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| Hibernia College Planning Form |
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**Session Planning Form**

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| Tutor name: | Kevin O’Brien | | | |
| Delivery date: |  | | | |
| Module title:   |  | | --- | |  | | Mathematics for Computing | | | |
| Session title: | Logic | | **Session no.** | 3 |
| Prepare | | | | |
| Session study content: | Chapter 3 of study guide | | | |
| Essential readings: | This exercise requires a full understanding of material covered in “Logic” (Chapter 3 of Book 1) | | | |
| Study aims and learning outcomes: | The quiz/knowledge check questions should focus on determining how well the students succeeded in achieving the study aims and learning outcomes. | | | |
| In this part of the session, students will study the relevant chapter(s) in the University of London study guide and read the essential readings for the chapter(s). When they have completed this, they will complete the end-of-session quiz to see how well they know the session content.  If there are any further readings, resources or web sites that you feel would be useful to students for studying this session, please add them in the next row. | | | | |
| Additional resources | None | None | | |
| Test yourself | Provide multiple-choice questions that test students on the core session content.  Fill in the quiz template at the end of this document with questions and constructive feedback. | | | |
| Evaluate | | | | |
| In this part of the session, students will engage with tasks and activities that will enable them to evaluate and analyse the session content they have studied.  When developing tasks and activities, think about how you intend for the student to achieve each one – this may be through discussing concepts on a forum, contributing to a wiki , conducting some online research, analysing a case study, studying a video, etc.  Discuss your ideas with the Knowledge Officer who will know the full range of options available and advise on which is most appropriate.  Note: You do not need to provide a task for each of the headings below. The task that you provide will depend on the session content and the workload for the student in that session. Select the most appropriate task(s) based on the session content. | | | | |
| Discuss | ~~Provide a question based on the session content that will generate a discussion on the tutor-moderated forum.~~ | | | |
| Solve | Design a problem-solving exercise or worksheet based on the session content that the students will complete. | | | |
| Research | ~~Ask the student to conduct online research into important areas of the session content such as useful examples or further explanation of the content. The findings could then be shared on a forum/wiki/blog.~~ | | | |
| Assess | | | | |
| Note: The activities in this part of the session will be linked to the synchronous online tutorial and the onsite days. The activities for each session will depend on the scheduling of the tutorials and onsites in the module calendar. These activities will be completed over a number of sessions.  Ideally, the activities in this part of the session should link together and be developed over a number of sessions. | | | | |
| Submit | Prepare an activity/task (for example, answering exam questions) for the students and ask them to submit their responses to the tutor prior to an online tutorial or onsite – this submission could then form the basis of the tutorial/onsite discussion.  The activity/task should be based on the content that they have covered in the sessions prior to the online tutorial or onsite. | | | |
| ***Students attempt some past paper questions and revision questions from the study guide*** | | | |
| Apply your knowledge | In the online tutorial and onsite day, build on the activity/task that students have prepared and submitted. Students could work together in groups to discuss and solve a problem.  A selection of students should be asked to present their submission in each online tutorial or onsite. This would be a different group of students for each tutorials and onsite so every student gets an opportunity to present. | | | |
| ***Students discuss solutions for worksheets of questions covering material in Session 3*** | | | |

