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| 1. Course code:
 | QM353 | 1. Course title:
 | Business Statistics |
| 1. College: College of Business Administration
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| 1. Department: Management and Marketing
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| 1. Program: B Sc.
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| 1. Course credits: 3-credit hour
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| 1. Course NQF Level: 6-7-8
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| 1. NQF Credits: TBA
 |
| 1. Prerequisite: QM250
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| 1. Lectures Timing & Location: Online
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| 1. Course web page: Blackboard
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| 1. Course Instructor: Dr. Elsayed Ali Habib. email: shabib@uob.edu.bh
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| 1. Office Hours and Location: TBA
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| 1. Course coordinator: Dr. Elsayed Ali Habib. email: shabib@uob.edu.bh
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| 1. Academic year: 2020-2021
 |
| 1. Semester:
 |  | **First** |  | **Second** | X | **Summer** |
| 1. Textbook(s): Business Statistics: A Decision-Making Approach (Latest Edition)

By D.F. Groebner-P.W. Shannon-P.C. Fry-K.D. Smith, Pearson Education (ISBN: 13: 978-0-13-233493-8). |
| 1. References from the Library (<http://www.ac-knowledge.net/uobv3/>):

Business Statistics using Excel by Glyn Davis & Branko Pecar,Oxford University Press (ISBN:978-0-19-955689-2) |
| 1. Other learning resources used (e.g. e-Learning, field visits, periodicals, software, etc.):

#1. Class Lecture Notes#2. PowerPoints#3. Mylab Pearson#4. Videos and their links on TedX statistics and MyLab platform.<https://www.ted.com/talks/alan_smith_why_you_should_love_statistics#t-30393><https://www.youtube.com/watch?v=MeB7GBi9iPs><https://www.ted.com/talks/arthur_benjamin_teach_statistics_before_calculus><https://www.ted.com/talks/mark_liddell_how_statistics_can_be_misleading>#5. Microsoft Excel or SPSS |
| 1. Course description (as per the published):

Review of probability concepts. Probability functions and distributions. Statistical estimation- Tests of significance- Hypothesis tests of population means, proportions and variances- Analysis of variance-multiple linear regression analysis- Time series analysis and forecasting. |
| 1. Course Intended Learning Outcomes (CILOs):
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| CILOs | *Mapping to PILOs* |
| Learning goals | a. Knowledge | b. Globalization | c. Skills | d. Communication | e. Competencies | f. Values |
| Learning objectives | a1: General Knowledge | a2: Specific knowledge | b1: International cross-cultural | b2: Global Perspective | c1: Thinking skills | c2: Analytical skills | d1: Communication (Writing) | d2: Communication (Oral) | e1: Leadership skills | e2: Teamwork | f1: Ethics | f2: Social responsibility |
| 1. Understanding of the probability models (Hyper-Geometric, Uniform and Exponential), their distributions and applications.
 | \* |  |  |  | \* |  |  |  |  |  |  |  |
| 1. Conceptualize the sampling distributions and applying these to solve problems of parameter estimation and inferential statistics.
 | \* |  |  |  |  | \* |  |  |  |  |  |  |
| 1. Acquiring /generating data, performing analysis and interpreting the results
 |  |  |  |  | \* |  | \* |  |  |  | \* |  |
| 1. Understanding and applying the ANOVA, Goodness of Fit of the models and Contingency Analysis techniques.
 | \* |  |  |  |  |  |  |  |  | \* |  |  |
| 1. Learning and applying the Multiple Linear Regression Analysis and statistical quality control and interpreting the results.
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| 1. Course assessment:
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| *Assessment Type* | *Details/ Explanation of Assessment in relation to CILOs* | *Number* | *Weight* | *Date(s)* |
| Continuous Assessment (2-hour) | a1, c1 | 5-7 | 15 % | TBA |
| Engagement Activities (1-hour) | a1, c1 | 5-7 | 15 % | TBA |
| Practical |  |  |   |  |
| Projects/Case StudiesTopic (#3 and #4) | d1, e2, f1 | 1 | 30% | TBA |
| Final ExaminationTopic (#5, #6, #7 and #8)(Respondus) | a1, c1, c2 | 1 | 40% | TBA |
| Total |  |  | 100% |  |

