SHRI VENKATESHWARA UNIVERSITY

EVALUATION SCHEME & SYLLABUS

M.TECH Power System Part Time

(Two Years Post Graduation Programme)
I SEMESTER

(w.e.f. 2019-20)

SCHOOL OF ENGINEERING & TECHNOLOGY

				M.TECH Power System Part Time SEMESTER-I										
Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semeste r		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	AUD-101	English for research paper writing	2	0	0	20	10	30		70		100	2
2	WPS-011	Renewable Energy System	3	0	0	20	10	30		70		100	3
3	WPS-101	Power System Dynamics -I	3	0	0	20	10	30		70		100	3
	WPS-111	Power System Dynamics -I LAB	0	0	4				25		25	50	2
		Total										350	10

Code	Course Name	L-T-P	Cr.
WPS -101	Power System Dynamics-I	3-0-0	3

Course Objectives: - Students will be able to:

- Study of system dynamics and its physical interpretation

- Development of mathematical models for synchronous machine

- Modeling of induction motor

Unit No.	Content
1	Synchronous Machines: Per unit systems Park's Transformation (modified) Flux-linkage equations.
2	Voltage and current equations Formulation of State-space equations Equivalent circuit.
3	Sub-transient and transient inductance and Time constants, Simplified models of synchronous machines
4	Small signal model: Introduction to frequency model.
5	Excitation systems and Philips-Heffron model PSS Load modeling.
6	Modeling of Induction Motors Prime mover controllers

Suggested reading:

- P. M. Anderson & A. A. Fouad "Power System Control and Stability", Galgotia , New Delhi, 1981.

- J Machowski, J Bialek& J. R W. Bumby, "Power System Dynamics and Stability", John Wiley & Sons, 1997.

- P.Kundur, "Power System Stability and Control", McGraw Hill Inc., 1994.

- E.W. Kimbark, "Power system stability", Vol. I & III, John Wiley & Sons, New York 2002

Course Outcomes: Students will be able to:

- Understand the modeling of synchronous machine in details.

- Carry out simulation studies of power system dynamics using MATLAB-SIMULINK, MI POWER

- Carry out stability analysis with and without power system stabilizer (PSS).

- Understand the load modeling in power system

Code	Course Name	L-T-P	Cr.
WPS -111	Power System Dynamics Lab	0-0-4	2

List of experiments:

S.No.	Experiments
1	Power Curves
2	Build a Wind Farm
3	Test the Capabilities of the Hydrogen Fuel Cells and Capacitors
4	Effect of Temperature on Solar Panel Output
5	Variables Affecting Solar Panel Output
6	Effect of Load on Solar Panel Output
7	Wind Turbine Output: The Effect of Load
8	Test the Capabilities of Solar Panels and Wind Turbines

Code	Course Name	L-T-P	Cr.
WPS -011	Renewable Energy System	3-0-0	3

Course Objectives:- Students will be able to:

- To learn various renewable energy sources.

- To gain understanding of integrated operation of renewable energy sources.

- To understand Power Electronics Interface with the Grid

Unit No.	Content
1	Introduction, Distributed vs Central Station Generation Sources of Energy such as Micro-turbines Internal Combustion Engines
2	Introduction to Solar Energy, Wind Energy, Combined Heat and Power Hydro Energy, Tidal Energy, Wave Energy Geothermal Energy, Biomass and Fuel Cells.
3	Power Electronic Interface with the Grid
4	Impact of Distributed Generation on the Power System Power Quality Disturbances
5	Transmission System Operation Protection of Distributed Generators
6	Economics of Distributed Generation Case Studies

Suggested reading:

- RanjanRakesh, Kothari D.P, Singal K.C, "Renewable Energy Sources and Emerging Technologies", 2nd Ed. Prentice Hall of India ,2011.

- Math H.Bollen, Fainan Hassan, "Integration of Distributed Generation in the Power System", July 2011, Wiley –IEEE Press.

- Loi Lei Lai, Tze Fun Chan, "Distributed Generation: Induction and Permanent Magnet Generators",October 2007, Wiley-IEEE Press.

- Roger A.Messenger, Jerry Ventre, "Photovoltaic System Engineering", 3rd Ed, 2010.

- James F.Manwell, Jon G.McGowan, Anthony L Rogers, "Wind energy

- explained: Theory Design and Application", John Wiley and Sons 2nd Ed, 2010

Course Outcomes:- Students will be able to:

- Knowledge about renewable energy

- Understand the working of distributed generation system in autonomous/grid connected modes.

Code	Course Name	L-T-P	Cr.
AUD -101	English for Research Paper Writing	2-0-0	0

Course objectives: Students will be able to:

- Understand that how to improve your writing skills and level of readability
- Learn about what to write in each section
- Understand the skills needed when writing a Title

Syllabus- Content:

Unit No.	Content
1	Planning and Preparation, Word Order, Breaking up long sentences, Structuring Paragraphs and Sentences, Being Concise and Removing Redundancy, Avoiding Ambiguity and Vagueness
2	Clarifying Who Did What, Highlighting Your Findings, Hedging and 4 Criticising, Paraphrasing and Plagiarism, Sections of a Paper, Abstracts. Introduction
3	Review of the Literature, Methods, Results, Discussion, Conclusions, The Final Check.
4	key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature
5	skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions useful phrases, how to ensure paper is as good as it could possibly be the 4 first- time submission.

Suggested Studies:

Goldbort R (2006) Writing for Science, Yale University Press (available on Google Books)Day R (2006) How to Write and Publish a Scientific Paper, Cambridge University Press Highman N (1998), Handbook of Writing for the Mathematical Sciences, SIAM. Highman's book .Adrian Wallwork , English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011