SULTAN QABOOS UNIVERSITY

COURSE OUTLINE

PROGRAM: Animal and Veterinary Sciences

1. Course Code	ANVS4124	
2. Course Title	Dairy and Beef Production	
3. Credits	3 CH, 12 CP, 6 ECTS	
4. Pre-requisite Course(s)	General Biology BIOL2101	
5. Co-requisite Course(s)	ANVS (2101 or 2201), BIOL2101	
6. Equivalent Course(s)		
7. Incompatible Course(s)		
8. Course Category	☐ University Requirement	☐ University Elective
	☐ College Requirement	☐ College Elective
	☒ Department Requirement	☐ Department Elective
	☐ Specialization Requirement	☐ Specialization Elective
	☐ Other (specify):	
9. Course Owner	College: College of Agricultural and Marine Sciences	Department: Department of Animal and Veterinary Sciences
10. Course Type	☒ Lecture	☒ Lecture/Lab
	☒ Lecture/Seminar	☐ Lecture/Studio
	☐ Lecture/Tutorial	☒ Lecture/Lab/Tutorial or Seminar
	☐ Tutorial	☐ Laboratory (Practical)
	☐ Field or Work Placement	☐ Studio
	☐ Seminar	☐ Internship
	☐ Workshop	☒ Project
11. Language of Instruction	English	

12. Course Description

This course is designed to provide students with information and skills that are needed to be successful in understanding dairy and beef cattle industry and the biological principles of dairy beef production. This course will focus on basic principles including global overview on dairy beef industry genetics and breeding, nutrition, reproduction, herd health, carcass evaluation, and management of dairy and beef production farms. An understanding of the major concepts and principles of beef cattle production is essential to subsistence of animal protein sources supply to the country, region and the world. This course will also focus on integration of nutrition, physiology, and marketing into complete production and management programs. Management evaluated in terms of production response and economic returns will be discussed. This course is also designed for students to evaluate problems in feeding dairy and beef cattle. Relevant aspects of digestion and metabolism of nutrients as well as current issues of feeding dairy and beef cattle and diagnosing nutritional deficiencies will be included. Diet formulation for dairy and beef animals will be learned via nutritional optimization software.

13. Teaching/Learning Strategies

Lecture notes, global beef report data, text book and optimization software.

14. Assessment Components and Weight [%]

☒ Quizzes 5	☒ Practical 10	☐ Other (specify):
☒ Homework assignments 5	☐ Project	
☒ In-term examination(s) 40	☒ Final examination 40	

15. Grading Method

☒ A-F Scale ☐ Pass/Not passed
16. Textbook(s) and Supplemental Material

17. Matching Course Objectives with Program Outcomes and SQU Graduate Attributes

SQU Graduate Attributes

A. SQU graduates should be able to:	**B. SQU graduates possess**	**C. SQU graduates should**
1. apply the knowledge and skills relevant to the specialization 2. communicate effectively and use information and communication technologies 3. critically analyze complex information and present it in simple clear manner	1. interpersonal communication skills and alignment with culture of international labour market to assist them in practical life and in living successfully 2. skills and motivation for independent learning and engagement in lifelong learning and research 3. work ethics and positive values, and intellectual independence and autonomy 4. teamwork skills and display potential leadership qualities	relish good citizenship qualities, be conscious of their national identity and be socially responsible, engage in community affairs and be mindful of contemporary issues.

#	Intended Student Learning Outcome /Course Learning Objective	Relevant Program Outcome(s)	Applicable Attribute(s)
1.	Demonstrate a basic understanding of nutrition, genetics, reproduction, health, carcass evaluation and marketing of dairy and beef products. Students will know the segments of the dairy and beef production chain.	Acquire broad based knowledge of husbandry, animal welfare and animal management	A1
2.	Have an acceptable level of competence and confidence in the application of theoretical principles and in the demonstration of practical skills in production of dairy and beef cattle.	Acquire broad based knowledge of husbandry, animal welfare and animal management Demonstrate ability to effectively communicate technical knowledge orally and in writing	A1, A2, B1, B4
3.	Gain knowledge in the reproduction, caring of pregnant cows and calving, lactation curve, milk productive performance, management of cow/calf operations, stockers, feedlot cattle, and breeding systems.	Acquire broad based knowledge of husbandry, animal welfare and animal management Apply knowledge of modern animal production technologies, sustainable production systems and animal products	A1
4.	Gain experience hands-on training in everyday management practices.	Recognition of the need for, and an ability to engage in life-long learnin	C
5.	Develop skills in applying concepts of breeding, nutrition, herd health, economics and management into practical and profitable dairy and beef cattle programs.	Develop critical thinking and problem solving skills and evaluate strategies to address real world problems and national concerns pertaining to the field of Animal Science. Interpret and critically evaluate scientific information as it applies to the field of Animal Science	A2, A3, B1, B2, B4, C
6.	Gain an understanding of the scope of world dairy and beef industry.	Develop critical thinking and problem solving skills and evaluate strategies to address real world problems and national concerns pertaining to the field of Animal Science Recognition of the need for, and an ability to engage in life-long learning	A2, A3, B1, C

7.	Understand the basic biological principles of beef cattle production.	Acquire broad based knowledge of husbandry, animal welfare and animal management Recognition of the need for, and an ability to engage in life-long learning	A1, C
8.	Provide students through practical lessons and demonstrations, an opportunity to develop basics skills required for successful rearing of dairy and beef cattle either at homestead level or on commercial scale.	Interpret and critically evaluate scientific information as it applies to the field of Animal Science Develop critical thinking and problem solving skills and evaluate strategies to address real world problems and national concerns pertaining to the field of Animal Science Recognition of the need for, and an ability to engage in life-long learning	A2, A3, B1, B2, B4, C
9.	Arouse the interest of students in dairy and beef cattle production as an economically viable and sustainable enterprise.	Apply knowledge of modern animal production technologies, sustainable production systems and animal products. Demonstrate knowledge of applied animal science and business/farm management skills	A1, B1, B4
10.	Gain an understanding of the issues currently facing dairy and beef producers in Oman and the region.	Interpret and critically evaluate scientific information as it applies to the field of Animal Science Recognition of the need for, and an ability to engage in life-long learning	A3, B2, B4, C
11.	Have an appreciation of the skills required to be successful in the dairy amd beef cattle industry. The student will understand the dairy and beef cattle industry's historical significance and current purpose.	Develop critical thinking and problem solving skills and evaluate strategies to address real world problems and national concerns pertaining to the field of Animal Science Recognition of the need for, and an ability to engage in life-long learning	A2, A3, B1, C
12.	Understand the segments of the beef industry including the cow-calf, stocker, and feedlot.	Acquire broad based knowledge of husbandry, animal welfare and animal management Demonstrate knowledge of applied animal science and business/farm management skills	A1, B1, B4
13.	Assimilate facts, research and industry knowledge that is relative to beef cattle management.	Develop critical thinking and problem solving skills and evaluate strategies to address real world problems and national concerns pertaining to the field of Animal Science	A2, A3, B1, C
14.			
15.			
16.			
17.			
18.			
19.			
20.			

16. Student Responsibilities

It is the student's responsibility to know and comply with all University Academic Regulations relevant to participation in this course. These regulations specifically include attendance requirement and students` academic code of conduct.

For attendance, it is the student's responsibility to be punctual and to attend all classes.

Students are expected to perform their work with honesty and avoid any academic misconduct, which is defined as the use of any dishonest or deceitful means to gain some academic advantage or benefit. This can take many forms, including but

not limited to, the following: copying, plagiarism, collusion and forging documents. For full details, please refer to the Undergraduate Academic Regulations and to the Student Academic Misconduct Policy.

Additionally, this course requires that you:

COURSE INFORMATION			
Course Code	ANVS4101	**Course Title**	Dairy and beef production
Semester/ Year	Spring	**Section(s)**	
Day, Time, and Place			

Course Coordinator			
Office Location		**Office Hours**	
Office Tel. Ext.		**Email**	

Tentative Schedule			
Week	**Lecture #**	**Topic/Material to be covered**	**Assessment**
1	1	Global overview of dairy and beef industry Lab# 1: field work , calve rearing	
2	2	Benchmarking dairy and beef breeds performance and genetics Lab# 2: field work, calves management systems	
3	3	Dairy and beef cattle production systems -Europe, Australia and North America Lab# 3: phenotypic characteristics of dairy and beef cattle	
4	4	Dairy and beef cattle production systems- arid lands, feedlot cow calf farm, yearling stockers Lab# 4: bos taurus vs indicus dairy and beef cattle	
5	5	Dairy and beef reproduction Lab# 5: production cycle and dairy and beef herd replacement rate	
6	6	First exam	
7	7	Nutrition in dairy and beef cattle (growth requirements) lab#6:On farm feed assessment for beef cattle	
8	8	Feeding systems of beef cattle lab# 7: dairy and beef cattle diets diversity	
9	9	Feedlot management lab#8: understanding growth nutrients requirements	
10	10	Ration formulation and feed additives lab#9: formulating diets for lactating cows finishing beef	
11	11	Second exam	
12	12	Economics of dairy and beef production systems lab#10: estimating profitability and breakeven point	
13	13	Sustainable dairy and beef production lab#11: comparing dry land and EU dairy systems sustainability	
14	14	Mitigating emissions from dairy and beef cattle systems lab#12 measuring emissions in-vitro from different diets	
15	15	Case study: US and Brazil beef industry	
16	16	final exam	
17			

APPENDIX A: INSTRUCTORS OF MULTIPLE SECTIONS					
Section	**Instructor**	**Day, Time, and Place**	**Office Location and Extension**	**Email**	**Office Hours**

APPENDIX B: ADDITIONAL INFORMATION