SHRI VENKATESHWARA   UNIVERSITY

Syllabus

B.Tech

**Electrical Engineering
VIII SEMESTER
(Four Years Programme)**

(w.e.f. 2019-20)

**SCHOOL OF ENGINEERIN &
TECHNOLOGY**
SEMESTER- IV

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
1	**SEE- 801**	Advanced Electric Drives	3	0	0	20	10	30		70		100	3
2	**SOE- 081**	Renewable Energy	3	0	0	20	10	30		70		100	3
3	**SOE- 082**	Operation Research	3	0	0	20	10	30		70		100	3
4	**SEE-811**	Project Stage-II	0	0	12				100		100	200	6
5	SEE-888	Seminar							100		100	100	3
												600	18

Electrical Engineering
SEMESTER VIII

SEE-801	Advanced Electric Drives	3L:0 T:0P	3 credits

Course Outcomes:
At the end of this course, students will demonstrate the ability to
- Understand the operation of power electronic converters and their control strategies.
- Understand the vector control strategies for ac motor drives
- Understand the implementation of the control strategies using digital signal processors.

Module 1: Power Converters for AC drives (10 hours)
PWM control of inverter, selected harmonic elimination, space vector modulation, current control of VSI,three level inverter, Different topologies, SVM for 3 level inverter, Diode rectifier with boost chopper, PWM converter as line side rectifier, current fed inverters with self-commutated devices. Control of CSI, H bridge as a 4-Q drive.

Module 2: Induction motor drives (10 hours)
Different transformations and reference frame theory, modeling of induction machines, voltage fedinverter control-v/f control, vector control, direct torque and flux control(DTC).

Module 3: Synchronous motor drives (6 hours)
Modeling of synchronous machines, open loop v/f control, vector control, direct torque control, CSI fedsynchronous motor drives.

Module 4: Permanent magnet motor drives (6 hours)
Introduction to various PM motors, BLDC and PMSM drive configuration, comparison, block diagrams,Speed and torque control in BLDC and PMSM.

Module 5: Switched reluctance motor drives (6 hours)
Evolution of switched reluctance motors, various topologies for SRM drives, comparison, Closed loopspeed and torque control of SRM.

Module 6: DSP based motion control (6 hours)
Use of DSPs in motion control, various DSPs available, realization of some basic blocks in DSP forimplementation of DSP based motion control.

Text / References:
1. B. K. Bose, "Modern Power Electronics and AC Drives", Pearson Education, Asia, 2003.
2. P.C. Krause, O. Wasynczuk and S.D. Sudhoff, "Analysis of Electric Machinery and Drive Systems",John Wiley & Sons, 2013.
3. H. A. Taliyat and S. G. Campbell, "DSP based Electromechanical Motion Control", CRC press,2003.
4. R. Krishnan, "Permanent Magnet Synchronous and Brushless DC motor Drives", CRC Press, 2009.