



COURSE SPECIFICATION

321 HIA-3

Requested by The College of Science (CAMS), KKU, Abha

2013

To Department Chairman / Course Coordinator

According to the Guidelines of the National Commission of Academic Assessment and Accreditation (NCAAA), individual course specifications should be prepared for each course in a program, and kept on file with the program specification. The purpose is to make clear the details of planning for the course as part of the package of arrangements to achieve the intended learning outcomes of the program as a whole. Consequently course specifications should include the knowledge and skills to be developed in keeping with the *National Qualifications Framework* and the overall learning outcomes of the program, the strategies for teaching and assessment in sufficient detail to guide individual instructors, as well as the learning resources, facilities requirements and any other special needs. Course specifications should be prepared for both core and elective courses.

This template for course specifications is included together with guidelines for completing the template, at the end. The template includes the intended learning outcomes and the strategies for developing those learning outcomes for the different types of learning described in the *National Qualifications Framework*, processes for course evaluation based on evidence with verification of interpretations of that evidence, and planning for improvement.

Yours sincerely,

Ibrahim A. A. Messaad, PhD

Department of Biology/College of Science

Course Specification

Institution	king khalid university
College/Department	Biology / Science College

A Course Identification and General Information

1. Course title and code: Ecology 321 HIA-3
2. Credit hours: 3 (2+1)
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor's In Biology
4. Name of faculty member responsible for the course : Dr. Ibrahim A. Messaad
5. Level/year at which this course is offered: level 6 th /third year
6. Pre-requisites for this course (if any) : 101 HIA General Biology
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. This course will help students to achieve the following objectives: <ul style="list-style-type: none">• Get grasp of all the levels which ecology course focuses on• Get grasp of all the ecology levels approaches• Get grasp of all ecology principles and laws.• Get grasp of the biotic and abiotic factors and their influence on the distribution, abundance, dispersal, etc of the organisms.• Get grasp of all the positive and negative organismic interactions• Get grasp of the ecosystem components and homeostasis• Get grasp of the energy flow in ecosystem• Get grasp of the cycling of elements in the ecosystem and their importance• Get grasp of many ecology terminologies• To have hands on experience on drawing many ecology illustrations
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)

Deepen the practical side by the inclusion of small projects for students to training of information systems

Updating the scientific knowledge of ecology in light of the research progress worldwide

Motivate the students to utilize the internet to be able to broaden their skills seeking more knowledge or to further their progress in ecology understanding

Motivate the students to be more active in the class room by distributing many question on them and make them into groups to be able to be competent teams

Involve the student in class discussion and scientific dialogues during the class duration

Providing the students with homework on the blackboard and have them send it back using the black board to be able to utilize the most current technology methods

Involve the students into writing term papers according to the elements of scientific research

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		
Topic	No. Of Weeks	Contact hours
Theory: course contents, requirements and introduction to ecology with more focus on some general essential terminologies.	2	2
Practical: Introducing diverse equipments for various ecological and physicochemical measurements and their use.	1	2
Theory: Ecosystems and their biotic and abiotic components and ecosystem types and diversity.	1	2
Practical: Soil mechanical analysis and determining soil profile and types according to the world triangle. Soil properties determination from different ecological localities within the region.	2	4
Theory: Ecosystem Homeostasis approach and their response to perturbations and the ecological pathways to sustain homeostasis.	1	2
Quiz1	2	4
Practical: Acidity and Alkalinity determination utilizing various biomarkers- Water acidity measurements utilizing the quantity of dissolved CO ₂		
Theory: Energy Flow in Ecosystem, the food chains and types, the food webs and the importance of understanding the intricate food webs energy flow from an ecological point of view, source of energy and its fate, the ecological pyramids and their explanation through illustrations.	2	4
Practical: Evaluation of Salinity of water sources (chloridity determination).	1	2
Theory: Ecological productivity and types, factors which influence the primary and secondary productivity, the methods which are used to measure productivities, the factors which influence energy allocations and finally the ecological efficiencies. Quiz2	2	4
Practical: First mid-exam	1	2
Theory: Elemental pathways: some facts with illustrations.	1	2
Practical: Water alkalinity and organic Carbon determination		
	2	4

Theory: Gaseous cycles and the biological processes which make them work dynamically.	1	2
Practical: soil minerals and water hardness determinations	2	4
Theory: Local elemental cycles and the biological processes which make them work dynamically. Quiz3	1	2
Practical: soil sulphur SO_4^{4-} determination	1	2
Theory: Ecological factors and their influence on organisms (ecological laws, abiotic and biotic interactions), Leibig's law and Shelfors's law and their importance.	1	2
Practical: O_2 determination in water (Winkler's methods)	1	2
Theory: Influences of some ecological factors (Temperature, light, salinity etc.) on life forms and the adaptations taken by the life forms in response to the changing influences of the ecological factors. Quiz4	2	4
Practical: Final and midterm exam (15 marks).	1	2

2 Course components (total contact hours per semester): 28			
Lecture: 26+2 quizzes	Tutorial:	Practical/Fieldwork/Internship : 16	Other:

3. 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): 3 hrs/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; instil in students the ability to be able to remember and understand the principles, laws, which do sustain the ecosystem homeostasis and stability and the ways the ecosystem function to keep such homeostasis intact in the face of man and ecological perturbations. Also, student must be better able to understand the positive and negative biological interactions and their influence on the stability of ecosystems and distribution and abundance. The students should be better able to remember most of the essential terminologies and their definition in both scientific English and Arabic. And finally, the student will be able to understand the effects of ecological factors on the life of organisms at different levels of biological organizations.
- A description of the teaching strategies to be used in the course to develop that knowledge or skill; Questions will be directed at the students randomly and in sequence before and throughout the lectures to get them involved in the discussion and dialogues. Quizzes throughout the course after each segment will be given to measure their learning and exams including midterm and finals will be given to assess their final performance on the course materials. Student every now and then will be divided into groups as teams to question and assess each other in the course materials given and futuristic lecture materials to keep them engaged in the class rooms.
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned. Quizzes, midterm and final exams, research, homework on the

blackboard, discussion involvement during lectures, etc.

a. Knowledge

- (i) Description of the knowledge which are to be acquired:

The student should be able to think, resonate, and understand all principles, laws, biological interactions whether positive or negative which do play a major role in the distribution of life forms at different biomes and ecosystems. Should be able to understand the ecological productivity and the ecological influences on the life forms and thus will be able to involve himself in reserving and sustain the biodiversity of life forms and ecosystems which make them stable and balanced for the well being of the communities.

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

Students are expected to read the course material prior to class. The class will include an interaction between the professor and the students with dialogue and questions.

- Participation: Class participation in discussion and dialogue may affect the final letter grade you are assigned for the class. While lack of participation will not lower your final grade, however it may have a negative impact on the final grade. Also
- Quizzes: I have scheduled quizzes after each segment of the course materials to keep students up to date with all new lecture knowledge. Scores and weights for the quizzes will affect students' exam scores in a manner it will be counted of the sum course grade (5 marks of the total grade).
- Exams: There will be one big midterm exam beside the quizzes and a final exam. All students are expected to be present for the exams. If a student can not attend an exam, the student must discuss the situation with the instructor prior to the exam date.

(iii) Methods of assessment of knowledge acquired

See the aforementioned strategies in the previous section

Dishonesty and cheating will result in an "F" and a possible expulsion from the class.

The exams problems may include *multiple-choice, blanks, true/false, short answer, terminologies* as well as *problems and case study*

• First Midterm Exam	12.5%
• Second Midterm Exam	12.5%
• Assignments and attendance	0
• Project Assignment	0

