

THE UNIVERSITY OF THE WEST INDIES, MONA CAMPUS
ECON2008: STATISTICAL METHODS I

Course Outline

Semester 1, 2020/2021

3 credit hours

Lecturer: Dr Kelly-Ann Dixon Hamil
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Office: 1st Floor, Social Science Block, Room 15
Office Hours: Tuesdays 4pm-5pm & Wednesdays 11am-12noon (or by appointment)

Course Website: The course site on OurVLE (<https://ourvle.mona.edu/>)
Tutors: TBA

ALL STUDENTS ARE REQUIRED TO READ THIS DOCUMENT IN FULL
(Ignorance of course structure and/or policy will not be excused)

Course Requisites

Prerequisites: It is assumed that students have mastered the requisite skills covered in the following:

- ECON1005 (Introductory Statistics) AND
- ECON1004 (Mathematics for Social Sciences II) OR MATH1142 (Calculus I)

Anti-requisites: Students may not take this course and any of the following courses and get credit for both:

- SOCI2008 (Statistics for the Behavioural Sciences)
- STAT2001 (Inferential Statistics)

Course Description

Probability and statistical inference are key tools in the development of economic and business models. This course, while building on the techniques learnt in introductory statistics courses, adds to the student's statistical toolbox through exposure to key probability distributions and inferential methods for different types of data.

Mode of Delivery

ECON2008 is delivered as a flipped course. This means that students will be required to:

- Watch pre-recorded lecture videos prior to lecture sessions
- Attend two lecture hours per week where questions related to the concepts taught in the videos are used to concretize statistical ideas
- One tutorial hour per week where students will share answers from given problems sets

Required Texts & Materials

This course will make extensive use of OurVLE. All course materials (skeleton lecture notes, problem sets and announcements) will be posted on the course site on OurVLE. All communication about this course will be made through the OurVLE course site and/or your official email provided to you by the University. Communication from non-UWI email addresses will be ignored. Students must therefore be able to access the course site and their UWI email frequently.

Required Text: Newbold, P., Carlson W. L., Thorne, B. M. (2013) *Statistics for Business and Economics*. Pearson Education.

Supplemental Texts: McClave, J. T., Benson, P. G., & Sincich, T. (2018). *Statistics for Business and Economics*. Pearson.

Required Materials: Blank Notes (on OurVLE), Scientific Calculator

Learning Outcomes

At the end of this course, students should be able to:

1. Describe a given dataset (numerically and graphically)
2. Identify different types of probability distributions
3. Use statistical methods to analyse data for one and two sample populations
4. Draw conclusions from the statistical analyses in (#3)

Assessment

The course will be assessed using the following methods:

- 1 Document Problem Solving Assignment - 20%
- 1 Mid-Semester Exam - 30%
- 1 Final Exam - 50%

Disclaimer: Students will be informed of any changes to this via email and/or an announcement on OurVLE.

Documented Problem Solving (DPS)

This is the assignment requires students to "... to keep track of the steps they take in solving a problem ..." (Angelo & Cross, 1993: p. 222). Students will therefore show their work and the reasoning behind their work.

Your submission should follow the template below, where the steps in the solution and actual workings are presented on the LHS of the page and your written explanation presented on the RHS of the page. Each side of the page should be clearly labelled and there should also be a line down the centre of the page so that each section can be clearly identified (see table below).

Steps in the solution	Written explanation

More detailed information is presented in the “DPS” section on the OurVLE homepage.

Each student will be assigned 1 tutorial question which must be submitted online using the portal given by 11:30am on the date the assignment is due (which will be the Friday of any given week). Note that for each 5-minute period after your assignment is due, the highest possible score for the assignment will be cut in half. Assignments submitted after the due date will not be accepted.

All assignments are required to have the following characteristics:

- Written in ink or typed
- Use 8.5 x 11 paper (not torn from binders or with jagged edges). Regular size folder paper may also be used
- Provide ONE answer to each question. Where more than ONE conflicting or contradictory answers are provided for the same question no marks will be awarded.
- Calculations must be correct to at least 4 decimals. If results are percentages, the precision rule is percentage point + 4 digits" (E.g. 1.2345% or 0.012345).
- Once you have completed your work, please either scan your work or use an app such as CamScanner or Adobe Scanner (both free) to take pictures of your work and save it as a .pdf file. Alternatively, if you typed it in Word, please save it as a .pdf _le (File { Save type as { change the type to PDF).
- ONLY .pdf files will be accepted.
- At the top of **each** page you must have:
 - your ID number
 - the tutorial sheet number and topic
 - the question being completed
 - your tutorial day and time
 - your tutor’s name
 - date the assignment is being submitted
- Your solutions must be clearly written and written in a logical format
- Show all work by writing all steps involved in solving the problem in a neat and organised fashion with one step below the other
- put your final answer at the end of your work, and mark it clearly by putting a box around it
- A copy of the Coursework Accountability Statement (undergraduate) must be stapled (not paper clipped or papers folded at the edges) to the front of your assignment. This can be found at https://www.mona.uwi.edu/socsci/sites/default/files/socsci/forms_documents/Undergraduate_Coursework_Accountability_Statement.pdf
- A copy of the grading rubric (in the “DPS” folder on OurVLE) must be stapled (not paper clipped or papers folded at the edges) to the back of your assignment.

