ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

"ವಿ ಟಿ ಯು ಅಧಿನಿಯಮ ೧೯೯೪" ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯ

Visvesvaraya Technological University

(State University of Government of Karnataka Established as per the VTU Act, 1994)

"Jnana Sangama" Belagavi-590018, Karnataka, India

Prof. B.E. Rangaswamy, Ph.D.
Registrar

Phone No: (0831) – 2405468
Fax No. : (0831) – 2405467

Ref. No.: VTU/BOS/A12/2025-26/767

Date: 16 MAY 2025

Circular

Sub: MEPE215B **MEPS215B Uninterruptible Power Supply** in M.Tech. Power Electronics Programme (2024 Scheme) – Updating the syllabus content

Ref: Chairperson, BOS in EEE, VTU, Belagavi email dated 13-05-2025

With reference to the above, it is observed that the syllabus content for the subject "**MEPE215B Uninterruptible Power Supply"** is repeated as that of "**MEPE215A** Converters For Solar And Wind Power Systems" syllabus in M.Tech. Power Electronics Programme (2024 Scheme. The Chairperson, BOS in EEE, VTU, Belagavi has submitted the correct syllabus for the subject **MEPE215B Uninterruptible Power Supply** and the same is enclosed herewith for your information.

You are hereby requested to bring the contents of this Circular to the notice of all the concerned faculty members / students of your college and follow the same.

Encl: syllabus

R 16/05/25 BE
Registrar

To
1) The Principals of constituent and all affiliated engineering colleges under VTU.
2) The Chairpersons/Programme Coordinators of all VTU PG Centres at Muddenhalli, Belagavi, Mysuru and Kalaburagi Regions.

Copy to:
1) The Secretary to VC, VTU, Belagavi.
2) The Registrar (Eval.), VTU, Belagavi.
3) The Regional Director (I/c), VTU Regional Offices at Bengaluru, Belagavi, Kalaburagi & Mysuru for information and circulation.
4) The Director, ITISMU, VTU, Belagavi to upload the Circular in the University website.
5) The Special Officer, Examination Section, VTU, Belagavi.
6) PS to Registrar, VTU, Belagavi.

Semester- II

Uninterruptible Power Supply			
Course Code	MEPE215B	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	3:0:0	SEE Marks	50
Total Hours of Pedagogy	40 Hours	Total Marks	100
Credits	03	Exam Hours	03

Course Learning objectives:

1. To understand classification of UPS, batteries for UPS, parallel operation and performance evaluation and control of UPS systems.
2. Acquire knowledge about sources of harmonics and their mitigation using active filters.
3. To understand steady-state operation and control of unified power quality conditioners and the concept of reduced parts converter.
4. To understand an on-line ups system based on novel AC/DC rectifier.
5. To understand the reduced parts active filters, their modeling and control.

Module-1

Uninterruptible Power Supplies: Classification, Batteries for UPS Applications, Flywheels for UPS Applications, Comparative Analysis of Flywheels and Electrochemical Batteries, Applications of UPS Systems, Parallel Operation, Performance Evaluation of UPS Systems, Power Factor Correction in UPS Systems, Control of UPS Systems, Converters for UPS Systems, Battery Charger/Discharger.

Module-2

Active Filters: Harmonic Definition, Harmonic Sources in Electrical Systems, Effects of Harmonics, Harmonic Mitigation Methods, Classification of Active Filters, Active Filters for DC/DC Converters, Modelling and Analysis, Control Strategies, Stability Assessment.

Module-3

Unified Power Quality Conditioners: Series–Parallel Configuration, Current Control, Voltage Control, Power Flow and Characteristic Power.

Reduced-Parts Uninterruptible Power Supplies: Concept of Reduced-Parts Converters Applied to Single-Phase On-Line UPS Systems, New On-Line UPS Systems Based on Half-Bridge Converters.

Module-4

New On-Line UPS Systems Based on a Novel AC/DC Rectifier: New Three-Phase On-Line UPS System with Reduced Number of Switches, New Single-Phase to Three-Phase Hybrid Line-Interactive/On-Line UPS System.

