Course Specifications: Theory of probability & Statistics MTH103

1. Basic Information

Program Tile	Biomedical Engineering
Department offering the Program	Biomedical Engineering
Department Responsible for the Course	ECE
Course Title	Theory of probability & Statistics
Course Code	MTH103
Year/ Level	100
Credit Hours	2
Specialization	Major
Requirements	MTH101
Authorization data of course specification	

Teaching Hours	Credit	Lectures	Tutorial	Practical
	2	1	2	-

2. Course Attributes:

No.	Aims
1	Apply knowledge of statistics and probability theory to solve fundamental engineering problems.
4	Apply statistical techniques and tools to conduct experiments that help in the design of digital biomedical systems.

3. Intended Learning Outcomes (ILOs):

a. Knowledge and Understanding:

Demonstrate the knowledge and understanding of:

No.	Knowledge and Understanding
A1	Apply scientific principles and methodology of mathematics (statistics and probability theory) to be applied in engineering discipline.
A16	Apply statistics to improve health care sevices
A5	Use statistical methodologies of solving engineering problems, data collection and interpretation.
A6	Apply statistical methods in quality assurance methods

b. Intellectual Skills

No.	Intellectual Skills
B16	Use statistics to evaluate health care systems
B11	Analyze results of numerical models using statistical approaches

c. Professional Skills

No.	Professional Skills
C5	Use computational facilities to collect, analyze and interpret the results.
C16	Improve biomedical services by analyzing statistical results

d. General Skills

No.	General Skills
D1	Work as a team and independently, as appropriate.

4. Course Contents:

No.	Topics	Weeks
1	Basic statistics fundamentals	1-2
2	Data representation	3-5
3	Measures of central tendency	6,7,9
4	Measures of dispersion	10-11
5	Statistical relations	12-13
6	Statistical analysis using Minitab	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions

6.1 Teaching and Learning Methods for Disabled Students:

No.	Teaching Method	Reason
1	Extra Discussion Sessions	To increase general skills

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	ILOs
1	Mid Term Examination	A1, A5, B11
2	Semester work	A1,A5, A16, A6, B16, C16, C5, D1
3	Final Term Examination	A1, A5, A6, B11

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work	Every week
3	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	20%
2	Semester work	30%
3	Final Term Examination	50%
Total		100%

8. List of References

No.	Reference List
1	Montgomery, Douglas C., and George C. Runger. Applied statistics and probability for engineers. Hoboken, NJ: John Wiley and Sons, Inc, 2014.
2	Von Mises, Richard. *Mathematical theory of probability and statistics*. Academic Press, 2014.
3	McClave, James T., and Terry Sincich. *Statistics*. Boston: Pearson, 2013.
4	Walpole, Ronald E., et al. Probability & statistics for engineers & scientists. Boston: Prentice Hall, 2012.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Sound System
5	Wireless Internet
6	Lab Facilities
7	Visualizer

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
1	Basic statistics fundamentals	1	A1			
2	Data representation	1	A1		C5	
3	Measures of central tendency	1,4	A1	B11	C5	D1
4	Measures of dispersion	1,4	A5,A6	B11	C16	D1
5	Statistical relations	1	A6		C5	
6	Statistical analysis using Matlab	1,4	A16, A5	B16, B11	C16	

Course Coordinator: Prof. Dr.

Head of Department: Assoc. Prof. HossamEldeenMoustafa
Date of Approval: