
This summary answers most common questions about STAT1520. **Read it all now, and keep it so that you can refer to it later in the semester.** You should also regularly check online for the latest notices. Please ask at Mathematics Enquiries, or see your lecturer or tutor, if you have any further queries.

**WARNING:** Students are expected to attend all classes and assessments for this unit. Any student whose Tutorial attendance and semester assessments are not satisfactory (that is, below 30% for assessments and 70% for Tutorial attendance) may be reported to the Sub Dean, and may be excluded from any favourable scaling in this unit.

1. **Lecturer in Charge:**
   
   Dr Gopalan Nair,  
   Room 2.07, Mathematics and Statistics Building.  
   **Phone:** 6488 3377, **Email:** Within WebCT for the unit.  
   **Consultation Time:** Mondays 9.00am-10.50am. **[email or phone for appointments outside these hours]** Happy to take questions after any of the lectures.

2. **Lecture/Tutorial/Lab Timetable:**

   Please check your timetable.

3. **WebCT:** All the lecture material will be posted online in WebCT, and one needs to login to WebCT to access the material. Students are encouraged to use ”Discussion” facility in WebCT to post questions related to the unit. Also use the ”email” facility in the WebCT to ask any questions directly to the lecturer or to make appointments with the lecturer.

4. **Expected Outcomes:**

   At the end of this unit the student should be able to:

   - Demonstrate understanding of the concepts and methods used in analysis of business data;
   - Apply these methods to a given data set;
   - Interpret and report the results of analysing a data set, incorporating outputs from Excel.

   The above generic skills will be tested in all assessments in this unit.
5. **Undergraduate Information:**


6. **Prerequisites:**

The standard prerequisite for STAT1520 is a pass in either TEE Applicable Mathematics, or TEE Calculus, or ECON1111 Quantitative Methods for Business and Economics (or equivalent). As a consequence, we assume some competence in numerical calculations and manipulating algebraic expressions, as well as some familiarity with the basics of probability. If you are lacking in these areas, you must take responsibility yourself for catching up. **If you do not have the prerequisites please see the lecturer immediately.**

7. **Textbook:**

Black, Asafu-Adjaye, Khan, Perera, Edwards, Harris, *Australasian Business Statistics*, (2007) John Wiley. I recommend you have ready access to a copy, as I am going to use it throughout this unit. The book comes with a comprehensive online programme that you will have access to via WebCT. Some copies of the book are on closed reserve in the Business Library.

8. **Lectures (4 each week):**

The lecturer will indicate what is required to complete the unit successfully and emphasise key concepts, together with additional examples, background and motivation, while sharing his experience and expertise in the subject area. Announcements about the unit are also made in lectures.

Attendance at lectures is considered compulsory, though recordings of the lectures will be available on lectopia (accessible via the WebCT page for the unit). The main purpose of these recordings is for student revision and the **OCCASIONAL** time when lecture attendance is impossible. Everything that is done in lectures will not be captured by lectopia, eg. practical demonstrations, and this is one reason why lectopia recordings should not be relied on in place of lectures. Also, due to technical reasons recording may not occur for some lectures. **Statistics is a subject that continually builds upon itself and if you miss a lecture, you should watch the recording (or go through lecture slides and the text book, if there is no recording) before you attend the next lecture or you may not understand the new content.**

9. **Tutorials (1 hour each week, beginning in Week 2):**

You will benefit **most** from tutorials if you attempt the tutorial questions beforehand, and are prepared to enter into discussion with the class and tutor. You will benefit **least** if you come along unprepared, “waiting for something to happen”. Remember that at the tertiary level, **you are responsible for your own learning**, although the tutor will readily give you guidance. Do not hesitate to approach the tutor or the lecturer to discuss your progress or special difficulties.

Each week you will be given a Tutorial Sheet [Students need to downloaded from WebCT and take to the tutorial]. Each Tutorial Sheet has four sections:

**A. Assignment Cover Sheet:** This is the cover page for the assignment. Any assignment submitted without duly filled up cover page will be awarded zero mark. It asks about key concepts covered in the lecture. Theses concepts are used in solving the questions in the tutorial sheet. Before attempting the questions in the Sections B-D
of the tutorial sheet go through the lecture notes and the Text book to answer the questions in the cover page.

B. **Tutorial Questions:** Students must try these questions before attending the tutorial. Tutor will discuss solutions to these questions in the tutorial. Do not submit the solutions to these questions for assessment.

C. **Assignment Questions (Tutorial Sheets 1-9):** These are the questions for assessment. These questions are similar to the questions in Section B. Submit solutions to these questions by **11.00 am, Monday** following the tutorial. Also, **attach your completed lab sheet** for the week to your solutions. Make sure you attach a duly filled and signed cover sheet (Section A) to your solutions, and place it in your Tutor’s assignment box, situated in the Mathematics Computer Lab, by the deadline. **Late submissions will receive a mark of zero,** unless the student is granted special consideration by the Sub Dean of Business School. Solutions to these questions will not be discussed in the tutorial. Only Tutorial sheets 1-9 solutions need to submitted for assessment.

D. **Practice Questions:** These are additional questions for students to solve. Students may seek help from Lectures/tutors or from the Mathematics Learning Centre to solve these questions. Do not submit the solutions to these questions for assessment. Solutions to these questions will not be discussed in the tutorial.

Solutions to the tutorial sheet questions will be posted in WebCT.

Submitted assignments (9 in total) will be marked by your tutor and returned to you in the Tutorial, and will contribute a mark of 9% towards your final mark in this unit. In this way both you and I will get immediate and continuous feedback on your progress. There will also be a marks for every Tutorial that you attend.

You **must** be allocated to a tutorial to ensure your assessments are marked. **If you do not have a tutorial allocation your assessments will not be marked and you will receive a mark of zero for them.**

10. **Computer Lab sessions (1 hour each week, beginning in Week 2):**

You **must** be allocated to a Computer Lab session to ensure that you are guaranteed access to a computer, in particular for the tests. Three tests will be conducted during the Computer lab session. In each laboratory class, except when the tests are conducted, you will complete work that is set out in a laboratory sheet [students are required to download lab sheet from WebCT and take to the lab], and submit the completed laboratory sheet with your solutions to weekly tutorial assignment questions.

During Week 1, you are required to visit the Mathematics Computing Lab (MCL) and read the **Conditions of Use** for the MCL. You must abide by the Conditions of Use at all times in the MCL. If you have not used Excel before, use Week 1 to work through an Excel Tutorial (there are several good ones available on the web).

As a STAT1520 student, you are also entitled to use the MCL **for extra STAT1520 work only** at times when the computers are not reserved for other users.

11. **Excel:**

Training in the use of a statistical package is now an **essential aspect of all statistics courses.** In STAT1520 we use **Microsoft Excel 2007** for this purpose. It is easy to use and already partly familiar to many students. In the weekly computer labs, you will be introduced to the statistical commands in Excel, and will use Excel for illustration of statistical concepts and data analysis. **If you have no experience with Excel,**
work through an online Excel Tutorial before your first Computer Lab in Week 2. An introduction to Excel will be given in the first few lectures.

Your knowledge of Excel will be assessed directly in the each Short Test (see item 15) and the Project, and the Final Exam will contain questions incorporating Excel output.

12. Calculators:

Calculators are useful in this unit for work during the semester. Very simple calculators, capable of the basic arithmetic operations, are quite sufficient – you do not need special statistical or other functions. You are advised:

(a) not to become too dependent on calculators for doing simple arithmetic;
(b) always to perform some quick check to satisfy yourself that the answer provided by your calculator is believable;
(c) programmable calculators will not be allowed during exam and tests. Present your calculator at the Mathematics Reception to obtain an “approved calculator” sticker. Only calculators with an "approved calculator" sticker will be permitted in short tests and the Exam.

13. Project:

As part of your assessment (see item 15), there will be one Project during the semester, worth 10% of your total assessment. This will be a group project, with a maximum of 4 students in a group. Tutors will be forming Project groups within a tutorial group. Every project group will submit their work need to will be in the form of a report involving data analysis using techniques covered in this unit. Project report is due at 1.00pm Thursday 14 May. Details on the project, including data and questions, will be made available in WebCT three weeks before the due date.

14. Short Tests:

There will be three computer based Short Tests during the semester. The first two tests will be online tests. The third test is a written test on the uses of Excel for statistical analysis. All three tests are conducted the computer lab during your lab sessions.

15. Assessment:

Your final mark in STAT1520 will be made up as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 Tutorial/lab assignments</td>
<td>9%</td>
</tr>
<tr>
<td>Tutorial Attendance</td>
<td>10%</td>
</tr>
<tr>
<td>1 Group Project</td>
<td>10%</td>
</tr>
<tr>
<td>2 Online Tests @ 5% each</td>
<td>10%</td>
</tr>
<tr>
<td>1 Written Excel based Test</td>
<td>10%</td>
</tr>
<tr>
<td>Final Exam (3 hours) in June exam period</td>
<td>51%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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Assessments that are submitted late will be awarded a mark of zero, & students who do sit for a test during the specified lab times will also be awarded a mark of zero for the test, unless a special consideration is awarded by the Business School. You may put an application to sub-dean of Business School for special consideration. The university policy on special consideration requires that applications for consideration, deferral of
tests or exams or extensions of time for assignments on medical, personal or other grounds must be lodged with the faculty office no later than three working days after the due date for the assessment in question.