## Quiz template

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| --- | --- | --- | --- | --- |
| Session title: | Logic | | Session no. | 3 |
| Test yourself:  Each session should have a minimum of 20 questions in total.  What content is tested will depend on the chapter(s) content – some parts may require more questions than others to test the student.  These questions will be used to test students' knowledge and help them to recall the academic content of the chapter(s).  Constructive feedback should be provided for each question to reinforce the learning for the session. | | | | |
| Q 1: Is the following statement a proposition?  *"The traffic is moving slowly".*   * Yes * No | | Q 2: Is the following statement a proposition?  ***"Japan is in Asia"***   * Yes * No | | |
| Feedback: No, it is a subjective comment | | Feedback: Yes, it is a proposition | | |
| Q 3: Is the following statement a tautology or a contradiction?  *"15 is a prime number"*   * Tautology * Contradiction | | Q 4: Is the following statement a tautology or a contradiction?  ***"14 is less than 17"***     * Tautology * Contradiction | | |
| Feedback: It is a contradiction. | | Feedback: It is a tautology | | |
| Q 5: Is the following statement true or false  *“The negation of a contradiction is necessarily a tautology?”*   * True * False | | Q 6: Which logical operation does the following truth table describe?   |  |  |  | | --- | --- | --- | | p | q | ? | | 1 | **1** | **0** | | 1 | **0** | **1** | | 0 | **1** | **1** | | 0 | **0** | **0** |  1. pq 2. pq 3. pq 4. ¬(p q) | | |
| Feedback: The correct answer is TRUE | | Feedback: The correct answer is b : pq | | |
| Q 7: Which logical operation does the following truth table describe?   |  |  |  | | --- | --- | --- | | p | q | ? | | 1 | **1** | **1** | | 1 | **0** | **0** | | 0 | **1** | **0** | | 0 | **0** | **1** |  1. pq 2. pq 3. p↔ q 4. p q | | Q 8: Complete the following truth table   |  |  |  |  | | --- | --- | --- | --- | | p | q | ¬p | ¬p q | | 1 | **1** | **0** |  | | 1 | **0** | **0** |  | | 0 | **1** | **1** |  | | 0 | **0** | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | A   |  | | --- | | ¬p q | | 1 | | 1 | | 0 | | 0 | | B   |  | | --- | | ¬p q | | 0 | | 1 | | 0 | | 0 | | C   |  | | --- | | ¬p q | | 0 | | 0 | | 1 | | 0 | | D   |  | | --- | | ¬p q | | 1 | | 0 | | 1 | | 1 | | | | |
| Feedback: The correct answer is c : p↔ q | | Feedback: The correct answer is c. | | |
| Q 9: Complete the following truth table:   |  |  |  |  | | --- | --- | --- | --- | | p | q | ¬q | p ¬q | | 1 | **1** | **0** |  | | 1 | **0** | **1** |  | | 0 | **1** | **0** |  | | 0 | **0** | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | A   |  | | --- | | p ¬q | | 0 | | 1 | | 0 | | 0 | | B   |  | | --- | | p ¬q | | 1 | | 1 | | 0 | | 1 | | C   |  | | --- | | p ¬q | | 1 | | 0 | | 1 | | 0 | | D   |  | | --- | | p ¬q | | 0 | | 0 | | 1 | | 1 | | | | Q 10: Complete the following truth table:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | p | q | ¬p | ¬q | ¬p ¬q | | 1 | **1** | **0** | **0** |  | | 1 | **0** | **0** | **1** |  | | 0 | **1** | **1** | **0** |  | | 0 | **0** | **1** | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | A   |  | | --- | | ¬p ¬q | | 0 | | 1 | | 1 | | 1 | | B   |  | | --- | | ¬p ¬q | | 1 | | 1 | | 0 | | 1 | | C   |  | | --- | | ¬p ¬q | | 1 | | 0 | | 1 | | 0 | | D   |  | | --- | | ¬p ¬q | | 0 | | 0 | | 1 | | 1 | | | | |
| Feedback: The correct answer is b. | | Feedback: The correct answer is a. | | |
| Q 11: Complete the following truth table:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | p | q | ¬p | ¬q | ¬(p ¬q) | | 1 | **1** | **0** | **0** |  | | 1 | **0** | **0** | **1** |  | | 0 | **1** | **1** | **0** |  | | 0 | **0** | **1** | **1** |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | A   |  | | --- | | ¬(p ¬q) | | 1 | | 0 | | 0 | | 1 | | B   |  | | --- | | ¬(p ¬q) | | 1 | | 0 | | 1 | | 1 | | | C   |  | | --- | | ¬(p ¬q) | | 1 | | 1 | | 0 | | 0 | | D   |  | | --- | | ¬(p ¬q) | | 0 | | 1 | | 0 | | 0 | | | | Q 12: Which of the following expressions is equivalent to the expression p↔ q?   1. **(pq)(qp)** 2. **(¬pq)(¬qp)** 3. **(p¬q) (¬qp)** 4. **(pq)(qp)** | | |
| Feedback: The correct answer is b | | Feedback: The correct answer is a. The expression p↔ q is the same as (pq)(qp) | | |
| Q 13: Which of the following expressions is equivalent to the expression p→ q?   1. ¬p q 2. ¬pq 3. p ¬q 4. p ¬q | | Q 14: Which of the following expressions is equivalent to the expression q T?   1. **q** 2. **T** 3. ***F*** 4. ***¬p*** | | |
| Feedback: The correct answer is b. The expression p→ q is the same as ¬pq. | | Feedback: The correct answer is b. It is equivalent to the logical TRUE condition.  . | | |
| Q 15: Which of the following expressions is equivalent to the expression p F?   1. ¬p 2. q 3. T 4. F | | Q 1**7**:Which of the following expressions is equivalent to the expression?  ***(p T ) ( q F)***   1. ***p*** 2. ***T*** 3. ***F*** 4. ***¬q*** | | |
| Feedback: The correct answer is d. It is equivalent to the logical FALSE condition. | | The correct answer is a. It is equivalent to the logical TRUE condition.  ( p T ) = p, ( q F) = F, ( p F ) = p | | |
| Q 17: Which of the following expressions is equivalent to the expression?  *(p T ) ( q F)*   1. *q* 2. *T* 3. *F* 4. *¬p* | | Q 18: What type of gate does the following symbol represent?     1. **AND c) XOR** 2. **NOT d) OR** | | |
| The correct answer is b. It is equivalent to the logical TRUE condition.  ( p T ) = T, ( q F) = q, ( T q ) = T | | Feedback: The correct answer is a. This is an AND gate. | | |
| Q 19: What type of gate does the following symbol represent?     1. AND c) XOR 2. NOT d) OR | | Q 20: What type of gate does the following symbol represent?     1. **OR c) OR** 2. **NOT d) XOR** | | |
| Feedback: The correct answer is d. This is an OR gate. | | Feedback: The correct answer is b. This is an NOT gate | | |