CSC 1706
Probability & Statistics

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Dua Before Studying

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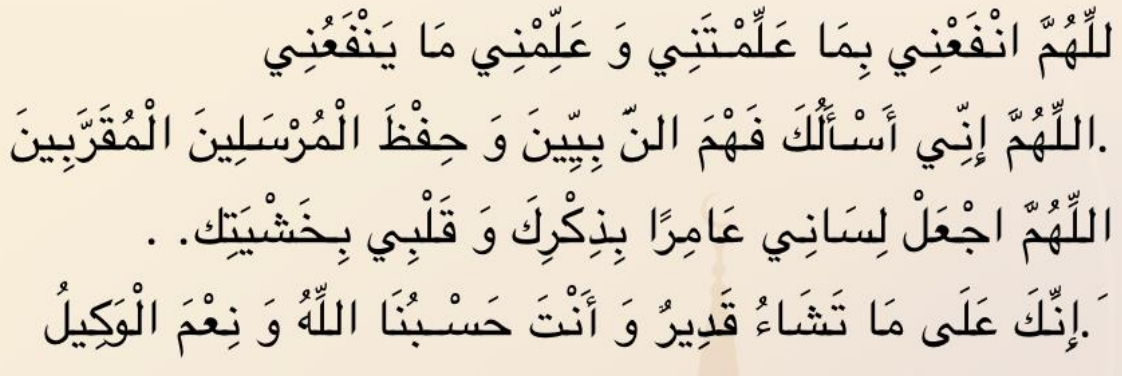
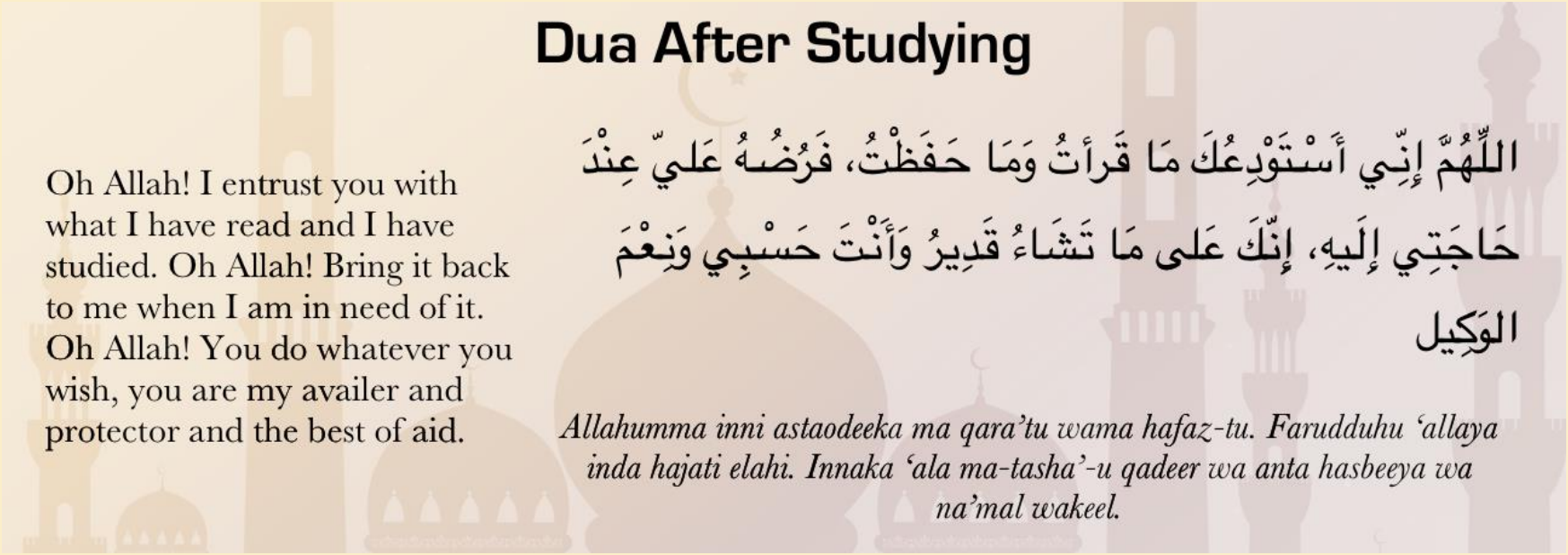
Oh Allah! Make useful for me what you have taught me and teach me knowledge that will be useful to me. Oh Allah! I ask you for the understanding of the prophets and the memory of the messengers, and those nearest to you.Oh Allah! Make my tongue full of your remembrance and my heart with awe of you. Oh Allah! You do whatever you wish, and you are my availer and protector and best of aid.



