INTERNATIONAL MANAGEMENT INSTITUTE, BHUBANESWAR
PROGRAMME NAME: POST GRADUATE DIPLOMA IN MANAGEMENT (PGDM-PT)
QUANTITATIVE TECHNIQUE
CREDIT: FULL (2 CREDITS)
SESSION DURATION: 90 MINUTES

TERM: III
YEAR: 2019-2020
BATCH: PGDM-PT (2018)

Faculty: Dr. Rajesh Katiyar
Telephone: (0674)3042-128
E-Mail: rajesh.katiyar@imibh.edu.in
Office hours: 9.30 AM – 5.30 PM

Course Introduction: The illustrious writer H.G. Wells stated that "*Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write*." That time is upon us now and the statement is even truer for managerial competence. Statistics is a tool required by managers to analyze, interpret and solve business problems. It gives them an objective perspective on problem at hand. This course addresses the need to get acquainted with the basic concepts and areas of managerial applications of statistics.

Learning Outcomes:
- To enable the student to gain a quantitative orientation.
- To introduce concepts of statistics and statistical analysis.
- To facilitate hands-on practice of statistical analysis (Excel based examples).
- To understand statistics from a business application perspective.

Course Pedagogy: The sessions will be a blend of interactive lectures and discussions and will be supplemented by class exercises.

Course Readings:

Text Book(s)

1. Levin, R.I. & Rubin, D.S. (2012). *Statistics for Management*. Pearson Education, New Delhi.

Reference Book(s)

1. Huff, D. (1993) *How to Lie with Statistics*. W.W. Norton & Company.

Course Evaluation Criteria:

Quiz	20%
Project/Assignment/Presentation	20%
Class Participation	20%
End-term	40%
Total	**100%**

Session Plan:

Session	Topic	Learning Outcomes	Reading
1.	**Introduction to course** **Frequency Distribution** **Probability Distribution** **Continuous Probability distribution – Normal distribution** **Choosing the correct probability distribution**	LO – 1 LO – 2	**Text book:** Ch. 3 (Pages 74-134); Ch. 5 (Pages 208-212) Ch. 5 (Pages 238-251) **Attempt:** Review & application exercises: 3-92 (p. 146), 3-99 (p. 147) Applications: 5-34, 5-35, 5-38, 5-40 (p. 252-253)
2.	**Sampling distribution** ❖ Sampling distribution of mean ❖ Standard error ❖ Central Limit Theorem ❖ Sample size and standard error	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 6 (Pages 286-305) **Attempt:** Applications: 6-32, 6-34 (p. 300-301)
3-4.	**Estimation** ❖ Interval estimation ❖ Confidence interval and confidence level ❖ Confidence interval for mean using z-distribution **Testing hypotheses (One sample – large sample)** ❖ Level of significance ❖ Type I and type II errors ❖ 2-tailed and 1-tailed tests of hypothesis	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 7 (Pages 316-334) Ch. 8 (Pages 366-385) **Attempt:** Applications: 7-15 (p. 328), 7-27 (p. 335) Applications: 8-27, 8-30, 8-31 (p. 386-387)
5.	**Testing hypotheses (One sample - small sample)** ❖ Confidence interval for mean using t-distribution ❖ Degrees of freedom ❖ 2-tailed and 1-tailed tests of hypothesis	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 7 (Pages 341-346) Ch. 8 (Pages 397-400) **Attempt:** 7-41, 7-43 (p. 350), 8-45, 8-47, 8-48, 8-50 (p. 402-403)
6.	**Sample size and other concepts** ❖ Sampling procedures ❖ Determining the sample size in estimation ❖ Concept of p-value ❖ Power of a test	LO – 1 LO – 2 LO – 3 LO – 4	Ch. 6 (Pages 268-280); Ch. 7 (Pages 351-353) Ch. 9 (Pages 450-454); Ch. 8 (Pages 388-390) **Attempt:** Applications: SC 8-12 (p. 402), 8-51 (p. 403), 8-53, 8-55 (p. 405-406)

7.	**Testing hypotheses: Two sample test (Differences of population means)** ❖ Large sample test ❖ Small sample test ❖ Dependent samples	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 9 (Pages 412-435) **Attempt:** Applications: 9-2, 9-3 (p. 418); 9-7, 9-8 (p. 429); SC 9-6, 9-17 (p. 438-439)
8.	**Chi-square test** ❖ Test of independence	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 11 (Pages 518-531) **Attempt:** Applications: 11-7, 11-11, 11-13 (p. 532-533)
9-10.	**Analysis of variance (ANOVA): One-way** ❖ Between treatments estimate of population variance ❖ Within treatments estimate of population variance ❖ F-test	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 11 (Pages 542-553) **Attempt:** Applications: 11-27 (p. 564), 11-32, 11-35 (p. 565-566) Applications: 11-60, 11-61 (p. 588)
11-12.	**Correlation and Simple Regression Analysis** ❖ Estimation using the regression line ❖ Correlation analysis	LO – 1 LO – 2 LO – 3 LO – 4	**Text book:** Ch. 12 (Pages 596-614, 629-638) **Attempt:** Applications: 12-10 (p. 601-602), 12-16 (p. 624-625), 12-21 (p. 626), 12-24 (p. 627), 12-31 (p. 642) & 12-37 (p. 648)

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