Any infraction of the above guidelines will result in the assignment receiving a grade of 0.

NO MAKE UP ASSIGNMENTS WILL BE GIVEN

Mid-Semester and Final Exams

There will be one mid-semester exam and one final exam. Their dates and times are to be determined. Below is critical information about each exam.

	Weight	Date	Duration	Topics	Format
Midterm	30%	TBA	1 hour	Beginning of the course to end of Unit 4	MCQ*
Final	50%	TBA	1 hour	The entire course (60% will cover the material in Units 5 -6)	MCQ

* MCQ = Multiple Choice Questions

NO MAKE-UP EXAMS WILL BE GIVEN

If you miss the mid-semester exam for a University approved reason (documentation required), your final will be worth (50% + 30%). Otherwise, your final is worth 50%.

Any issues with ONLINE exams must be reported immediately. Problems with mid semester exams are reported directly to your lecturer, while issues with your final exam are to be reported to the Exam Section using the email provided in the exam portal.

Note that in the case of face-to-face exams, failure to shade your ID number correctly (includes shading incorrect numbers or shading too lightly or no shading at all) on your MCQ answer sheet will result in a score of 0 being assigned. The same rule applies for failure to write your correct ID number on the required pages on/in your answer booklet.

Course Policies

Attendance

The course is delivered using both synchronous and asynchronous methods. *Students are expected to watch all pre-recorded lectures prior to class AND attend all lectures and tutorials.* However, all lectures and tutorials will be recorded and posted in the relevant section on OurVLE. If you miss a lecture or tutorial, it is the student's responsibility to get the relevant notes by watching the related recordings. The lecturer and tutors will not be giving completed notes, lecture slides or tutorial answers to any student.

Electronic Material

Lectures, notes and other material presented during the course of the lecture or as part of the course are protected by copyright laws. As such, students are not allowed to post, sell or otherwise barter, reproduce any of the above-mentioned en masse, either to other students or to any commercial concern. To obtain permission to sell or barter notes, the individual wishing to sell or barter the notes must be registered in the course or must be an approved visitor to the class. The lecturer may grant or not grant such permission at their own discretion and may require a review of the notes prior to their being sold or bartered. If they do grant such permission, they may revoke it at any time, if they so choose.

Tutorials

Each tutorial can have up to 2 sections:

- a. A 5-minute key concepts presentation by your tutor.
- b. A discussion session about the tutorial questions. This can include one or more of the following (as determined by your tutor):
 - i. Individual students putting answers to tutorial questions on the board for discussion
 - ii. Small group discussions and the group puts their final answer on the board for discussion
 - iii. Any other appropriate teaching/learning method

STUDENTS ARE REQUIRED TO **ATTEMPT** ALL TUTORIAL QUESTIONS PRIOR TO THE TUTORIAL. Failure to do so will result in the tutorial ending prematurely and the tutor assuming that students are comfortable with the information contained therein.

The role of the tutor is not to do the tutorial questions but to assist students through the tutorial questions. Therefore, an attempt must be made by students prior to the tutorial session.

Please inform your lecturer if your tutor is absent or late to tutorials. Also let your lecturer know if your tutor is not performing within the parameters outlined above.

Please note that **you are only allowed to attend a tutorial for which you are registered.** Under absolutely no circumstances are you allowed to go to a tutorial that you are not registered for. If you are unable to attend your tutorial, for whatever reason, you are responsible for getting the information you missed from that tutorial.

Review Sessions

Review sessions are for the benefit of the students. As such, the lecturer and/or tutors **will not** prepare specific questions to go through in these sessions. Students are expected to come with their questions, whether they are from questions done in lectures, tutorials, quizzes, extra questions, exam review packets, past exams and/or the textbook (or other textbooks). Conceptual questions will also be taken during these sessions. **Students are therefore required to prepare questions for the review sessions.**

Missed Assessment

As noted above, there will be no make up assignments or exams for students who have missed assessments.

Communication

Communication between lecturer/tutors and students and vice versa will be done using official UWI email addresses. Emails sent from addresses at other domains will not be answered. All emails must include:

- a relevant subject;

- a proper salutation – includes a greeting and who you are addressing (e.g. Dear Dr Dixon Hamil);
- proper grammar (text language and short-hand type messages are not accepted);
- clear and complete sentences;
- a proper closing – includes a closing and who is sending the email (e.g. Regards, Keisha).

Emails without these key characteristics will be ignored.

Emails sent to lecturers and tutors between Monday and Thursday (8am – 5pm) will be responded to within 24 hours. Emails sent between Friday and Sunday will be responded to on the next valid work day. This also applies emails sent during a holiday period.

Students are required to check their UWI assigned email addresses regularly. All correspondence from the UWI will be sent to those addresses. One option is for you to forward your UWI email to an email address that you check regularly.

Reminders about exams or special class activities **will not** be sent out. It is the student's responsibility to follow the course schedule (see Pages 9 - 11). Additionally, it is the student's responsibility to check their UWI email or the News Forum on OurVLE for the exact dates of mid semester and final exams.

Students with Disabilities

Students with disabilities **MUST** register with The Office of Special Student Services (OSSS) **and** your lecturer so that the necessary accommodations may be made for you. Also see Section II of the Assessment Regulations for First Degrees, Associate Degrees, Undergraduate Diplomas and Certificates 2017-2018 document.

(https://www.mona.uwi.edu/registry/sites/default/files/registry/uploads/Assessment_Regulations_2017-2018_Final.pdf)

Academic Dishonesty

Acts of dishonesty, including cheating, plagiarism, and directly or indirectly aiding and/or abetting persons in committing a dishonest act, will not be tolerated. Students found to be committing an act of dishonesty, will be given a zero for the related assessment and will be reported to the Head of Department who can in turn report it to the Campus Registrar for further action. Please refer to Section IX of the Assessment Regulations for First Degrees, Associate Degrees, Undergraduate Diplomas and Certificates 2017-2018 document (https://www.mona.uwi.edu/registry/sites/default/files/registry/uploads/Assessment_Regulations_2017-2018_Final.pdf). In this section, plagiarism refers to the “presentation of work by a student for evaluation, whether or not for credit, but do[es] not apply to invigilated written examinations”.

How to Succeed in this Course

Success in this course requires you to:

- Focus on understanding and not just swatting the material
- Set aside specific, non-negotiable times to watch the pre-recorded videos and complete tutorials
- Watch the pre-recorded lectures prior to the class
- Print off the lecture notes and fill them in while watching the videos

- Read the required sections in your text prior to attending class
- Attend classes (lectures and tutorials)
- Engage in classes (lectures and tutorials) – ask questions; answer questions
- Complete tutorials prior to your tutorial time
- Work all extra questions on the problem sets
- Attend office hours (or make an appointment to meet with your lecturer or your tutor) if you need assistance
- Email your lecturer or tutor if you need any assistance with understanding certain concepts or examples
- Keep track of questions you have that may develop in class, tutorials or your personal study and contact either your lecturer or your tutor
- Complete the practice packets for each exam
- Form study groups (no more than 5 persons per group)

Course Website & Other Details

The OurVLE course website is currently divided into 8 main sections.

- I. **General Information (Section 1)**: Information on course logistics such as the syllabus and important notices can be found here. The link to join lectures and tutorials is at the top of the section. You will click this link and then select the relevant session that you need to join. The News Forum is also located in this area – check this regularly as notices are sent to students using this medium.
- II. **Unit Notes (Sections 2-8)**: There are 7 such divisions – one for each unit. With the exception of Unit 1, each will contain the following:
 - Pre-recorded lectures
 - Fill-in-the blank lecture notes

You are required to watch the pre-recorded videos prior to our lecture time (see syllabus for schedule) along with the accompanying fill-in-the blank lecture notes which follow the videos.
- III. **Live Lecture Sessions (Section 9)**: This section will contain links to the recordings for each lecture session. They are arranged according to the weeks of the lecture. Live lectures are posted 24 hours after the lecture has been completed.
- IV. **Problem Sets/Tutorial Sheets (Section 10)**: The question sheets for each tutorial are located here. Each tutorial sheet is divided into 2 sections:
 - a. Questions for discussion during the tutorial (this will appear first on the sheet)
 - b. Extra Questions. Students should use these to practise the concepts they need to learn for that topic. These will NOT be discussed during the tutorial sessions unless there is extra time AND a student/students has/have specific questions.

Recordings for the live tutorial sessions are also placed here.

