ASAB 1100
Fundamentals of Biology

Credit Hours: 4
Contact Hours: (NA)
Pre-requisites: None
Type of Course: Departmental Requirement
Passing Grade: (NA)

Course Description:
It introduces the students to a general understanding of basic principles of biology particularly the organization of life at cellular level. It contains: The general characteristics of living things; diversity of life; Structure and functions of cells; Tissues; movement of substances in and out of cells; Nutrition and digestion; Respiration; Excretion and osmoregulation; Communication and coordination; Cellular reproduction; mitosis and meiosis; Reproduction and outline of genetics.

ASAC 1100
Fundamentals of Chemistry

Credit Hours: 3
Contact Hours: (NA)
Pre-requisites: None
Type of Course: Departmental Requirement
Passing Grade: (NA)

Course Description:
It is the first course in Chemistry that introduces the basic concepts of chemistry and explains the basic scientific principles concerning the states of matter, separation techniques, the mole as well as the atomic theory and redox reactions. It also states and applies the laws of electrolysis. Practical work forms an integral part of this course.
ASAC 1203
Laboratory Techniques

Credit Hours: 3
Contact Hours: (NA)
Pre-requisites: ASAB 1100/ASAC 1100
Type of Course: Departmental Requirement
Passing Grade: (NA)

Course Description:
This course allows the students to learn more laboratory techniques, whatever is their previous chemical or biological background, with the fundamental chemical and biological laboratory techniques. Furthermore, the course allows the progression for those measuring in science as it forms an integral part of their studies.

ASAC 1204
Chemistry 1

Credit Hours: 3
Contact Hours: (NA)
Pre-requisites: ASAC 1100
Type of Course: Departmental Requirement
Passing Grade: (NA)

Course Description:
It builds on the principles explained in Fundamentals of Chemistry / ASAC1101. The concepts of enthalpy, bonding, chemical equilibrium and kinetics are introduced. In addition, the relationships between electronic, structural and chemical properties of elements, as well as trends across the periodic table are explored. Practical work forms an integral part of this course.
ASAC 1212
General Organic Chemistry

Credit Hours: 3
Contact Hours: (NA)
Pre-requisites: None
Type of Course: Departmental Requirement
Passing Grade: (NA)

Course Description:
It is the first course in organic chemistry which introduces the basic concepts of organic chemistry and explains the basic scientific principles concerning nomenclature and reactions of aliphatic, alicyclic and aromatic hydrocarbons, and simple monofunctional organic compounds. It also introduces the student to a few selected mechanistic approaches of some important organic reactions. Practical work forms an integral part of this course.

ASAC 1205
Physics

Credit Hours: 3
Contact Hours: (NA)
Pre-requisites: MATH 1100
Type of Course: Departmental Requirement
Passing Grade: (NA)

Course Description:
The course equips the students with a strong understanding of fundamentals of Physics to enable them to apply the concepts of physics in their field of study. It includes Units and dimensions; Force and energy; Rotational dynamics; Oscillation, wave motion and types of wave motion; Thermal properties of materials; Geometrical optics, Wave and wave properties of light; Electric current and charges; Magnetism and electromagnetism; Electronics, electron motion in electric and magnetic fields.; cathode ray oscilloscope and its applications; use of semiconductor devices; Modern physics, radioactivity and detectors of radiation, A minimum of 30% time is devoted to practical work.
### ASAC 1307
**Safety, Laboratory Organization and Management**

<table>
<thead>
<tr>
<th>Credit Hours:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Hours:</td>
<td>(NA)</td>
</tr>
<tr>
<td>Pre-requisites:</td>
<td>ASAB 2103</td>
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<tr>
<td>Type of Course:</td>
<td>Specialization Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>(NA)</td>
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</tbody>
</table>

**Course Description:**
This course introduces the students to the basic concepts and methods of Modern Biotechnology with the major focus on recombinant DNA technology. The course also provides an integrated overview about Biotechnology in different fields which covers Microbial Biotechnology, Animal Biotechnology, Plant Biotechnology, Marine Biotechnology and Medical Biotechnology including Bio safety and Bio security.

### General Education Courses

#### ENTW 1100
**Technical Writing 1**

<table>
<thead>
<tr>
<th>Credit Hours:</th>
<th>3</th>
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<tbody>
<tr>
<td>Contact Hours:</td>
<td>4</td>
</tr>
<tr>
<td>Pre-requisites:</td>
<td>Foundation Placement Level 4</td>
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<tr>
<td>Type of Course:</td>
<td>College Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>D</td>
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</tbody>
</table>

