



**Spring Term**

**Basic Information:**

<b>Title:</b>	Statistics for Business Decision Making	<b>Code:</b>	STAT 291
<b>Program:</b>	BBIT	<b>Credit Hours:</b>	Three (03)
<b>Sessions:</b>	30 Classes + Mid Term + Final Term	<b>Pre-Requirement:</b>	STATISTICS-I

**Course Description:**

*The course will be helpful for the students of BBIT to understand what validity is and how to test the validity of the scale. Moreover, it will also help to understand what reliability is? and how to ensure it through different advanced level techniques. Moreover, after attending the course the students will be able to run and test the complete model by using AMOS software application.*

**Learning Outcomes:**

*After the completion of this course, it is expected that students who will involve themselves in the knowledge base working of the course will be capable to*

1. *Understand how to handle the data.*
2. *Run the different validity related tests to ensure the validity of the instrument.*
3. *Use SPSS for validity and reliability testing and hypotheses testing.*
4. *Use AMOS software application for CFA and Model Testing.*
5. *Handle different types of data.*
6. *Present the data in more accurate and effective way as per APA standards.*

**Teaching Learning Methodology:**

*The formal teaching component of this course consists of active student participation in and contribution to all forms of teaching and learning i.e. lectures, discussions, labs for software usage, data analysis for research and projects. Lectures will be twice a week of 90 min each.*

**Group Configurations:**

*One of the objectives of this course is to encourage and facilitate teamwork. Class will have to make a group of three for all assignments and semester project. It is recommended that students will form their own groups. As a general guideline, your group should have members with diverse skill sets including people who are proficient or have aptitude for different subject areas.*

**Weekly Term Plan**

<b>Wk</b>	<b>Lecture Topic</b>
01	<i>Introduction to Multivariate Analysis.</i>
02	<i>Examining the Data for Normality and Outliers</i>
03	<i>Factor Analysis; Exploratory Factor Analysis (EFA) Vs Confirmatory Factor Analysis.</i>
04	<i>Difference Between R and Q Factor Analysis</i>
05	<i>Limitations Associated with Factor Analysis.</i>
06	<i>Confirmatory Factor Analysis (CFA) Through AMOS.</i>
07	<i>Reporting the EFA And CFA In Researches.</i>
08	<i>Mid Term Examination</i>
09	<i>Multiple Regression Analysis.</i>
10	<i>Dummy Variables and Their Interpretation. Testing Assumptions w.r.t Multiple Regression Analysis.</i>
11	<i>Structural Equation Modeling</i>
12	<i>Reporting of Structural Equation Modeling.</i>
13	<i>Presenting and Reporting the Quantitative Data.</i>
14	<i>Revision of Topics Covered.</i>
15	<i>Presentation of The Final Term Project</i>
16	<i>Final Term Examination</i>



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**Topics in Detail**

**Multivariate Analysis**

- Types of Measurement Scales*
- Measurement errors and its effects*
- Factors effecting the statistical power*
- Types of multivariate techniques*

**Assumption related to Multivariate Analysis**

- Testing the normality (univariate, bivariate and multivariate)*
- Detecting Outliers (univariate, bivariate and multivariate) and handling.*
- Dealing the missing data.*
- Testing homoscedasticity*
- Testing linearity*

**Factor Analysis**

- What is factor analysis?*
- Types of factor analysis.*
- Difference between EFA and CFA*
- Seven steps process of EFA*

**Exploratory Factor Analysis**

- Difference between R and Q factor analysis*
- Extracting and determining the numbers of factors*
- Purpose and concluding from rotation of factors*
- Determining and naming the number of factors extracted through EFA*
- Understanding limitation associated with FA*

**Confirmatory Factor Analysis**

- Understanding difference between measured variable and latent variables*
- Understanding the concept of summated scale*
- Running the CFA through AMOS*

**Multiple Regression Analysis**

- What is multiple regression analysis*
- Usage of MRA for hypotheses testing*
- Understanding different options in MRA (Step Wise and Hierarchical Analysis)*
- MRA by using dummy variables*

**Structural Equation Modeling**

- SEM by using AMOS*
- Understanding model fitness through SEM*

**Reporting and Presenting the Quantitative Results**

**Text & Recommended Readings**

1. *Multivariate data analysis (7th ed.).*  
*Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2017).*
2. *Field, A. (2009). Discovering Statistics Using SPSS (3rd ed.).* Chennai, India:  
*Sage Publications Ltd.*

**Assignment Specification**

- |   |                                 |
|---|---------------------------------|
| <i>Microsoft Word for Documentation</i> |                                 |
| <i>Headings</i>                         | <i>Times New Roman 12pt</i>     |
| <i>Bold</i>                             |                                 |
| <i>Normal Text</i>                      | <i>Times New Roman 12pt</i>     |
| <i>Header Footer</i>                    | <i>Times New Roman 8pt</i>      |
| <i>Paragraph</i>                        | <i>Single Line Spacing</i>      |
|   | <i>First Line Indent 1.0 cm</i> |
| <i>Page Margins</i>                     | <i>2 cm from each side</i>      |



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**Grading Policy:**

*Final Grade for this course will be the cumulated result of the following term work with relevant participation according to the quoted percentage.*

<b>Sessional</b>	<b>25%</b>		<b>Mid Term</b>	<b>35%</b>		<b>Final Term</b>	<b>40%</b>
Assignments	10 %		Mid Term Exam	25%		Final Exam	30%
Quizzes	10%		Major Report/Work	10%		Case Study/ Project/ Term Paper	10%
Presentations	05%						

*Remember subdivision of Mid Term and Final Term Examination should be done only in extreme cases of very essential and major Grading Instruments.*

**Dishonest Practices & Plagiarism**

*Any student found responsible for dishonest practice/cheating (e.g. copying the work of others, use of unauthorized material in Grading Instruments) in relation to any piece of Grading Instrument will face penalties like deduction of marks, grade 'F' in the course, or in extreme cases, suspension and rustication from IBIT.*

*For details consult PU Plagiarism Policy at <http://pu.edu.pk/dpcc/downloads/Plagiarism-Policy.pdf>*

**Grading System:**

Letter Grade	Grade Point	Num Equivalence
A	4.00	85 – 100 %
A-	3.70	80 – 84 %
B+	3.30	75 – 79%
B	3.00	70 – 74 %
B-	2.70	65 – 69 %
C+	2.30	61 – 64 %
C	2.00	58 – 60 %
C-	1.70	55 – 57 %
D	1.00	50 – 54 %
F	0.00	Below 50 %
I	Incomplete	*
W	Withdraw	*

**Norms to Course:**

- ✓ *Submission Date and Time for the term instruments is always **Un-Extendable***
- ✓ *5 Absentees in class will result in forced withdrawal. **(PU Policy)***
- ✓ *Re-sit in Mid and Final Term will cause you a loss of 2 and 3 grade marks respectively. **(PU Policy)***
- ✓ *This is your responsibility to keep track of your position in class evaluation units.*
- ✓ *After the submission date, NO excuse will be entertained.*
- ✓ ***Keep a copy of all submitted Grading Instruments.***
- ✓ *Assignment is acceptable only in its Entirety.*
- ✓ *No make up for any assignment and quiz.*
- ✓ *Copied & Shared work will score Zero.*
- ✓ *Assignments are Individual.*

**Good Luck**  
 For the Spring Term