

Course Title	Clinical Embryology				
Course Code	MED 602				
Course Type	Major Elective				
Level	Doctor of Medicine (MD)				
Year / Semester	6 th Year / 12 th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 Hours	Laboratories / week	1 Hour
Course Purpose and Objectives	<p>This course is aiming to acquaint Medical students to a broad and concrete overview of the mechanisms causing major and minor birth defects after drug and environmental causative factors during pregnancy and neonatal life, to types of their prevention and to the clinical problems which arise for their repair and rehabilitation. Genetic Counseling methods and international Guidelines for birth defects prevention and their early diagnosis in pregnancy will be taught. The role of folic acid and healthy and enhanced nutrition before and during pregnancy will be analyzed. Viruses, bacteria, toxic substances, chemicals, endocrine disrupters, drugs, particulate matters and toxic nanoparticles bio-distribution throughout the embryonic/fetal and neonatal body which can have consequences to the developing human organism via their placenta blood barrier permeability will be taught. Incidence of genetic syndromes and epigenetic disturbances will be emphasized. Thus, the course is going to serve as a connective foundation upon which, clinical orientated problems and their prevention and repair in Clinical Embryology and Neonatology in Medical sciences will be based.</p>				
Learning Outcomes	<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of clinical orientated problems in embryology influencing the developing of the human embryo and of each of its organs and systems. • Illustrate, recognize, identify and describe the normal and abnormal embryonic development in comparison with the clinical problems raised after the influence of causative teratogenic and genetic factors. • Understand the role of Clinical evaluation in Embryology for accurate diagnosis of birth defects. • Understand the role of Clinical Genetic Counseling for birth defects prevention. • Understand the role of Clinical rehabilitation and surgical repair of 				

	<p>birth defects.</p> <ul style="list-style-type: none"> • Understand the role of Networking with diverse types of physicians and clinics for information of birth defects prevention. • Describe and explain diagnostic methods as :the prenatal ultrasound 2D and 3D diagnosis, amniocentesis and other modern prenatal examination methods for diagnostic purposes of birth defects. <p>All the above will acquaint Medical students to demonstrate effective self-assessment skills, communicative and collaborative skills, communication with peers, discussions in small groups with clinicians and presentation of Problem Based Learning and Clinical Discussions in human clinical cases of birth defects.</p> <p>Laboratory skills</p> <ul style="list-style-type: none"> • Describe and explain prenatal diagnostic methods in collaboration with clinicians. • Describe and identify clinical cases of birth defects into the human embryonic body. • Understand the role of Genetic Counselling and Clinical Embryology for accurate diagnosis in diverse diseases demonstrating skills in critical thinking via Problem Based Learning and Clinical Discussions. • Describe and identify stages of embryological and fetal normal and defective differentiation of organs and systems from implantation of the blastocyst to the full term pregnancy. • Identify tissue and organs' normal and defective embryological structure , from 3-D high fidelity embryological models, videos and Computer Assisting Learning-CAL. 		
Prerequisites	None	Co-requisites	None
Course Content	<p>In that regard, students will familiarize themselves with the following Modules:</p> <ul style="list-style-type: none"> • Genetic Counseling for Birth Defects. • Endocrine disrupters and Birth Defects. • Birth Defects caused by drugs, viruses, bacteria, toxic substances and multiple teratogenic environmental causative factors during pregnancy and neonatal life. • Epigenetics and Clinical Embryology. • Congenital Anomalies due to Genetic disorders. Clinical expression of Parental Diseases and Syndromes. • Clinical expression of birth defects at the Craniofacial area. • Clinical expression of birth defects at the Cardiovascular and the Respiratory System. • Clinical expression of birth defects at the Gastrointestinal System. • Clinical expression of birth defects at the Renal System. • Clinical expression of birth defects at the Male and Female 		

	<p>Reproductive System.</p> <ul style="list-style-type: none"> • Clinical expression of birth defects at the Neural System and the Sensory organs. • Clinical expression of birth defects at the Skin, Muscular and Skeletal System and at the Upper and Lower extremities. • Clinical expression of birth defects at the Umbilical Cord and the Placenta. • Clinical and modern imaging modalities' methods for prenatal diagnosis of Birth defects. <p>Laboratory exercises:</p> <ul style="list-style-type: none"> • Observations of normal and pathological clinical embryonic cases from the systems described. • Drawing methods for understanding the clinical expression of birth defects of the organs and systems described above and observations of various types of high fidelity 3D embryological models • Clinical Seminars and Discussions of pathological clinical cases of birth defects in comparison with normal clinical appearance from the organs and systems described. • Clinical Seminars and Discussions with videos for clinical cases of congenital malformations and birth defects from the modules described using videos and Computer Assisting Learning-CAL.
Teaching Methodology	Face- to- face
Bibliography	<p>The Developing Human: Clinically Oriented Embryology, 10e 10th Edition by: Keith L. Moore BA MSc PhD DSc FIAC FRSM FAAA , T.V.N.Persaud MD PhD DSc FRCPath (Lond.) FAAA, Mark G. Torchia MSc PhD 2016, 10th EDITION-INTERNATIONAL EDITION Copyright 2016 By ELSEVIER Inc 1600 JOHN F. KENNEDY Blvd Ste 1800 Philadelphia, PA 19103-2899 ISBN-13: 978-0-32331338-4 ISBN-10: 978-0-32331347-6</p> <p>ADDITIONAL RECOMMENDED TEXTBOOKS:</p> <p>Textbook of Clinical Embryology Edited by Kevin Coward and Dagan Wells Cambridge University Press 2013 1st Edition University Printing House Cambridge CB2 8BS United Kington Print Publication Year:2013 Online Publication Date: November 2013 Online ISBN:9781139192736 Paperback ISBN:9780521166409</p>

	<p>Before we are Born. Essentials of Embryology and Birth Defects. Keith L. Moore, T.V.N. Persaud, Mark G. Torcha. Philadelphia, Elsevier Saunders Edition, 8th Edition 2013, ISBN 978-1-4377-2001-3.</p> <p>Langman's Medical Embryology. T. W. Sadler. Wolters Kluwer Health/Lippincott Williams & Wilkinson, Philadelphia, Baltimore, New York, London, Buenos Aires, Hong Kong, Sydney, Tokyo. 12th Edition- International Edition, 2012. ISBN 978-1-4511-4451-1.</p>												
Assessment	<table border="1"> <tr> <td>Mid-Term Examination</td> <td>30%</td> </tr> <tr> <td>Final Examination</td> <td>40%</td> </tr> <tr> <td>Assignment /Lab</td> <td>10%</td> </tr> <tr> <td>Clinical problems(team effort)</td> <td>10%</td> </tr> <tr> <td>Class participation</td> <td>10%</td> </tr> <tr> <td></td> <td>100%</td> </tr> </table>	Mid-Term Examination	30%	Final Examination	40%	Assignment /Lab	10%	Clinical problems(team effort)	10%	Class participation	10%		100%
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