Course Specifications: Mathematics 2 MTH003

1. Basic Information

Program Title	Biomedical Engineering
Department offering the Program	Biomedical Engineering
Department Responsible for the Course	Mathematics and Engineering Physics
Course Code	MTH003
Year/ Level	Level 000
Specialization	Minor
Requirements	MTH003
Authorization data of course specification	

Teaching Hours	Lectures	Exercises	Practical
	2	2	0

2. Course aims:

No.	aim
1	Apply knowledge of methods of integration and concepts of analytic geometry to solve simple engineering problems.
5	Use modern mathematical techniques and skills to design and control biomedical systems

3. Intended Learning Outcomes (ILOs):
a. Knowledge and Understanding:

No.	Knowledge and Understanding
A_1	Identify the concepts and theories of integration and analytic geometry.
A_5	State the methodologies of integration to solve simple engineering problems.

b. Intellectual Skills

No.	Intellectual Skills
B_1	Select appropriate methods of integration for modeling and analyzing problems.
B_2	Investigate appropriate solutions for engineering problems based on analytical thinking.

c. Professional Skills

No.	Professional Skills
C_1	Apply appropriate methods of solid geometry to solve engineering problems.

d. General Skills

No.	General Skills
D_3	Communicate effectively through writing reports.

4. Course Contents:

No.	Topics	Weeks
1	Pair of straight lines	1-2
2	Circles	3-4
3	Conic sections	5-6
4	Point, line and plane in space	7,9
5	Cylinder and quadric surfaces	10
6	Integration	11
7	Techniques of integration	12
8	Applications of integration	13
9	Infinite series	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions
3	Tutorial sessions

6. Teaching and Learning Methods for Disable Students:

No.	Teaching Method	Reason
1	Extra problems	To answer their questions

7. Student Evaluation:

7.1 Student Evaluation Methods:

No.	Evaluation Method	ILOs
1	Mid Term Examination	A_1, B_1, C_1
2	Semester work	B2, C1, D3
3	Final Term Examination	A1, A5, B1

7.2 Evaluation Schedule:

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

7.3 Weighting of Evaluations:

No.	Evaluation 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	R. A. Adams &C. Essex, Calculus, single variable, Pearson Education Canada,2010.
2	Banner, Adrian. "The Calculus Lifesaver: All the Tools You Need to Excel at Calculus." *AMC* 10 (2007): 12.
3	Kreyszig, E. "Advanced Engineering Mathematics" 10th edition, John Wiley & Sons, Inc., 2011.
4	Stroud, K. A., and Dexter J. Booth. Engineering mathematics. New York: Industrial Press, 2013.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aim	Knowledge &Understanding	Intellectual Skills	Professional Skills	General Skills
1	Pair of straight lines	1	A_1		C_1	
2	Circles	1	A_1		C_1	D_3
3	Conic sections	1	A_1	B_1	C_1	
4	Point, line and plane in space	5	A_1	B_1	C_1	
5	Cylinder and quadric surfaces	5	A_1		C_1	
6	Integration	5	A_1, A_5			D_3
7	Techniques of integration	5	A_1, A_5	B_1		D_3
8	Applications of integration	1	A_1, A_5	B_1, B_2	C_1	
9	Infinite series	1	A_1, A_5			

Course Coordinator: Prof. Dr.
Head of Department: Assoc. Prof. Hossam Eldeen Moustafa
Date of Approval: