المركز الوطني للتقويم والاعتماد الاكاديمي
National Center for Academic Accreditation and Evaluation

Molecular Biology (BIO 420)

T6. COURSE SPECIFICATIONS (CS)

هيئة تقويم التعليم
Education Evaluation Commission

Course Specifications

Institution: **University of Tabuk**	Date: 13/8/1440
College/Department : **Science/ Biology**	

A. Course Identification and General Information

1. Course title and code: **Molecular Biology, BIO 420**
2. Credit hours: 3
3. Program(s) in which the course is offered.
(If general elective available in many programs indicate this rather than list programs)
: Biology Program
4. Name of faculty member responsible for the course: Dr. Subrata Trivedi
5. Level/year at which this course is offered: 8
6. Pre-requisites for this course (if any): Cell Biology (BIO 222)
7. Co-requisites for this course (if any): None
8. Location if not on main campus: **N.A.**
9. Mode of Instruction (mark all that apply):

a. traditional classroom	√	What percentage?	75
b. blended (traditional and online)		What percentage?	
c. e-learning		What percentage?	
d. correspondence		What percentage?	
f. other (Lab work)	√	What percentage?	25

Comments:

B Objectives

1. What is the main purpose for this course?

- Understanding of the organization, replication and expression of the genetic material in prokaryotic and eukaryotic cells.
- Understanding of contemporary methods and approaches used in analysis of gene structure and function.
- Experience and confidence in applying this knowledge to solve new and interesting problems in molecular biology.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- Biodiversity conservation using molecular techniques.
- Increased use of computer based programs and web based reference material to support the course material to more understanding of molecular biology.
- Modify the content as a result of new research in molecular biology.
- Encourage the student to introduce themselves in the field of genetic engineering.
- The course planed as basic lectures and reports, seminars introduced by students to understand new important topics related to advanced science

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

- This course covers topics on introduction and overview of course, prokaryotic and eukaryotic cell cycles, DNA replication, repair and recombination, structure and function of chromosome, as well as operon of prokaryotic and eukaryotic cell, gene clusters and genes in organelles. ribosomes, protein biosynthesis and transportation, and genetic engineering.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
Introduction and overview of course	1	3
Prokaryotic cell cycles	1	3
Eukaryotic cell cycles	1	3
DNA Replication	1	3
DNA Repair and Recombination	1	3
Chromosome structure and function	1	3
Chromosome structure and function, chromatin	1	3
Revision and Pre Final Exam		
Mid Term Vacation		
Prokaryotic and eukaryotic operon structure & function.	1	3
Prokaryotic and eukaryotic gene clusters and genes in organelles.	1	3
Ribosomes, protein biosynthesis	1	3

Ribosomes, protein transportation	1	3
Genetic engineering	1	3
Revision		
Final Exam		

2. Course components (total contact hours and credits per semester):

		Lecture	Tutorial	Laboratory/ Studio	Practical	Other:	Total
Contact Hours	Planed	26		26			52
	Actual	26		26			52
Credit	Planed	2		1			3
	Actual	2		1			3

3. Additional private study/learning hours expected for students per week. 8

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Describe structure of DNA, RNA and protein, their interrelationships and the basic idea of importance of molecular biology.	- Reproduce visual and interactive methods to inculcate the concepts of molecular biology.	- Ask questions while teaching and interacting with students
1.2	Define and describe Cell cycle, DNA replication, Operon, Protein biosynthesis, genetic engineering.	- Tell students to learn more by increasing interest in the subject.	- Conduct quiz - Group discussion - Home assignments - Periodical exams
2.0	**Cognitive Skills**		
2.1	Explain major ideas relating to molecular biology. Develop clear understanding about DNA, RNA,	- Use electronic and print media - Classroom teaching	- Ask questions while teaching and interacting with