Module-5

Reduced-Parts Active Filters: Reduced-Parts Single-Phase and Three-Phase Active Filters, Reduced-Parts Single-Phase Unified Power Quality Conditioners, Reduced-Parts Single-Phase Series–Parallel Configurations, Reduced-Parts Three-Phase Series–Parallel Configurations.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

1. Two Unit Tests each of **25 Marks**
2. Two assignments each of **25 Marks**or **one Skill Development Activity of 50 marks** to attain the COs and POs

The sum of two tests, two assignments/skill Development Activities, will be **scaled down to 50 marks**

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester-End Examination:

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper will have ten full questions carrying equal marks.
3. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.
5. The students will have to answer five full questions, selecting one full question from each module

Suggested Learning Resources:

Books

1. Uninterruptible Power Supplies and Active Filters, Ali Emadi et al, CRC Press, 2005.
2. Uninterruptible Power Supplies and Standby Power Systems, Alexander C King, William Knight, McGraw-Hill, 2003.

Web links and Video Lectures (e-Resources):

-

Skill Development Activities Suggested

-

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

Sl. No.	Description	Blooms Level
CO1	Discuss classification of UPS, batteries for UPS, parallel operation and performance evaluation and control of UPS systems.	L3
CO2	Discuss the sources of harmonics and their mitigation using active filters.	L3
CO3	Discuss the steady-state operation and control of unified power quality conditioners and the concept of reduced parts converter.	L3
CO4	Discuss the on-line ups system based on novel AC/DC rectifier.	L3
CO5	Discuss the reduced-Parts Single-Phase and Three-Phase Active Filters.	L3

Program Outcome of this course

Sl. No.	Description	POs

Mapping of COS and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1										
CO2										
CO3										
CO4										
CO5										

Gmail Sadashiv Halbhavi <sbhvtuso2022@gmail.com>

Regarding Syllabus in Portal for 2nd Semester MTech Power Electronics

3 messages

The Oxford Educational Institutions <enghodeee@theoxford.edu> Tue, May 13, 2025 at 6:28 AM
To: Sadashiv Halbhavi <sbhvtuso2022@gmail.com>, Principal The Oxford College of Engineering <engprincipal@theoxford.edu>, basavarajvma@gmail.com

Respected Sir / Madam
We are from The Oxford College of Engineering, Bangalore
We have **MTech Power Electronics - 2024 Scheme**
Our student is interested in Taking Uninterruptible Power Supply - MEPS215B as elective.
The syllabus is same as the MEPS215A syllabus and not Uninterruptible Power Supply syllabus

Kindly check and update the corrections as semester already commenced
1) Converters For Solar And Wind Power Systems - MEPS215A - Page No: 14
1) Uninterruptible Power Supply - MEPS215B - Page No 17
PFA the syllabus loaded in portal
Regards
Dr.Devi Vighneshwari
Prof & HOD
Department of EEE
The Oxford College of Engineering
Bangalore
560068
9342129484

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Sadashiv Halbhavi <sbhvtuso2022@gmail.com> Tue, May 13, 2025 at 8:29 AM
To: Dr Basavaraj Madiggond <basavarajvma@gmail.com>
Cc: The Oxford Educational Institutions <enghodeee@theoxford.edu>, Meghana Kulkarni <meghanak@vtu.ac.in>

Good Morning Professor,

Please see the forwarded email
[Quoted text hidden]
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Thanks and Regards

Prof. S. B. HALBHAVI
Special Officer,
Visvesvaraya Technological University,
Jnana Sangama' Belagavi 590 018.
Karnataka. India
eMail-sbhalbhavi@vtu.ac.in.
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Dr Basavaraj Madiggond <basavarajvma@gmail.com> Tue, May 13, 2025 at 10:14 AM
To: Sadashiv Halbhavi <sbhvtuso2022@gmail.com>

Sir,
I regret the inconvenience caused. Please find the updated syllabus of **MPE205B** for your reference and needful action.

Thanks and Regards

Dr. Basavaraj V Madiggond
Chairman, Board of Studies (EEE), VTU Belagavi
Professor and Head
Dept. of EEE
Dean (Acad)
Hirasugar Institute of Technology, Nidasoshi- 591236
Accredited by NBA & At A Grade by NAAC
Ph : 9343454993

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