

**CAMBODIA ACADEMY OF DIGITAL TECHNOLOGY**

**INSTITUTE OF DIGITAL TECHNOLOGY**

**School of Digital Engineering**

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| **Course Information** | | | |  |  |
| **Course Title** | Introduction to statistics | | |  |  |
| **Department** | **Foundation Year** | | |  |  |
| **Course Code** | xxx | **Hour:** 30 | **Credit:2** |  |  |
| **Level** | Undergraduate | **Prerequisite** | - The building block for researching, exploring information on new tools that the student can help themselves, self-learning, improving their knowledge on continuing courses.  - Basic Algebra |  |  |
| **Course Type** | Major ◻ Core ☑ Elective ◻ Other ◻ | | |  |  |
| **Offer in Academic Year** | Foundation Year Term 2 | | |  |  |
| **Revision** |  | | |  |  |
| **Instructor Information** | | | |  |  |
| **Instructor** | KIM Chamroeunvuthy | **Qualification** | Ph.D |  |  |
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| **Office Hour** |  | | |  |  |

**Course Description**

Statistics is the science of collecting, organizing, presenting, analyzing, and interpreting data to assist in making more effective decisions. The topic includes descriptive statistics, probability theory and inferential statistics.

Descriptive statistics consists of terminologies, graphs, measure of central tendency and measure of dispersion. Probability theory consists of discrete random variable, continuous random variable and convergence of sequence of random variables. Inferential statistics includes estimation, hypothesis testing and linear regression and correlation.

This course focuses on applied statistics in digital engineering which is designed to provide students with the basic concepts of data analysis and statistical computing. Topics include brief descriptive measures, probability theory, confidence intervals, hypothesis testing and regression analysis. The main objective is to provide students with pragmatic tools for assessing statistical claims and conducting their own statistical analyses.

**Course Learning Outcomes**

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

**a. Knowledge:**

-Demonstrate their understanding of descriptive statistics by practical application of quantitative reasoning and data visualization

-Demonstrate their knowledge of the basics of inferential statistics by making valid generalizations from sample data

**b. Skills**

-Use R and Excel to conduct statistical analysis

-Recognize pitfalls in using statistical methodology

**c. Attitudes**

-Critical attitudes, which are necessary for “life-long learning”

-Greater appreciation for the importance of statistical literacy in today’s data rich world

**Course Outline/Schedule**

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| --- | --- | --- | --- |
| ***Session*** | ***Topic*** | ***Required Reading*** | ***Practice/ Assignments*** |
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| 1 | Introduction to statistics. Definitions, Terminologies and Frequency Tables. | Chapter 1 | Group discussion and presenting how to identify the information need |
| 2 | Graphs in statistics: Bar, Pie, Histogram and Frequency Polygon. | Chapter 2 | Group discussion and presentation |
| 3 | Measure of central tendency: Mean, Mode, Median | Chapter 3 | Group discussion and presentation |
| 4 | Measure of Spread: Mean Deviation, Variance and Standard Deviation. | Chapter 4 | Group discussion and presentation |
| 5 | Random Variable and Probability Distribution | Chapter 5 | Group discussion and presentation |
| 6 | Discrete RV and Properties | Chapter 6 | Group discussion and presentation |
| 7 | Continuous RV and Properties | Chapter 7 | Group discussion and presentation |
| 8 | Confidence Interval: Mean and Proportion | Chapt8r 7 | Group discussion and presentation |
| 9 | Hypothesis Testing: Mean and Proportion | Chapter 9 | Group discussion and presentation |
| 10 | Regression: Simple and Multiple | Chapter 10 | Group discussion and presentation |
| 11 | Final Exam |  |  |

# Learning Resource:

* **Core Textbooks**
  + Lind, Marcel & Wathen**, “***Statistical Techniques in business and Economics***”,** 15th Edition, McCraw-Hill.
  + 2. G. Casella & R. L. Berger, “*Statistical Inference*”, 2nd Edition, Duxbury Advanced Series.
* **Additional Reading Materials**
* Lecture Slides
* Video
* Websites

# Teaching and Learning Activities

* Lecture
* Group discussion
* Presentation
* Quizzes

# Student Responsibilities

* Watch and read the material a day before having class.
* Join group/teamwork in every discussion activity.
* Do research and presentation.

# Academic Policy: (Assessment Policy, Plagiarism, and Cheating Policy….)

* **Attendance**:Students must attend every hour of class and well prepare.
* **Academic Integrity & Collaboration**: student must complete their homework/assignment and submit it to LMS if required. In class, student must take concentration on what the lecture explains and join online quizzes at the end of class hour/present about what they have learned.
* **Exam**: student will be strongly restricting at any way they can cheat the exam such as searching the internet, plagiarizing, etc.
* **Penalty**: In the case of violating during exam, do assignment/homework the internal regulation of IDT will be used to grant penalty on those students by reporting the office of student affairs.

**Grading Policy**

|  |  |
| --- | --- |
| ***Activities*** | ***Percentage (%)*** |
| Attendance & Class Participation | 10% |
| Quiz | 10% |
| Mid Term exam | 30% |
| Presentation/Activities | 10% |
| Final exam | 40% |

* **Attendance**
  + To comply with IDT internal regulation, Student must come on time or before the class start.
  + In the case of continuing 3 time late coming will be counted as one absence.
  + Permission will be allowed only when the office of academic affairs have approved.
* **Class participation**
  + Students need to engage in all class activities such as raising questions, responding to questions when the lecture ask, participation in group discussion, providing feedback and sharing information by presenting what they know.
* **Quizzes**
  + Quizzes are already prepared by lecture citing throughout the course having learned so the student need to review what they learned.
* **Final exam**
  + To pass the final exam the students must join every activates to save 10% score as mentioned in grading policy above. Finally, the score will be summed up with 40% score they gain from final exam quizzes that would be hold at the day of ending term.

# Rating Scale

|  |  |  |  |
| --- | --- | --- | --- |
| **Letter Grade** | **Score (%)** | **Grade Point** | **Explanation** |
| **A** | 85-100 | 4.00 | Excellent |
| **B+** | 80-84 | 3.50 | Very Good |
| **B** | 70-79 | 3.0 | Good |
| **C+** | 65-69 | 2.5 | Fairly Good |
| **C** | 50-60 | 2.0 | Fair |
| **F** | <50 | 0.0 | Fail |