Allahumma infa'nii bimaa 'allamtanii wa'allimnii maa yanfa'uunii. Allahumma inii as'aluka fahmal-nabiyyen wa hifzal mursaleen al-muqarrabeen. Allahumma ijal leesanee 'aiman bi dhikrika wa qalbi bi khashyatika. Innaka 'ala ma-tasha'u qadeer wa anta hasbun-allahu wa na'mal wakeel.

Dua After Studying



GROUP PROJECT DETAILS

Outlines

1. Introduction
2. Objectives
3. How to Prepare the Proposal?
4. How to Prepare the Presentation?
5. How to Prepare the Report?
6. Peer Evaluation
7. Additional: Five Things Students Can Learn through Group Work

1. Introduction (1)

- This is a group project coursework that consists of **4 to 5 students per group** and with a **total mark of 15%**.
- You may choose your own group members.
- The breakdown of the total marks 15% are as the following:
  1. **Proposal – 3%**
  2. **Presentation – 4%**
  3. **Report – 8%**
- There will be **peer evaluation**.
- The group member who is not cooperating well / a passive member will be graded poorly by the rest of the group members and based on certain percentages, this will affect the overall marks greatly.

1. Introduction (2)

1. You will have the opportunity to address some questions that interest you by applying the statistical methods learned in this course, as the means to answer those questions.
2. You are given the freedom to choose the (research) question; to decide how to collect data; and how to do the analyses.
3. The questions can address almost any topic including topics in information technology, computer science, natural science, psychology, sociology, medicine, public policy, sports, law, etc.
4. The most important aspects of any statistical analysis are stating questions and collecting data.
5. Hence, to get the full experience of running your own study, the project requires you to analyse the data that you have collected.
6. It is permissible to use the data sets that have been put together by others and to collect data off of the web; however, you must be the one who decides on the analyses and puts the data set together.

1. Introduction (3)

Some ideas:

1. Is there a relationship between a student's GPA and where he or she sits in class – towards the front, middle, or towards the back?
2. Are women organized better than men? (in general lifestyle and habits)
3. Are men organized better than women? (in arranging and updating the data folders stored at desktop and other directories in computer)
4. Who are the better and efficient users of computer and mobile gadgets? KICT or Non-KICT students?
5. Since there are many open source programming languages out there and lots of free tutorials and e-learning tools, who are the better programmers then? KICT or Non-KICT students?
6. Is there a relationship between having many group projects and GPA for KICT students?
7. Is there a relationship between final assessment (no final paper examination) and GPA for KICT students?
8. Is there a relationship between online learning materials (such as online quizzes and lectures) and GPA for KICT students?

2. Objectives

1. Demonstrate an understanding of the practical application of statistics.
2. Collecting, organizing, and presenting information in tabular and graphical forms.
3. Use appropriate statistics notion and terminology.
4. Demonstrate appropriate use of statistical methods.
5. Demonstrate the use of R statistical programming language as the tool to solve statistics problem.
6. Form a logical argument, supported with concrete information.