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| 1. Description of Topics Covered
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| *Topic Title* *(e.g. chapter/experiment title)* | *Description* |
| Topic 1: Probability distributions (discrete and continuous) | The Hyper-geometric (HG) probability function and distribution of two and more possible outcomes per trial. The mean and the variance of a HG random variable.The Continuous Uniform probability density function and distribution. The mean and the variance of a uniform random variable.The Exponential probability density function and distribution.The mean and the variance of an exponential random variable. |
| Topic 2: Sampling distribution and estimation of population parameters | The Point estimate and the confidence intervals of population Proportions one and two populations and two population averages. Determination of an appropriate sample size for a proportion.  |
| Topic 3: Tests for averages and proportions | Hypothesis tests of two proportions means with known and unknown population variances using independent samples. In case of unknown population variances, assuming equality of variances. Estimation and hypothesis tests of population proportions.  |
| Topic 4: Tests of variance  | Testing hypothesis on a Population variance using χ2-test statistic. The confidence interval of a population variance.Testing hypothesis on two population variances using F- test statistic |
| Topic 5: Two-way ANOVA | Randomized Block DesignTwo factors ANOVA (without replications) \*Fisher’s Least Significant Difference (LSD) test |
| Topic 6: Contingency analysis and Goodness of fit | Goodness-of-Fit of theoretical probability distributions to the observed data.Contingency Analysis  |
| Topic 7: Multiple linear regression (MLR) | Modeling and Analysis of MLR problems.Estimation of the MLR model parameters and interpretation of results. |
| Topic 8: Statistical process control | Introduction to quality and Statistical Process Control (SPC).\*Average and Range charts |

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| 1. Weekly Schedule
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| *Week* | *Date* | *Topics covered* | *CILOs* | *Teaching Method* | *Assessment* |
| *1* | 7-11 Feb. | #1. Discrete and Continuous Probability Functions, their Distributions, and applications(Chapters #5 and #6)  | a1, c1 | *2-hour lecture:* |  Continuous,Engagement |
| *1-hour lecture* |
| *2* | 14-18 Feb. | #1. Discrete and Continuous Probability Functions, their Distributions, and applications(Chapters #5 and #6).  | A1, c1 | *2-hour lecture:* |  Continuous,Engagement |
| *1-hour lecture* |
| *3* | 21-25 Feb. | #2 Sampling distributions and Estimation of Population Parameters (Chapters #7 & #8) | A1, c2 | *2-hour lecture:* | Continuous,Engagement |
| *1-hour lecture* |
| *4* | 28 Feb – 4 March | #2 Sampling distributions and Estimation of Population Parameters (Chapters #7 & #8) | A1, c2 | *2-hour lecture:* |  Continuous,Engagement |
| *1-hour lecture* |
| *5* | 7–11 March | #3. Hypotheses Testing on Population Parameters(Chapters #9 and #10) | c2, f1 | *2-hour lecture:* | Project, excel practice |
| *1-hour lecture* |
| *6* | 14–18 March | #3. Hypotheses Testing on Population Parameters(Chapters #9 and #10) | c2, f1 | *2-hour lecture:* | project and discussions |
| *1-hour lecture* |
| *7* | 21–25 March | #4. Testing of Hypotheses on Population Variances. (Chapter #11) | D1, f1 | *2-hour lecture:* | project and discussions |
| *1-hour lecture* |
| *8* | 28 March–1 April | #4. Testing of Hypotheses on Population Variances. (Chapter #11) | D1, f1 | *2-hour lecture:* | project and discussions |
| *1-hour lecture* |
|  | 4-8 April | Student break |  |  |  |
| *9* | 11-15 April | #5. Introduction to Analysis of Variance. Completely Randomized Design.(chapter #12) | C2, f1 | *2-hour lecture:* | Final, Engagement, Continuous |
| *1-hour lecture* |
| *10* | 18-22 April | #5. Introduction to Analysis of Variance. Completely Randomized Design.(Chapter #12) | C2, f1 | *2-hour lecture:* | Final, continuous, Engagement |
| *1-hour lecture* |
| *11* | 25-29 April | #6. Goodness-of Fit Tests and Contingency Analysis (Chapter #13) | A1, e2 | *2-hour lecture:* | Final, Engagement,Continuous |
| *1-hour lecture* |
| *12* | 2-6 May | #6. Goodness-of Fit Tests and Contingency Analysis (Chapter #13) | A1, e2 | *2-hour lecture:* | Final, continuous,Engagement |
| *1-hour lecture* |
| *13* | 9 – 13 May | #7. Multiple Linear Regression (MLR) Analysis and Model Building (Chapter#15) | A1, c2 | *2-hour lecture:* | Final, Continuous,Engagement |
| *1-hour lecture* |
| *14* | 16-20 May | #7. Multiple Linear Regression (MLR) Analysis and Model Building (Chapter#15) | A1, c2 | *2-hour lecture:* | Final, Continuous,Engagement |
| *1-hour lecture* |
| *15* | 23-27 May | #8. Statistical Process Control (Chapter #18) | A1, c2 | *2-hour lecture:* | Final, ContinuousEngagement |
| *1-hour lecture* |