COURSE SPECIFICATION

A2:(Special course in Medical Biochemistry & Molecular Biology)

(A)Administrative information

1.Programme offering the course:	M.D. of Medical Biochemistry
2.Department offering the programme:	Medical biochemistry department
3.Department responsible for teaching the course:	Medical biochemistry department
4.Part of the programme:	1st part
5.Date of approval by the Department`s council	1/11/2015
6.Date of last approval of programme specification by Faculty council	9/8/2016
7.Course title:	**Special course in Medical Biochemistry & Molecular Biology**
8.Course code:	BIC 604 SB
9.Total teaching hours:	15 hours
10.Total credit hours:	1 hour

(B) Professional information

(1) Course Aims:

To educate students about the basics of aging, stem cells, obesity and bioinformatics and their different biochemical basis and theories, also to provide the students with updated data concerning recent applications.

(2) Intended Learning Outcomes (ILOs):

A-Knowledge and Understanding

On successful completion of the course, the candidate will be able to:

AI-11	**AI-11.1** Define aging **AI-11.2** Discuss aging theories **AI-11.3** Describe secrets of aging including: **AI-11.3.a** Free radical (oxidative stress) theories (Mitochondria and ROS generation, ROS and biomolecules damage, ROS and immune response, ROS and cytokines) **AI-11.3.b** Mitochondrial changes. **AI-11.3.c** Accumulation of aberrant proteins in the cytosol. **AI-11.3.d** Chemical damage to macromolecules. **AI-11.3.e** DNA repair errors. **AI-11.3.f** Somatic mutations and altered transcription of specific genes **AI-11.3.g** Glucose cross linking **AI-11.3.h** Role of HSP, hormones, growth factors in aging **AI-11.4** Explain pathways of senescence (telomere dependent pathway induced by stress signals)

	AI-11.5 Explain Role of Antioxidant , Caloric or dietary restriction, Hormone replacement in retarding aging process **AI-11.6 Explain** Role of dopamine receptor in aging AI-11.7 Recognize telomerase regulation
AI-12	**AI-12.1 D**iscuss Stem cells **AI-12.2 Recognize** Characters of stem cell (self renewal& potency) **AI-12.3 Recognize** Classification of stem cell **AI-12.4 Recognize** Induced pluripotent stem cells **AI-12.5 Describe** Stem cell plasticity **AI-12.6 Illustrate** Updating in regulation of stem cell proliferation/differentiation **AI-12.7** Describe Stem cell signaling pathways **AI-12.8 Describe** Updating in application of stem cells (in research & therapeutic fields) **AI-12.9 Recognize** Technical advantages& disadvantages of stem cell for therapeutic Purposes **AI-12.10** Define Leukemic Stem Cells **AI-12.11** Explain Cancer stem cells
AI-13	***AI-13***.1 Define the Human Genome Project **AI-13.2 Recognize** the prominent examples of bioinformatics resources (GenBank, UniProt, The protein database, HapMap database, ENCODE project, Entrez Gene & dbGAP) **AI-13.3** Define the concept of Computational biology & its applications **AI-13.3.a Recognize** BLAST as a method to identify unknown proteins **AI-13.3.b** Discuss Computer –Aided drug design **AI-13.3.c** Recognize Creation of virtual cell to be used in diagnosis & treatment of diseases.
AI-14	***AI-14.1*** Explain assessment ofobesity.

	AI-14.2 Discuss regulation of body weight. **AI-14.3** Explain molecules that influence obesity. **AI-14.4** Discuss metabolic changes observed in obesity. **AI-14.5** Discuss regulation of body weight. **AI-14.6** Illustrate the diseases associated with obesity.

B- Intellectual skills

On successful completion of the course, the candidate will be able to:

B3	Formulate a systematic approach for laboratory diagnosis of metabolic and genetic diseases

(3) Course content:

Subjects	Teaching Hours Lectures
Aging	4
Stem cell	4
Bioinformatics	3
Obesity	4
Total Teaching Hours	15

(4) Teaching methods:

4.1: Lecture

4.2: Small group discussion with case study and problem solving

4.3: Tutorial

4.4: Seminars

(5) Assessment methods:

5.1: **MCQ Examination for assessment of** Knowledge and intellectual ILOS

5.2 **Written exam for assessment of** Knowledge and intellectual ILOS

5.3: **Log book for activities for assessment of** : transferrable skills which are accepted through attending different conferences (at least one), thesis discussions (at least one), seminars(at least 3 per month), workshops (at least one) , attending scientific lectures as well as self learning.

Percentage of each Assessment to the total mark:

Written exam: 80 Marks

MCQ exam: 20 Marks

6.References of the course:

6.1: Text books:

- Harper's Illustrated Biochemistry: 30th edition by Murray RK, Granner DK, Mayes PA, Rodwell VW, McGraw-Hill companies New York, 2015.
- Lippincott's Reviews of Biochemistry, 4th edition by Champe PC, Harvey RA, Ferrier DR, Lippincott William & Wilkins London, 2008.
- Textbooks of Medical Biochemistry, 7th edition by Chatterjea MN. and Shinde R. JAYPEE BROTHERS. New Delhi, India, 2007.

6.2: Websites:

- http://www.medlib.iupui.edu/ref/biochem.htm
- The Biology Project (from the University of Arizona): http://www.biology.arizona.edu/default.html
- Harvard Department of Molecular & Cellular Biology Links: http://mcb.harvard.edu/BioLinks.html

7.Facilities and resources mandatory for course completion:

- Lecture rooms: available in the department

Course coordinator: staff members of the credit

Head of the department:

Prof.Dr/FagrBazeed

Date: 1/11/2015