Course Specification	
Course Code: EPM 351	**Course Title: Electric Power (2)**
Prerequisites	**ELC 251**

(1).Basic information			
Program Title	Electrical Power and Machine Engineering		
Department offering the program	Electrical Engineering Dept.		
Department offering the course	Electrical Engineering Dept.		
Course Code	EPM 351		
Year/level	first term- 2022/2023 / 3rd level		
Specialization	Major		
Teaching Hours	Total	Practical / Tutorial	Lectures
	4	2	2
Date of approval of Bylaw	**2021**		

(2).Course Aims	
No.	**Aims**
1.	Analysis the design of some electrical power system components, as transformers, synchronous machine and their representation in the electrical systems, and also solve Egyptian network problems. In addition to power system elements impedance and faults analysis (Aim no.4 (PEO4) .)

(3). Learning Outcomes of Course (LOs)	
B1.1	Select, model and analyze electrical power systems such as transformers , synchronous generators.
B3.1	Analyze, Design an electrical power system represented by all its components.
B4.1	Estimate and measure the performance of a power system under specific input excitation and evaluate its suitability and efficiency for a specific application.
C3.1	Analyze the performance of electric power generation under faults.

(4). Course Contents				
Week No.	**Topics**	**Lecture**	**Tutorial / Practical**	**Total**
1	Introduction to power system analysis.	2	2	4
2	Electrical power systems construction and per-unit diagram	2	2	4
3	Electrical power transformers	2	2	4
4	Electrical power transformers	2	2	4
5	Electrical power transformers	2	2	4
6	Synchronous Generators	2	2	4
7	Synchronous Generators	2	2	4
8	**Midterm exam**			
9	Symmetrical faults	2	2	4
10	Symmetrical faults	2	2	4
11	Symmetrical components	2	2	4
12	Unsymmetrical faults	2	2	4
13	Unsymmetrical faults	2	2	4
14	Introduction to load flow analysis	2	2	4
15	Introduction to load flow analysis	2	2	4
16	**Final exam**			
	total	28	28	56

(5). Teaching and Learning methods	
No.	**Teaching Method**
1.	Interactive lectures
2.	Active learning e.g. group discussion, brain storming, demonstration.
3.	Project based learning
4.	Self-Learning

(6). Teaching and Learning methods of Disabled Students		
No.	**Teaching Method**	**Reason**
1.	Additional tutorial	
2.	On line lectures	

(7). Students Assessment

(7.1)Students Assessment Method

No.	Assessment Method	Los
1	Attendance	
2	Mid Term Examination	B1.1, B3.1, B4.1
3	Formative (quizzes - presentation)	B1.1, B3.1, B4.1
4	Final Term Examination	B1.1, B3.1, B4.1,C3.1

(7.2) Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Mid Term Examination	8
3	Formative (quizzes - presentation)	Every week
4	Final Term Examination	Decided by faculty council

(7.3) Weighting of Assessments

No.	Assessment Method	Weights %	Weights	
1	Attendance	5%	5	50
2	Mid Term Examination	30%	30	
3	Formative (quizzes - presentation)	5%	15	
6	Final Term Examination	50%	50	
Total		100%	100	

(8). List of References

[1].	Prabha S. Kundur Om P. Malik: “Power System Stability and Control,second edition” New York : McGraw Hill Education, 2022.
[2].	Grigsby, L. L. Power System Stability and Control (Electric Power Engineering Handbooks) (3rd ed.). CRC Press, 2012.
[3].	D. Das, “Electrical power systems”, NEW AGE INTERNATIONAL (P) LIMITED, PUBLISHERS,2006.
[4].	H. Saadat, “Power System Analysis”, 2nd ED, McGraw Hill International Editions, 2004.
[5].	A. Bergen, and V. Vittal, “Power Systems Analysis”, 2nd ED, Prentice Hall, 2000.

(9). Facilities required for teaching and learning	
1.	Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
2.	Microsoft teams
3.	Data show
4.	Simulation Software (MATLAB)

(10).Matrix of Aims and LOs of the Course

No.	Topics	Aims	LOs
1.	Introduction to power system analysis.	1	B1.1
2.	Electrical power systems construction and per-unit diagram		B1.1, B3.1
3.	Electrical power transformers		B1.1, B3.1,B4.1
4.	Synchronous Generators		B1.1, B3.1,B4.1
5.	Symmetrical faults		B1.1, B3.1,B4.1,C3.1
6.	Symmetrical components		B1.1, B3.1,B4.1,C3.1
7.	Unsymmetrical faults		B1.1, B3.1,B4.1,C3.1
8.	Introduction to load flow analysis		B1.1, B3.1,B4.1

(11). Matrix of Competencies/ Program LOs with Course LOs

No.	Competences/ Program LOs	No.	Course LOs
B1	Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of generation, transmission and distribution of electrical power systems.	B1.1	Select, model and analyze electrical power systems such as transformers , synchronous generators.
B3	Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.	B3.1	Analyze, Design an electrical power system represented by all its components.
B4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.	B4.1	Estimate and measure the performance of a power system under specific input excitation and evaluate its suitability and efficiency for a specific application.
C3	Analyze the performance of electric power generation, control, and distribution systems.	C3.1	Analyze the performance of electric power generation under faults.

Title	Name	Signature
Course Coordinator	Dr.	
Head of Department	Assoc. Prof. Eyad Saeed	
Date of Approval	2022/ 2023	