16. Miscellaneous:

Course Material: All relevant course material will be available in WebCT (online) only. This includes Tutorial Sheets, Laboratory Sheets, Lecture examples, and some Lecture notes. None of the course material, except the Unit Outline, will be printed out and distributed to the class. It is your responsibility to print off Lecture notes and examples BEFORE the lecture so that you can follow lectures more easily.

Statistical tables: The SEA Tables Book is needed for the later parts of this unit. The textbook (Appendix A) does have all the required statistical tables and they can also be obtained using Excel. Table books will be provided in the final exam if needed.

Mathematics Learning Centre (MLC): The School of Mathematics and Statistics runs a ”drop in centre” for first year students in any of our courses. The MLC is staffed by (mainly) honours/postgraduate students and they will answer any questions you may have (though they will not do your assignments for you). It is located in the Maths Meeting Room (G.03) and is open M-Th 2pm - 5pm and F 9am - 12pm.

17. University and Faculty Policies: It is your responsibility to be familiar with ALL University and Faculty policies that apply to you as a student. In particular note the following:

- University’s Guidelines on Academic Misconduct
- Faculty policy on Assessment Practices (including scaling policy)
  http://www.ecm.uwa.edu.au/for/students/assess
- Faculty policy on Appeals and Supplementary exams
  http://www.business.uwa.edu.au/studentnet/assessments

In particular note that supplementary exams will not be granted in this unit except if this is the last unit for the degree taken in the last semester of study and the student has achieved a mark between 45-49.

- Charter of Student Rights and Responsibilities
  http://www.secretariat.uwa.edu.au/home/policies/charter
- Business IRIS (Introductory Research and Information Skills)
  From Semester 1, 2009 all commencing undergraduate students are required to complete Business IRIS within the first 10 weeks of semester. (Postgraduate students will normally complete Business IRIS as part of their Orientation program.) Business IRIS is an online, self paced unit that provides an introduction to the skills needed to find and use information effectively and efficiently when studying in Business. Topics covered include how to locate and use library resources, the search process and search strategies, how and why to reference work, and evaluating online sources. Business IRIS is a WebCT unit containing 8 modules, the final one being a self-test module. It is recommended that you work through the modules in the order they are presented and finish with the Test Yourself quiz and survey. Multiple attempts at the quiz are allowed. Completion of the unit will be recorded as an Ungraded Pass (UP) or Ungraded Fail (UF) on your academic record.
• **Academic Conduct Essentials (ACE)**

All newly enrolled students are required to complete a short compulsory online unit called Academic Conduct Essentials (ACE) within the first 10 weeks of semester. ACE introduces students to essential knowledge regarding ethical scholarship, it helps prepare them for the expectations they will need to meet during their university career and it informs them of correct academic conduct. ACE can be accessed via WebCT (http://webct6.uwa.edu.au). In order to pass the unit, the unit quiz must be completed with a mark of 80.