<ul style="list-style-type: none"> • Practical exam I 	10%
<ul style="list-style-type: none"> • Final practical exam 	15%
<ul style="list-style-type: none"> • Final theory exam 	50%
b. Cognitive Skills	
(i) Cognitive skills to be developed	
<p>Involvement of the students in the course material discussions among themselves and with the instructor of the course. This is to entice in them the ability to think and analyse the course materials and be able to provide their opinions and correct each other with the support of the instructor. Instilling these skills into students will make them able to be functional to serve in their communities effectively and efficiently.</p>	
(ii) Teaching strategies to be used to develop these cognitive skills	
<p>Divide students into groups or teams and have them prepare for some lectures by leading the lectures asking questions to each other, listening to each other feedbacks and correcting each other answers with the support of the instructor.</p>	
(iii) Methods of assessment of students cognitive skills	
<ul style="list-style-type: none"> • Questions on some of the course concepts • Evaluate their exams and have them give their feedback during lectures after each given exam • Evaluate their projects and homework <i>etc.....</i> 	
c. Interpersonal Skills and Responsibility	
(i) Description of the interpersonal skills and capacity to carry responsibility to be developed	
<ul style="list-style-type: none"> • The ability to discuss the course materials during the course lectures • The ability to interact with other students to resolve any questions or given a homework • To be able to collaborate in groups to solve a homework or do research or write a term paper • To asses their responsibility toward the course materials given to them and the preparation for the new course materials 	
(ii) Teaching strategies to be used to develop these skills and abilities	
<p>Dividing students into groups to work on a homework or research etc , preparing slides for the course materials to be able to lead the lectures every now and then, make them draw illustrations on the</p>	

blackboard with the support of other students and the instructor

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

Their abilities to discuss and participate in the course material dialogues, being active in class asking questions and answering questions. Doing their homework, research, and checking the e-blackboard materials and homework feedback etc. Also, the exams will be a major assessment as follows:

• Quizzes	0
• Class participation and attendance	0
• Midterm examination- I & II	25%
• Practical exam I	10%
• Final practical exam	15%
• Final theory exam	50%

d. Communication, Information Technology and Numerical Skills

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

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

(iii) Methods of assessment of students numerical and communication skills

null

e. Psychomotor Skills (if applicable)

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

null

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

null

(iii) Methods of assessment of students psychomotor skills

null

5. Schedule of Assessment Tasks for Students During the Semester			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	Quizzes	Whole semester	
2	Participation and attendance	6 week	
3	Midterm exam – I & II	10 th week	25%

4	Final theory exam	End of semester	50%
5	Practical Midterm 1	5 th week	5%
6	Homework, reports etc.	Whole semester	5%
7	Final and mid Midterm 2	End of semester	15%

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)

10 hrs /week

E Learning Resources

1. Required Text(s) Ecology. 1433H. 423 pp. Dr. Ibrahim A.A. Messaad. Alkheriji publishing
2. Essential References Ecology. 1433H. 423 pp. Dr. Ibrahim A.A. Messaad. Alkheriji publishing
3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List) Krebs, C.J. 1985. Ecology: The Experimental Analysis Distribution and Abundance. 800 pp. Third Edition, Harper and Row, publishers, inc. Ricklefs, R.E. 2001. The economy of nature: a textbook in basic ecology. 678pp. 5 th ed. W.H. Freeman and Company, usa
4-.Electronic Materials, Web Sites etc www.uslm.edu.sa
5- Other learning material such as computer-based programs/CD, professional standards/regulations Not available

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.) Class room with 50 chairs including media show or data show, smart blackboard etc internet one lab including 25 chair including all practical requirements determined by the instructor of the course and the department

2. Computing resources Computer /student supported with internet, data show or media show
3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list) Most current ecological factors measuring devices (O ₂ , CO ₂ , pH, Wind, Humidity, soil humidity, etc soil hygrometer, psychometer, Altimeter, etc. Temp.), glass aquaria to run some experiments by the students, animal traps, plankton nets, thermometers. Soil sieves, soil probes, glass bottles to collect water samples, identification books for terrestrial and aquatic organisms. Chemicals including the following: Erichrome Black T Indicator, O-phenanthroline monohydrate, K ₂ Cr ₂ O ₇ , EDTA, K ₂ MnO ₄ , H ₃ PO ₄ , H ₂ O ₂ , Methyl orange indicator, pH measuring tables, AgNO ₃

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Evaluation of the course materials, the methods of teaching and the course instructor Students feedback on the best teaching method they feel most effective
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department Recommendation box for the instructor and exams evaluation by the exam committee within the department
3 Processes for Improvement of Teaching Research, conferences attendance or participation, workshops, reading knowledge sources on the same materials etc.
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) Student results evaluation by the department and filing a detailed report to the quality and accreditation committee for further assessments of the course exam results
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. Updating the syllabus of the course and according to the new research in the field modification for further development of course materials might be recommended.