1. Basic Information

Program Tile	Biomedical Engineering
Department offering the Program	Biomedical Engineering
Department Responsible for the Course	Computers Engineering and Control Systems
Course Code	CSE252
Year/ Level	Level 200
Specialization	Minor
Requirements	MTH101
Authorization data of course specification	

Teaching Hours	Credit	Lectures	Tutorial	Practical
	3	2	1	1.5

2. Course Aims

No.	Aim
1	Applydynamic models, block diagram analysis, bode plot analysis for controlling different systems.
3	Design lead and lag compensators to control a biomedical system and encourage in-self learning to know the most recent control system design techniques.

3. Intended Learning Outcomes (ILOs):

A. Knowledge and Understanding:

No.	Knowledge and Understanding
A8	Elementary science underlying different tools such as dynamic models
A12	Basics of design tools such as root locus

B. Intellectual Skills

No.	Intellectual Skills
B12	Create different tools such as dynamic models,bode plot analysis.

C. Professional Skills

No.	Professional Skills
C3	Carry out compensator design for a control system.
C4	Practice the neatness in design of lag and lead compensator.
C5	Use computational tools and electronic circuits to designcontrol systems related to biomedical systems.

D. General Skills

No.	General Skills
D2	Work in stressful environment and within constrains.
D9	Refer to relevant literature effectively.

4. Course Contents:

No.	Topics	No. of weeks
1	Dynamic modeling	1-2
2	Block diagram analysis	3-4
3	First and second order system	5-6
4	Routh test	7,9
5	Root Locus	10-11
6	Bode Plot diagram	12
7	Nyquist analysis	13
8	Lead and lag Compensators	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions
3	Research Assignment

6.Teaching and Learning Methods forDisabled Students:

No.	Teaching Method	Reason
1	Make simple projects	To help them practice

7. Student Evaluation:

7.1 Student Evaluation Methods:

No.	Evaluation Method	ILOs
1	Mid Term Examination	A8,A12, B12

2	Practical Examination	A8,A12,B12,C3,C4,C5,D2
3	Semester work	A8,A12,B12,C3,C4,C5,D2,D9
4	Final Term Examination	A8,A12,B12

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Mid Term Examination	8
2	Practical Examination	13
3	Semester work	Every week
4	Final Term Examination	15

7.3 Weighting of Evaluations:

No.	Evaluation Method	Weights
1	Mid Term Examination	20%
2	Practical Examination	10%
3	Semester work	20%
4	Final Term Examination	50%
Total		100%

8. List of References

No.	Reference List
1	Golnaraghi F, Kuo BC. Automatic Control Systems. Wiley; 2009.
2	II RL, Lawrence DA. Linear State-Space Control Systems. John Wiley & Sons; 2007.
3	Dorf RC, Bishop RH. Modern Control Systems. Prentice Hall; 2011.
4	Nise NS. Control Systems Engineering. Wiley; 2014.

9. Facilities Required for Teaching and Learning:

No.	Facility	No.	Facility
1	White Board	3	Sound System
2	Data Show System	4	Wire-Internet

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	Knowledge &Understanding	Intellectual Skills	Professional Skills	General Skills
1	Dynamic modeling	1	A8	B12	C3	
2	Block diagram analysis	1,3	A12	B12,	C3	D2
3	First and second order system	1,3	A8,	B12	C3,C5	D2
4	Routh test	1	A8,A12	B12,	C3,C5	D2
5	Root Locus	1,3	A8,A12,		C3,C4	D2
6	Bode Plot diagram	1,3	A12	B12	C3	D2,D9
7	Nyquist analysis	1	A8		C3,C4	D2
8	Lead and lag Compensators	1	A12	B12	C3,C4,C5	D2,D9

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