1.	Illustrate classification, synthesis and degradation of sucrose and starch and learn diurral fluctuations in plants and their regulation.
2.	Summarize photosynthesis whole process including light absorption and energy conservation, pigment systems I and II and their structural organization, electron transport and ATP synthesis.
3.	Discuss synthesis and degradation of fats and fatty acids and α- and β-oxidation.
4.	Construct pathways and networks and analyse the importance of secondary metabolites in medicine and agriculture.
5.	List the steps involved in pathway engineering for new products and new pathways and redirecting metabolic flow desensitization of feedback inhibition.

S.No.	Content	Contact Hours
1.	**Carbohydrate metabolism:** Classification, Synthesis and degradation of sucrose and starch. Diurral fluctuations in plants and their regulation. Genetic engineering of sugars.	**8**
2.	**Photosynthesis:** Light absorption and energy conservation, pigment systems I and II and their structural organization, electron transport and ATP synthesis. Calvins cycle, Transcription, translation and regulation of plastid genes in chloroplast development. Genetic engineering of photosynthesis.	**8**
3.	**Lipid metabolism:** Synthesis and degradation of fats and fatty acids. α- and β-oxidation. Outlines of terpenoid and flavonoid pathways, signal transduction.	**9**
4.	**Concept of secondary metabolites.** Historical and current status. Importance of secondary metabolites in medicine and agriculture. Introduction to pathways and their networking. Transfer of entire pathways and completion of partial pathways through genetic engineering.	**9**
5.	**Metabolic engineering:** Pathway engineering for new products and new pathways, redirecting metabolic flow – desensitization of feedback inhibition, elevating rate limiting enzymes.	**8**
	Total	**42**

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Books: -

S.No.	Name of Books/ Author/Publisher
1.	Lincoln, Tiaz and Eduardo Zeiga Plant Physiology, Paxima Publishing Co. (2003)
2.	Buchanan, B.B. Gruiesson, W. and Jones R.S. (2). Biochemistry and Molecular Biology of Plants, (2000)
3.	Derris D.T., Turpa, D.H. Leferbure, D.D. and Layzell D.B.. Plant Metabolism. (1987)