Course Title	Applied Dental Biochemistry				
Course Code	DES155				
Course Type	Compulsory				
Level	Bachelor of Dentistry				
Year / Semester	1st year / 2nd semester				
Teacher's Name	TBA				
ECTS	3	Lectures / week	2 hrs / 13 weeks + exam week	Laboratories / week	2 hrs / 13 weeks
Course Purpose and Objectives	Knowledge of the basis of the molecules, cells and the anabolic, catabolic pathways involved. Metabolic pathways associated in Dental environment as well as key pathways involved in oral pathology. Nutrition involvement in health and disease.				
Learning Outcomes	Upon successful completion of this course students should be able to: • Describe the Catabolic pathways of all biomolecules (Amino acids, lipids, carbohydrates, and nucleotides). • Describe the energy production pathways (ETC. TCA). • Describe the role of chemical, molecular basis of the oral function and their importance in the health care. • Describe the oral environment. • Describe the biochemical pathways involved in oral tissues during normal conditions and disease.				
Prerequisites	None	Co-requisites	None		
Course Content	In that regard, students will familiarize themselves with the following Biochemical Modules: • Describe and Discuss the key metabolic pathways: • Describe the catabolism and anabolism of all biomolecules including proteins (transamination, deamination) carbohydrates (Glycolysis and gluconeogenesis) nucleotides (pentose phosphate pathway and salvage pathway), lipids (lipolysis and b-oxidation). • Describe and explain the metabolic pathways (Krebs cycle and urea cycle) • Describe and explain the significance of lactic acid elimination				

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<tr><td></td><td>from muscles (Cory cycle)
Describe and discuss the energy production pathways (Oxidative Phosphorylation and ETC)
Describe and explain the ATP production
Describe and explain the key metabolic pathways triggered in oral cavity and saliva mixture as a biomarker and dynamic fluid.
Describe and explain the mechanisms in oral diseases in respect to biochemical defects of biomolecule malfunctions as well as the environmental changes in oral cavity during oral diseases.</td></tr>
<tr><td>Teaching Methodology</td><td>Face-to-face, Laboratories, Quizzes, Assignments, Literature review sessions.</td></tr>
<tr><td>Bibliography</td><td>Nelson DL, Cox MM. Lehninger Principles of Biochemistry. New York: W H Freeman MacMillan, 2017.

Additional reading
Berg JM, Tymoczko JL, Stryer L. Biochemistry. New York: W H Freeman, 2002.
Levin M. Topics in Dental Biochemistry. Berlin: Springer, 2011.
Shuttleworth A, Whittaker DK, Ferguson DB. Oral Bioscience. London: Churchill Livingstone, 2000.
Vasudevan DM, Sreekumari S. Textbook of Biochemistry for Dental Students. New Delhi: Jaypee Brothers Medical Publishers, 2007.</td></tr>
<tr><td>Assessment</td><td><table><tr><td>Final Examination</td><td>60%</td></tr><tr><td>Lab Report / Oral presentations</td><td>30%</td></tr><tr><td>Participation and attendance</td><td>10%</td></tr><tr><td>Total</td><td>100%</td></tr></table></td></tr>
<tr><td>Language</td><td>English</td></tr>
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