	and Proteins.		students
2.2	Explain the application of molecular biology to solve the practical problems in modern biology.	- Group discussions - Presentations - Laboratory techniques	- Conduct quiz - Group discussion - Home assignments - Periodical exams
3.0	**Interpersonal Skills & Responsibility**		
3.1	- Apprise major ideas relating to molecular biology - Illustrate clear understanding about central dogma.	- Show students to read more beyond the classroom lecture - Keep the students update with the latest developments in the subject.	- Conduct quiz - Interact with students directly
3.2	- Justify the need and ways to apply molecular techniques to solve the problems of biology in general.	- Group discussion - Learning modern lab techniques. - Illustrate students to make correct observations and inferences.	- Involve students in projects
4.0	**Communication, Information Technology, Numerical**		
4.1	- Demonstrate web based searching on the topics of modern molecular biology.	- Group discussion and interactive session - Apprise students to enhance communication, IT and numerical skills	- Engage students to express their opinion on a particular topic. - Conduct quiz
4.2			
5.0	**Psychomotor**		
5.1	Not Applicable	Not Applicable	Not Applicable
5.2			

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Quiz	3	10
2	Pre final Exam (Theory)	8	25
3	Pre final Exam (Lab)	8	10
4	Final Exam (Lab)	14	15
5	Final Exam (Theory)	15	40
6	Total		100

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week) - An induction period at the beginning of the academic session - An extensive Learning Resources Centre, incorporating a library and computer center. - A Program Tutor to give academic advice. - Personal tutors to provide pastoral and academic support. - Office hours 10 hr/ week

E Learning Resources

1. List Required Textbooks - Bruce Alberts et.al. (1994): Molecular Biology of the cell. Garland; 3rd edition, ISBN-10: 0815316194, ISBN -13: 978-081531619.
2. List Essential References Materials (Journals, Reports, etc.) - Hartwell L, Hood L, Goldberg ML. et al. (2000) Genetics: from Genes to Genomes. Boston: McGraw Hill. - Lodish H, Berk A, Zipursky SL. Et. Al. (2000). Molecular Cell Biology, 4thedn. New York. WH Freeman. - Sambrook J and Russel DW (2001) Molecular Cloning: A laboratory manual. Cold Spring Harbour Laboratory Press. New York.
3. List Electronic Materials, Web Sites, Facebook, Twitter, etc. - Friedberg EC, Walker GC&Siede W (1995) DNA Repair and mutagenesis. Washington DC: ASM Press. - Lodish, Berk, Kaiser, Krieger, Scott, Bretscher. Ploegh (2008): Molecular Cell Biology, 6th Edition. Darnell. W. H. Freeman and Company, New York. - Genetics: From Genes to Genomes(Hardcover),by Leland Hartwell, Leroy Hood, Michael L.2006. Recommended Journals: - Molecular Biology Reports. - Journal of molecular biology - Marine Genomics - Gene - Nature (Biotechnology) - PLOS One
4. Other learning material such as computer-based programs/CD, professional standards or regulations and software. - www.yk.rim.or.jp/~aisoai/index.html - www.hpc.unm.edu/~aroberts/main/molbio.htm
5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Molecular Biology Lab is required
2. Technology resources (AV, data show, Smart Board, software, etc.) None
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) - Electrophoresis set with power pack, UV Trans illuminator, PCR machine, Refrigerated centrifuge machine, Micro-pipettes, Milli Q Water apparatus.

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching - Course evaluation by student - Students- faculty meetings
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department - Peer consultation on teaching - Departmental council discussions - Discussions within the group of faculty teaching the course
3. Processes for Improvement of Teaching - Conducting workshops given by experts on the teaching and learning methodologies - Periodical departmental revisions of its methods of teaching - Monitoring of teaching activates by senior faculty members
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) - Providing samples of all kind of assessment in the departmental course portfolio of each course. - Assigning group of faculty members teaching the same course to grade same questions for various students. - Faculty from other institutions invited to review the accuracy of the grading policy.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. - The course material and learning outcomes are periodically reviewed and the changes to be taken are approved in the departmental and higher councils. - The head of department and faculty take the responsibility of implementing the proposed changes.

Name of Course Instructor: Dr. SubrataTrivedi

Signature: Subrata Trivedi Date Specification Completed: 13/8/1440

Program Coordinator: **Dr. Omar Salem Obeid Bahattab**

Signature: Omar Bahattab Date Received: 16/8/1440