V. **Documented Problem-Solve (DPS) (Section 11)**: This section includes the ID numbers and questions assigned to students for the DPS assignments. It also has examples of how to complete a DPS assignment and the required documents that need to be attached to students' submissions. The submission portal for these assignments is also located in this section. Assignments are done on a weekly basis, so **STUDENTS SHOULD CHECK THIS SECTION REGULARLY**. Make up assignments are **NOT** given.

VI. **Exam Review (Section 12)**: This section includes 2 folders – one for each exam. Each folder has a practice packet (list of topics to study + practice questions) and their related answer sheets.

The practice packets are designed to give you an idea of the types of questions that MAY be on the exam. Students are encouraged to focus on understanding the concepts taught and not memorizing questions and their answers. The packets, like the exams, will emphasize application and not regurgitation of definitions and facts.

As part of the exam preparation process, students are **strongly** advised to go through all extra questions (from the tutorial sheets) and the exam packet questions.

Note: As the semester progresses, there may be the need to include additional sections and/or information.

Course Schedule

*** Disclaimer: this schedule may be adjusted if needed. Students will be informed of any changes via email and/or an announcement on OurVLE

Week	Week Beginning	Lecture Topic	Readings	Tutorial Topic	Videos to Watch Before Class
Week 1	September 7	<ul style="list-style-type: none"> Course Information Unit 1: Review of Introductory Statistics 	Chapters 1 & 2		
Week 2	September 14	<ul style="list-style-type: none"> Unit 2.1: Linear Combinations of Random Variables Unit 2.2: Discrete Random Variables and Related Probability Distributions 	Section 4.1-4.5		Unit 2.1 Unit 2.2
Week 3	September 21	<ul style="list-style-type: none"> Unit 2.3: Continuous Random Variables and Related Probability Distributions 	Section 5.1-5.5	<ul style="list-style-type: none"> Linear Combinations of Random Variables & Discrete Random Variables & Related Probability Distributions (Problem Set 1) 	Unit 2.3
Week 4	September 28	<ul style="list-style-type: none"> Unit 3: Review of Inferential Statistics + P-values 	Sections 6.1, 9.1 - 9.2	<ul style="list-style-type: none"> Continuous Random Variables & Related Probability Distributions (Problem Set 2) 	Unit 3

Week	Week Beginning	Lecture Topic	Readings	Tutorial Topic	Videos to Watch Before Class
Week 5	October 5	<ul style="list-style-type: none"> Unit 4: Inference for Population Standard Deviations 	Sections 6.4, 7.5, 9.6	<ul style="list-style-type: none"> Inferential Statistics + P-values (Problem Set 3) 	Unit 4
Week 6	October 12	<ul style="list-style-type: none"> Revision for Midterm 		<ul style="list-style-type: none"> Inference for Population Standard Deviations (Problem Set 4) 	
Week 7	October 19 (No class or tutorials on National Heroes' Day)	<ul style="list-style-type: none"> Unit 5.1: Inference for Means - Review of Z tests Unit 5.2 Inference for Population Means - One-sample T-test 	Sections 6.2, 7.2, 9.2 Sections 7.3, 9.3	<ul style="list-style-type: none"> Inference for Population Means: One-Sample Tests (Problem Set 5) 	Unit 5.1 Unit 5.2
Week 8	October 26	<ul style="list-style-type: none"> Unit 5.3: Inference for Population Means – Paired Samples 	Sections 8.1, 10.1	<ul style="list-style-type: none"> Inference for Population Means: One-Sample Tests (Problem Set 6) 	Unit 5.3
Week 9	November 2	<ul style="list-style-type: none"> Unit 5.4: Inference for Population Means – 2-sample Means 	Sections 8.2, 10.2	<ul style="list-style-type: none"> Inference for Population Means – Paired Samples (Problem Set 7) 	Unit 5.4

Week	Week Beginning	Lecture Topic	Readings	Tutorial Topic	Videos to Watch Before Class
Week 10	November 9	<ul style="list-style-type: none"> Unit 5.5: Inference for Population Means – ANOVA 		<ul style="list-style-type: none"> Inference for Means – 2-sample Means (Problem Set 8) 	Unit 5.5
Week 11	November 16	<ul style="list-style-type: none"> Unit 6: Inference for Population Proportions 	Sections 6.3, 7.4, 8.3, 9.4, 10.3	<ul style="list-style-type: none"> Inference for Population Means – ANOVA (Problem Set 9) 	Unit 6
Week 12	November 23	<ul style="list-style-type: none"> Contingency Time and/or Review 		<ul style="list-style-type: none"> Inference for Population Proportions (Problem Set 10) 	
Week 13	November 30	<ul style="list-style-type: none"> Review (students come with questions) 		<ul style="list-style-type: none"> Identifying types of tests 	