3. How to Prepare the Proposal?

- State the **question** that you wish to investigate.
- Followed by providing an assumption as the answer to that question (hypothesis).
- List down the following compulsory **statistical methods**:
  1. **Mean**
  2. **Median**
  3. **Mode**
  4. **Variance and Standard Deviation**
  5. **Chebyshev's Theorem**
- You may add other statistical methods, and those will be considered as bonus marks if it is actually being applied and is reported in the report.
- List down in details the **independent** variables, **confounding** variables (if any), and one **dependent** variable.
- Briefly, explain the **data** to be used in this group project. Is it individual or grouped data? What kind of data; existing or new data? How to collect (if the data is new) / gather (if the data is already available) the data? How many?

3. How to Prepare the Proposal? (2)

- In summary, your proposal should have the following:

A. Research question

B. Research hypothesis

C. Statistical methods (compulsory and additional – if any)

D. Dependent and independent variables, and confounding variables – if any (create a table)

E. Data (proposed)

4. How to Prepare the Presentation?

- The time given for a presentation is about **10 to 12 mins**, with an additional of maximum 3 mins for Q&A.
- Include the following items in the presentation slides:
  1. **Introduction** – introduction to the research problem selected.
  2. **Problem statement** - describe in detailed the research problem and why it is a good statistical research problem.
  3. **Hypothesis** - what is the assumption as an answer for the research problem selected?
  4. **Methods** – data collection and sample details, and statistical methods applied.
  5. **Preliminary analysis** – what are the initial results based on the statistical methods applied?
  6. **Final analysis** – what are the correlations between independent variables that can be used as evidence in answering the research problem? Is the hypothesis proven correct?
  7. **Conclusion and Recommendations/Suggestions** – briefly recap the whole processes up to the results and recommendations for future works, or suggestions if the hypothesis is not proven.

4. How to Prepare the Presentation? (2)

- Marks for the presentation will be based on:
  1. the presentation style
  2. the flow of the presentation slides
  3. the contents (direct, useful, effective and/or creative information).
- **Important Note: Prior to presentation's day, email the slides to me at hrai@iium.edu.my, clearly mention your group's details, i.e. section no., group no., name and matric no.**

Beware of grammatical and spelling errors, and writing style errors

How to Prepare the Report? (1)

- **Cover page**
  i. Title
  ii. Students' Names and Matric No
  iii. Lecturer's Name
  iv. Section No
  v. Semester
- **Table of Contents**
- **Abstract**
  i. The purpose of study
  ii. Explain the research problem
  iii. Methods or approaches applied
  iv. Explain the results (informative for abstract only – means briefly)
  v. Conclusion

Important Note:
Prior to presentation's day, submit the report's hardcopy, and softcopy: email the presentation slides to me at hrai@iium.edu.my, clearly mention your group's details, i.e. section no., group no., name and matric no.

Beware of grammatical and spelling errors, and writing style errors

How to Prepare the Report? (2)

- **Introduction**
  i. Explain again the purpose of study and research problem in details.
  ii. Explain the data – What kind of data? How many? How is the data collected/gathered? Is there any corrupted data? What are the dependent variables? What is the dependent variable? Any confounding variable(s)?
  iii. Explain how the statistical methods applied can help in answering the research question or proving the hypothesis. *Hint:* you must understand the purpose of measures of central tendency, variation, and position.
  iv. Explain the steps taken from the beginning until the end to answer the research question.
- **Preliminary Analysis**
  i. Dataset
  ii. Mathematical processes of all statistical methods applied.
  iii. Additional statistical method (for bonus marks).
  iv. Graphs

Beware of grammatical and spelling errors, and writing style errors

How to Prepare the Report? (3)

- **Final Analysis**
  i. Identify the correlations between the dependent and independent variables.
  ii. Explain how the correlations can answer your research question or to prove the hypothesis.
  iii. Highlight the additional statistical method(s) applied. Give the explanation as to why it is being applied.
- **Conclusion and Recommendations/Suggestions**
  i. Restate purpose of study, research problem and hypothesis.
  ii. Summarize main points of evidences (results).
  iii. Recommendations for future works.
  iv. Suggestions to improve the current methods or approaches applied in this group project when the hypothesis is not proven.
- **References**: List of books, websites, etc. referred.
- **Appendix**: Samples of good and bad (answered) questionnaire.

Peer Evaluation (1)

- There are **5 measurements** that you can give to your group members based on the following:

  - ✓**Participated in group discussions.**
  - ✓**Contributed useful ideas.**
  - ✓**Completed given tasks on time.**
  - ✓**Quality of completed work.**
  - ✓**Demonstrated a cooperative and supportive attitude.**

- The 5 measurements are assigned with the following **values**:

  - ✓**5 = Superior**
  - ✓**4 = Above Average**
  - ✓**3 = Average**
  - ✓**4 = Below Average**
  - ✓**1 = Poor**

Peer Evaluation (2)

- The total marks is 25.
- Say there are 4 group members evaluating 1 same group member (for 5 members per group):

Group Members	Marks out of 25 for "Anggerik"
"Sarah"	23
"Abdullah"	24
"James"	24
"Fiona"	25

- The percentage is then calculated:
- $\frac{23+24+24+25}{25*4} * 100 = \frac{96}{100} * 100 = 96\%$

Peer Evaluation (3)

- Let's take a look at another example.
- Say there are 3 group members evaluating 1 same group member (for 4 members per group):

Group Members	Marks out of 25 for "Chloe"
"Amir"	19
"Rashid"	20
"Rose"	19

- The percentage is then calculated:
- $\frac{21+20+19}{25*3} * 100 = \frac{58}{75} * 100 = 77\%$

Peer Evaluation (4)

- Based on the percentage ranges, the following deductions will be applied onto the 15% total of group project:
  1. **91% to 100% - no deduction**
  2. **81% to 90% - 10% deduction**
  3. **71% to 80% - 20% deduction**
  4. **61% to 70% - 30% deduction**
  5. **51%to 60% - 40% deduction**
  6. **Less than or equals to 50% - 50% deduction**
- For the first example, which is 96%, no deduction will be applied.
- For the second example, which is 77%, there will be 20% deduction.
- Say, the group project marks (proposal + presentation + report) is 12, the deduction will be:
- $\frac{20}{100} * 12 = 2.4$, which makes the new group project marks is $12 - 2.4 = 9.6\%$.

CSC 1706: Peer Evaluation Form

SECTION NO: _____ **YOUR NAME: _____**

GROUP NO: _____ **MATRIC NO: _____**

DATE: _____

VALUES: **5 = Superior** **4 = Above Average** **3 = Average**
2 = Below Average **1 = Poor**

Evaluation Criteria	Member's Name: _____ _____	Member's Name: _____ _____	Member's Name: _____ _____	Member's Name: _____ _____
Participated in group discussions.				
Contributed useful ideas.				
Completed given tasks on time.				
Quality of completed work.				
Demonstrated a cooperative and supportive attitude.				
TOTAL				

7. Five Things Students Can Learn through Group Work*

1. When students work together on content, they can master the basics because they are figuring things out for themselves rather than having the lecturer tell them what they need to know.
2. When students are trying to explain things to each other, to argue for an answer, or to justify a conclusion, that interaction clarifies their own thinking and often it clarifies the thinking of other students.
3. Students can learn how group functions properly by fulfilling their own individual responsibilities. Productive group members come prepared, they contribute to the group interaction, they support each other, and they deliver good work on time.
4. Students can learn why groups make better decisions than individuals; how different perspectives, constructive deliberation, questioning, and critical analysis can result in better solutions and performance.
5. Students can learn how to work with others that are outside their circle of friends, including those who have different backgrounds and experiences.

* https://www.facultyfocus.com/articles/teaching-professor-blog/five-things-students-can-learn-through-group-work/

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All the best!

* Image used is from https://www.monsterevents.nl/teambuilding