

KINGDOM OF SAUDI ARABIA
MINISTRY OF HIGHER EDUCATION
KING SAUD UNIVERSITY
COLLEGE OF SCIENCE
DEPARTMENT OF BOTANY & MICROBIOLOGY

MBio 320 Course Specification

Institution King Saud University
College /and Department Science Botany & Microbiology

A Course Identification and General Information

1. Course title and code: Microbial Diagnosis MBio 320
2. Credit hours 2(1+1)
3. Program(s) in which the course is offered.
(If general elective available in many programs indicate this rather than list programs)
 - BSc . Science /Microbiology
4. Name of faculty member responsible for the course
 - **Dr. Nagwa Mohamed Aref**
5. Level year at which this course is offered 6
6. Pre-requisites for this course (if any) 250, 260, 270 mic
7. Co-requisites for this course (if any)
8. Location if not on main campus

B Objectives

1. **Summary of the main learning outcomes for students enrolled in the course.**
Samples collection-Transport – Processing – storage condition for microbial diagnosis of human diseases by molecular technology – Laboratory emphasize basic and clinical techniques for nucleic acid. antigenic serology based detection methods
 - **Knowing more about** techniques used in microbial diagnosis
 - **Learning more about human diseases**
 - **Ability to isolate and identification of microbes causing diseases**
 - **Following the update reaches throw Internet exploring.**
 - **Ability to prepare and microscopically examination of microbial slides**
2. Briefly describe any plans for developing and improving the course that are being implemented. (eg Increased use of IT or web based reference material, changes in content as a result of new research in the field)
 - Looking to recent research throw Internet and scientific journals.
 - Scientific exchange to gain advanced techniques in microbial diagnosis
 - Allowing Students evaluation for all the scientific material and their benefits
 - from the course in practical way

C. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

1 Topics to be Covered

Overview of genetic material DNA assembly and structure/function relationships . DNA replication , transcription and translation , regulation of gene expression – Gene cloning and chemical analysis of

DNA restriction enzyme and sequencing methods – Recombinant DNA technology and genetic engineering concept and applications in field of microbiology.

Topic

–

No of
Weeks

Contact
hours

2 Course components (total contact hours per semester):

Lecture:

13

Tutorial: Practical/Fieldwork/Inte
rnship:

• $13 \times 4 = 52$

Other:

2. Additional private study/learning hours expected for students per week. (This should be an average :for the semester not a specific requirement in each week)

Two hour per week

4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned

a. Knowledge

(i) Description of the knowledge to be acquired

- Recognize the different groups of human pathogens
- Isolation and identification of microbes from different media
- Aware with all the update research in this field.
- The benefits of the recent research scientific exchange.
- Student reports for the course.

(ii) Teaching strategies to be used to develop that knowledge

- Homework assignments
- Tutorial discussions
- Laboratory practice (conducting experiments and writing reports)

(iii) Methods of assessment of knowledge acquired

- Student reports for the course
- quizzes.
- Mid term and final exams

b. Cognitive Skills

(i) Cognitive skills to be developed

- Ability to collect the data that helping to gain more information about specific subject.
- Learning more about using the library system.

- Learning more about Internet.
- Using the advanced tools for teaching.

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(ii) Teaching strategies to be used to develop these cognitive skills

- International and recent references in teaching.
- Home work. using Internet.
- Using new visual tools in teaching.

(iii) Methods of assessment of students cognitive skills

- Student report will evaluate their benefits.
- quizzes in class
- final exams
- Checking the homework assignments

c. Interpersonal Skills and Responsibility

(i) Description of the interpersonal skills and capacity to carry responsibility to be developed

- Working as groups during the practical classes

(ii) Teaching strategies to be used to develop these skills and abilities

- The practical experiments
- Conducting group experiments and writing group reports
- Homework related to the recent research.

(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility

- During doing the experiments
- Results discussion
- Laboratory exams
- Assessment of the laboratory reports
- Grading homework assignments
- Working in groups.
- Student evaluation by teacher.

d. Communication, Information Technology and Numerical Skills

(i) Description of the skills to be developed in this domain.

- Skill of writing experiments reports
- Skill of results statistical analysis
- Skill of results reading and presentation
- Skill of science conclusion of the results
- Skill of obtaining related scientific subjects from internet and other sources

(ii) Teaching strategies to be used to develop these skills

- Practical classes
- Searching throw the internet
- Using the computer in interpretation and presentation of the result
- Writing laboratory reports
- Incorporating the use and utilization of computer in the course requirements

- Lectures.
 - Homework.
- (iii) Methods of assessment of students numerical and communication skills
- Evaluating the laboratory written reports Homework.

e. Psychomotor Skills (if applicable)

Not applicable

(i) Description of the psychomotor skills to be developed and the level of performance required

Not applicable

(iii) Teaching strategies to be used to develop these skills

Not applicable

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(iii) Methods of assessment of students psychomotor skills

Not applicable

5. Schedule of Assessment Tasks for Students During the Semester

Assess

ment

Assessment task (eg. essay, test, group project, examination etc.)