Dr Gopalan Nair  
STAT1520 Co-ordinator  
February 2009

**PROPOSED LECTURE AND ASSESSMENT SCHEDULE:**
(treat as a very rough guide for lecture content)

<table>
<thead>
<tr>
<th>Monday</th>
<th>Week</th>
<th>Topics (with references to Black where available)</th>
<th>Important dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 February</td>
<td>1</td>
<td><strong>0. Introduction</strong> (Ch 1). <strong>Introduction to Excel</strong> 1. <strong>Exploratory Data Analysis</strong> (Ch 2, 3). Graphical representations of data (2.2) — histograms.</td>
<td>Introduction to MCL and Excel, in your own time. No tutorials.</td>
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<tr>
<td>2 March</td>
<td>2</td>
<td>Pie charts, bar charts, Pareto charts. Descriptive statistics (3.1, 3.2)— summation notation, mean, median, variance, quartiles. Linear transformation of data, Standardised scores. <strong>2. Probability</strong> (Ch 4). Random experiments, sample space, events, assigning probabilities to events, axioms of probability, probability rules.</td>
<td>Tutorials and Computer labs begin.</td>
</tr>
<tr>
<td>9 March</td>
<td>3</td>
<td>Conditional probability, independent events. <strong>3. Random Variables</strong> (5.1–5.3). Discrete random variables, probability mass function, cumulative distribution function. Mean or expectation, variance. The Binomial distribution (5.3), expectation and variance of a binomial random variable.</td>
<td>Tut Sheet 1 and Lab Sheet 1 assignment due at 11.00 am on Monday</td>
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<tr>
<td>16 March</td>
<td>4</td>
<td>Joint probability distributions, independent random variables, covariance. Expectation and variance of a sum of random variables. Continuous random variables (6.1).</td>
<td>Test 1 this week in your usual lab session. Tut Sheet 2 and Lab Sheet 2 assignment due at 11.00 am on Monday</td>
</tr>
<tr>
<td>23 March</td>
<td>5</td>
<td><strong>4. The Normal distribution</strong> (6.2). Sum of Normal random variables. Normal approximation to Binomial distribution (6.3). <strong>5. Sampling distributions and the Central Limit Theorem</strong> (Ch 7 (p242 onward). Introduction. Normal population with (a) σ known, (b) σ unknown, t-distribution.</td>
<td>Tut Sheet 3 assignment due at 11.00 am on Monday</td>
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<tr>
<td>Monday</td>
<td>Week</td>
<td>Topics (with references to Black where available)</td>
<td>Important dates</td>
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<td>30 March</td>
<td>6</td>
<td>5. <strong>Sampling distributions and the Central Limit Theorem (ctd.)</strong> (c) Large sample case — CLT. 6. <strong>Estimation</strong> (8.1 – 8.2). Confidence interval for population mean. Confidence intervals for population proportion (8.3).</td>
<td><strong>Tut Sheet 4 and Lab Sheet 3 assignment due at 11.00 am on Monday</strong></td>
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<tr>
<td>6 April</td>
<td>7</td>
<td>7. <strong>Hypothesis Testing.</strong> Basic ideas (9.1), hypothesis test for population mean (9.2, 9.3). Type I and Type II errors (9.1, p310). One-tail and two-tail tests. Hypothesis test for population proportion ( p ) (9.4).</td>
<td><strong>Tut Sheet 5 and Lab Sheet 4 assignment due at 11.00 am on Monday</strong></td>
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<tr>
<td>13 April</td>
<td></td>
<td><strong>NON-TEACHING STUDY BREAK.</strong> (This is a good time to catch up or to start doing some revision.)</td>
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<tr>
<td>20 April</td>
<td>8</td>
<td>Revision of Hypothesis Testing. 8. <strong>Simple linear regression</strong> (Ch 13). Introduction (13.1), Least squares method for the line of best fit (13.2), partitioning the sum of squares, explained and unexplained variation, hypothesis test for the regression slope ( \beta_1 ) (13.6). Estimating standard error of regression coefficients (13.4), Confidence intervals for the regression slope.</td>
<td><strong>Test 2 this week in your usual lab session, Tut Sheet 6 and Lab Sheet 5 assignment due at 11.00 am on Monday</strong></td>
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<tr>
<td>27 April</td>
<td>8</td>
<td>8. <strong>Regression:</strong> Checking the model assumptions (13.3). Prediction (13.7). 9 <strong>Two Sample Tests</strong> (10.1), Paired samples (10.3). Independent samples (10.4, 10.5).</td>
<td><strong>Tut Sheet 7 assignment due at 11.00 am on Monday</strong></td>
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<td>4 May</td>
<td>10</td>
<td>10. <strong>Analysis of Variance</strong> (ANOVA) (11.1, 11.2). ANOVA table. Multiple Comparison Tests (11.3).</td>
<td><strong>Tut Sheet 8 and Lab Sheet 6 assignment due at 11.00 am on Monday</strong></td>
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<tr>
<td>11 May</td>
<td>11</td>
<td>10. <strong>Anova (ctd.)</strong> Checking the assumptions of the ANOVA model. 11. ( \chi^2 ) tests. Goodness-of-fit tests (Ch 12). Fitting ( \text{Bin}(n,p) ) with ( p ) known and unknown (12.1).</td>
<td><strong>Tut Sheet 9 and Lab Sheet 7 assignment due at 11.00 am on Monday. Project Report due 1:00 pm Thursday 14 May.</strong></td>
</tr>
<tr>
<td>18 May</td>
<td>11</td>
<td>( \chi^2 ) test of independence (contingency tables) (12.2).</td>
<td><strong>Test 3 this week in your usual lab session.</strong></td>
</tr>
<tr>
<td>25 May</td>
<td>13</td>
<td>12 <strong>Multiple Linear Regression</strong> 141-14.4; 13. <strong>Ethics in Statistics</strong>; Revision for final exam.</td>
<td>No assignment to submit!</td>
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</tbody>
</table>