with the students is working well and something I am proud of in my teaching as it encourages engagement and a fun learning environment for a subject that is stereotypically boring/difficult to understand.

What did not work well?

The break out rooms worked fine but I think if I had to give the class again I would allocate more time for the breakout session and group work on vectors. I feel the students felt a bit rushed. Paula commented on my good time keeping, in that nothing felt too rushed but I think that a bit more independent learning in the break out rooms would have benefitted the students better. I put this down to being nervous having someone watching me!

To what extent did you address different domains of learning?

<u>Domain 1 The Self:</u> I addressed my professional and personal values by reflecting after this class. Prior to the class, I looked back on the previous time I gave this lecture in order to make adjustments and improve.

<u>Domain 2 Professional Identity, Values and Development in Teaching and Learning:</u> As part of the T&L Certificate I am much more involved in critical reflection, recognising that that my identity has shifted

this year from a more research and engineering focus to a more educational focus. I also feel the shift to online learning has encourage more reflection in to how I put a class together and to increase engagement.

Domain 3 Professional Communication and Dialogue: I feel that I used excellent, clear and coherent communication skills during the class. I gave clear oral and visual examples of vectors and used colour, graphing and the interactive ruler to creative an active learning environment. This was evident as the group completed the Breakout session correctly and achieved the correct answers. The feedback from Paula highlights my encouragement of feedback from students which is highly important to me.

Domain 4 Professional Knowledge and Skills: I remained current in terms of their professional/disciplinary knowledge by discussing other subjects including engineering science that would require sufficient knowledge of vectors and also where it might feature in the workplace. I am dealing with apprentices in this class, which means their goals and aspirations for learning can be different to a typical first year undergrad. I often ask students whether they liked/disliked a task just to understand how different learners feel about the course.

Domain 5 Personal and Professional Digital Capacity: this module is taught completely online so it is important to recognise the potential of technology for learning impact. Using the interactive ruler feature on One Note increased understanding of the task and the Breakout rooms harnessed the importance of group work in mathematical understanding.

What would I do differently next time?

I think next time I will do one less demonstration example and dedicate that time to the group learning activity. Having a double lecture can allow for more independent and group learning activities so I will take advantage of that next time.