Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NCYD534	Rechargeable Battery Science and Technology	3	0	0	3

Course Objective
● This course will Introduce the students to the science and technology of various rechargeable energy storage systems, their components, chemistry, Applications and fabrication steps.
Learning Outcomes
The students will learn: ● Fundamentals of energy storage systems ● Various types of battery systems and their applications ● Chemistry of battery systems ● Fabrication Techniques of batteries ● Characterization of Battery systems

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Fundamentals of Energy storage systems, Types of energy storage systems and Applications.	6	Energy storage mechanism. Types of Energy storage systems.
2	Types of Battery systems and their applications. Metal-ion batteries. Metal – Air batteries, Metal – Sulphur batteries. Other types of Batteries.	9	Various types of batteries, fundamentals and applications.
3	Components of battery system. Chemistry of electrodes, electrolytes. Commercial Electrodes and Electrolytes.	10	Various components of batteries. Materials used for various types of batteries. Chemistry and Electrochemistry of batteries.
4	Fabrication Techniques for Batteries. Various process used for battery fabrication in Lab and Industries. Battery pack design and power management.	9	Students will be introduced to fabrication techniques of Batteries.
5	Characterization of Batteries. Electrochemical analysis and materials characterization of electrodes.	8	Students will learn techniques to evaluate performance of a battery.
TOTAL		**42**	

Text Books:

1. Battery Technologies: Materials and Components, Jianmin Ma (Editor), ISBN: 978-3-527-34858-9, John Wiley & Sons, Inc., 2021.

Reference Books:

1. Lithium batteries and other electrochemical storage systems, Christian Glaize and Sylvie Geniès ISBN:9781848214965, John Wiley & Sons, Inc., 2013.
2. The handbook of lithium – ion battery pack design: Chemistry, components, types and terminology, John Warner, ISBN: 9780128016688,Elsevier, 2015.
3. Electrochemical energy: Advanced materials and technologies , Edited by Pei Kang Shen, Chao-Yang Wang, San Ping Jiang, Xueliang Sun, Jiujun Zhang, ISBN: 9781482227284, Chapman and Hall/CRC, 2018.