Week due Proportion

of Final

Assessment

- 1 • Activities 30/100
- 2 • first exam 13 10/100
- 3 • second exam 14 100/100
- 4 • Final practical exam 15 50/100

D. Student Support

1. Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week)

- Tutorial :3hours/week
- Student meeting.

E Learning Resources

3. Essential References

Richard D. G., John S.C.B., Mike P.F. B., (2007) Medical Microbiology, A Guide to Microbial Infections : Pathogenesis, Immunity, Laboratory Diagnosis, and Control. 17 edition, Elsevier Science Health Science div. 738 pages.

Sachse K. and Frey J. (2002) PCR Detection of Microbial Pathogens (Methods in Molecular Biology) 1 edition, Humana Press; 352 pages.

3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List

4- Electronic Materials, Web Sites etc

5- Other learning material such as computer-based programs/CD, professional standards/regulations

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)

1. Accommodation (Lecture rooms, laboratories, etc.)

- Data show room
- Laboratory

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- E learning room

2. Computing resources

- Computer supported with important soft wares , printer and scanner

3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)

- Course evaluation by student
- Students- faculty meetings

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Discussion with Student about teaching strategies
- Continuous contact with students throw internet
- Course evaluation by student
- Students- faculty meetings
- Course evaluation by student
- Students- faculty meetings

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Self evaluation
- Faculty member evaluation
- Annual report
- Peer consultation on teaching
- Departmental council discussions

3 Processes for Improvement of Teaching

- Revision of student results in the same term and between the succession terms
- Comparison between students in the same term and between the succession terms
- 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 (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in 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 are invited to review the accuracy of the grading policy
- Conducting standard exams such as the American Chemical Society exams **or others.**

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.

- Oral report by student and teacher
- Reviewing and evaluating the test result

اسم المقرر :تشخيص ميكروبي رقم المقرر ورمزه 320 :حدق
المتطلب السابق للمقرر 270 :، 250، 260 حدق لغة تدريس المقرر :الانجليزية
(1+1) مستوى المقرر :السادس الساعات المعتمدة 2 :

Module Description :
وصف المقرر
التقنيات المتبعة في جمع العينات وطرق نقلها وحفظها لحين التشخيص
الميكروبي -تشخيص الأمراض عن طريق الأحماض النووية والوراثة
الخلوية – طرق استخلاص الأحماض النووية من العينات الطبية-
الطرق المخبرية الجزيئية لتشخيص الأمراض -أمثلة على تشخيص
الأمراض الميكروبية مثل الأمراض الفيروسية والبكتيرية والفطرية
والطفيلية.

**Samples collection-Transport – Processing – storage
condition for microbial diagnosis of human diseases
by molecular technology – Laboratory emphasize
basic and clinical techniques for nucleic acid
antigenic serology based detection methods.**

Module Aims :
أهداف المقرر
التقنيات المتبعة في جمع العينات وطرق نقلها وحفظها لحين التشخيص
الميكروبي

**To learn the technique Of sampling Transport
Processing – storage condition for microbial
diagnosis of human diseases**

Molecular technique of diagnosisتشخيص الأمراض عن طريق الأحماض النووية والوراثة الخلوية
التعرف على تشخيص الأمراض الميكروبية مثل الأمراض
الفيروسية والبكتيرية والفطرية والطفيلية

Examples of diagnosis of some microbial diseases

مخرجات التعليم) :الفهم والمعرفة والمهارات الذهنية والعملية)

يفترض بالطالب بعد دراسته لهذه المقرر أن يكون قادرا على:

Able to collect ,transport storage the microbialالدراية الكافية بطرق جمع العينات وحفظها لحين
الهاجة

samples

**Preparation microbial samples for molecular
diagnosis**تحضير العينات الميكروبية للتشخيص الميكروبي الجزيئي

اكتساب القدرة على التعرف والتشخيص الأولي لبعض اعراض
المراض الميكروبية

Able to identify and diagnose some microbial disease

الكتاب المقرر والمراجع المساندة:

اسم الكتاب اسم المؤلف اسم الناشر سنة النشر

**Medical Microbiology, A Guide to Microbial
Infections : Pathogenesis, Immunity,
Laboratory Diagnosis, and Control., Elsevier**

. Richard D. G., John

S.C.B., Mike P.F. B.

Science Health

Science div.

2007

17th edition

PCR Detection of Microbial Pathogens
(Methods in Molecular Biology.
200 Humana Press Sachse K. and Frey. J.
21st edition