

**Unit Outline – Semester 2 2014**

**Unit:** 10810 Probability and Statistics T (1.0)

**Course:** 1077 SPECIALIST MATHEMATICS

**Teacher/s:** Steve WALKER

**Specific Unit Goals**

* formalise intuitive work on probability studied in previous years
* manipulate and apply various probability and counting concepts
* draw connections between various branches of mathematics from both an algebraic and a

combinatoric perspective

* describe, summarise and compare data
* perform statistical calculations and construct statistical graphs using technology
* interpret and comment meaningfully on contextual data sets

**Content**

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| Content |  |
| Random experiments; event spaces and events; probability as long-run proportion; simulation – coins, dice, random number generators; probability of simple and compound events; the addition rule conditional probability; independent and mutually exclusive events – the multiplication rule for independent events; counting: addition and multiplication rules for counting, factorials, combinations and permutations, nPr, nCr notations, Pascal’s Triangle; applications of counting techniques to probability; law of total probability | Weeks 1 - 7 |
| Revision and test | Week 8 |
| Identification of types of variables – discrete/continuous, nominal/ordinal, categorical; practical aspects of data collection; graphical and tabular displays of data; summary statistics; random variables: discrete and continuous, probability distribution of discrete and continuous variables, expected value, variance and standard deviation, mode, median; Binomial, Poisson as examples of discrete binomial variables; Normal, Uniform, Exponential as examples of continuous variables; probabilities for specific values and intervals of a variable; confidence intervals for distribution parameters | Week 9 -15 |
| Revision &Test  | 16  |

**Assessment Matters**

Information about moderation procedures, calculation of unit scores and course scores, attendance requirements, penalties for late or non-submission of work or for plagiarism, and procedures for appealing against a grade or score may be found on the Hawker College website at <http://www.hawkerc.act.edu.au/__data/assets/pdf_file/0010/158059/hc_assessment_matters2009.pdf>,

or in the handout “Assessment Matters” (additional copies available from the Den).

**Assessment Items**

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| **Assessment Item** | **Due Date Range**  | **Weighting %** |
| Assignment 1 | 25/08/2014 | 29/08/2014 | 25% |
| Test 1 | 08/09/2014 | 11/09/2014 | 25% |
| Investigations | 21/07/2014 | 14/11/2014 | 25% |
| Test 2 | 17/11/2014 | 21/11/2014 | 25% |

**Completion of Assessment Items**

Students are required to substantially complete and submit all assessment items that contribute to the assessment for a unit unless due cause and adequate documentary evidence is provided.

Exemption from an item and/or alternative assessment without penalty is available to students providing adequate documentary evidence.

Unless prior approval is granted, any student who fails to submit assessment tasks worth in total 70% or more of the assessment for the unit will be deemed to have voided the unit.

**Attendance/Participation**

It is expected that students will attend and participate in all scheduled classes/contact time/structured learning activities for the units in which they are enrolled, unless there is due cause and adequate documentary evidence is provided. Any student whose attendance falls below 90% of the scheduled classes/contact time or 90% participation in structured learning activities in a unit, without having due cause with adequate documentary evidence will be deemed to have voided the unit.

**Grade Descriptors**

Technology, its selection and appropriate use, is an integral part of all the following descriptors.

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|  | **Knowledge** | **Application** | **Reasoning** | **Communication** |
| A student who achieves the grade **A** | Demonstrates very high level of proficiency in the use of facts, techniques and formulae. | Selects, extends and applies appropriate modelling and problem solving techniques. | Uses mathematical reasoning to develop logical arguments in support of conclusions, results and/or decisions; justifies procedures. | Is consistently accurate and appropriate in presentation of mathematical ideas in different contexts. |
| A student who achieves the grade **B** | Demonstrates high level of proficiency in the use of facts, techniques and formulae. | Selects and applies appropriate modelling and problem solving techniques. | Uses mathematical reasoning to develop logical arguments in support of conclusions, results and/or decisions. | Is generally accurate and appropriate in presentation of mathematical ideas in different contexts. |
| A student who achieves the grade **C** | Demonstrates some proficiency in the use of facts, techniques and formulae studied. | With direction, applies a model. Solves most problems. | Uses some mathematical reasoning to develop logical arguments. | Presents mathematical ideas in different contexts. |
| A student who achieves the grade **D** | Demonstrates limited use of the facts, techniques and formulae studied. | Solves some problems independently. | Uses some mathematical reasoning to develop simple logical arguments. | Presents some mathematical ideas. |
| A student who achieves the grade **E** | Demonstrates very limited use of the facts, techniques and formulae studied. | Solves some problems with guidance. | Uses limited reasoning to justify conclusions. | Presents some mathematical ideas with guidance. |