**Course Description:**
The course equips the students to analyze an essay and break it down into its structural parts. Plan and draft a paragraph. Evaluate purpose and audience. Develop organizational skills in writing. Monitor, check and revise one’s own work or that of other course participants, giving feedback. Support controlling idea in the thesis statement with explanation, facts and examples. Convey a specific attitude about a topic. Write well-organized essays and paragraphs of exposition and comparison and contrast showing evidence of significant planning. Use clear purpose to compare/contrast and express a specific attitude about the items being analyzed. Express ideas using significant and insightful points which support the thesis. Describe place and object. Write one research question for a given topic. Read at least two printed and electronic resources critically as part of literature review to use others’ information and ideas in one’s own report. Document precisely the information and ideas. Design a questionnaire and collect data and information from secondary sources such as printed materials and electronic devices for assignment. Analyze the data collected by questionnaire using charts and tables. Interpret the analyzed data in order to provide explanation for the phenomenon investigated in the research. Deliver a presentation on the assignment topic using LCD.
MATH 1100  
College Algebra

Credit Hours: 3  
Contact Hours: 3  
Pre-requisites: Foundation Placement Level 4  
Type of Course: Departmental Requirement  
Passing Grade: C-

Course Description:  
To provide the student with strong fundamentals in mathematics to enable him/her to apply mathematical concepts in his/her field of study. Translate worded problems into numbers and expressions. Solve equations (linear, quadratic and cubic) and inequalities. Graph solutions of equations and inequalities. Solve and graph functions. Apply the laws of exponents. Perform operations on polynomials. Factor polynomials. Perform operations on rational expressions. Solve systems of linear equations. Perform operations on complex numbers. Identify, solve and graph logarithmic and exponential functions. Understand and apply trigonometric functions and their inverses. Classify, identify congruence figures, angles and sides using theorems of triangles. Identify parts of triangles including, mediums, altitude perpendiculars and angle bisectors. Apply properties of triangles including length of sides, angle sums and triangle inequality theorem.

ITSE 1100  
Information Systems and Multimedia

Credit Hours: 3  
Contact Hours: (NA)  
Pre-requisites: Keyboard Skills  
Type of Course: (NA)  
Passing Grade: (NA)

Course Description:  
This course introduces the fundamentals of applications programs, using the Microsoft Office suite as a typical example. Differentiate the categories of software: operating system (including communications software and user interface) and Applications software (pre-packaged, or Custom-built). Make use of “keystroke” and “mouse” movements to perform fundamental exercises in all two applications within the suite. Demonstrate the ability to navigate and utilize the hypertext “help” system as a troubleshooting tool. Demonstrate the common commands and functions of Word and Excel in a variety of applications. Demonstrate the common commands and functions of Access and PowerPoint in a variety of applications.
ENG 1200
Advanced Writing II

Credit Hours:  3
Contact Hours: (NA)
Pre-requisites: 
Type of Course: 
Passing Grade: (NA)

Course Description :
This course is a continuation of ENTW 1100. This course teaches students the technical communication skills which enable them to communicate effectively and clearly using technical genres based on real life situations. They will use English for academic purposes and expository writing, as well as develop their writing skills in an integrated manner, making use of the listening, reading and speaking skills. Students also use the skills of presentation delivery using technology such as computer, laptops, LCD and Smart Board. Use effectively various pre-writing techniques to generate or classify ideas to coherently plan, introduce, develop and conclude a topic. Express ideas in clear, acceptable English using a wide range of grammatical structures. Organize writing in a logical sequence using linking words. Write in an appropriate style, showing awareness of audience. Adhere to the conventions of the mechanics of writing, paying attention to layout, spelling and punctuation. Edit one’s own work. Read printed and electronic sources critically to identify an author’s audience, purpose, claims, evidence and bias. Locate source materials in the library and on the internet, evaluate their usefulness, relevance, and credibility, and then incorporate them into an assigned task with in-text citations and full reference list. Write summaries and reports including tables, charts and other images where necessary. Interpret the analyzed data in order to provide explanation for the phenomenon investigated in the research. Deliver a presentation on the assignment topic using an LCD.

BACO1212
Job Search Techniques

Credit Hours:  3
Contact Hours: (NA)
Pre-requisites: 
Type of Course: 
Passing Grade: (NA)

Course Description :
This course assists students to gain confidence necessary to obtain or improve employment chances. It emphasizes on the job search techniques and strategies, resume writing, interviewing skills, and improving employment opportunities. It enables students to understand the job search techniques, customs, and practices. It also enables them to always meet the expectations of employers.
## ASAB 2101
### Cell Biology

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<tr>
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<tr>
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<tr>
<td>Pre-requisites:</td>
<td>ASAC 1100</td>
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<td>Specialization Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>C</td>
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</tbody>
</table>

**Course Description:**
This course introduces the concept of cell and cell theory, describes the functioning of electron microscope and its comparison with light microscope, the structures (including ultra-structure) and functions of the cell organelles, methods of transport in cells. It also introduces students with cell cycle, cell division, cell growth and basic concepts of inheritance with suitable examples.

## ASAB 2102
### Biology Laboratory Techniques

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<th>Credit Hours:</th>
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<td>Type of Course:</td>
<td>Specialization Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>C</td>
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</tbody>
</table>

**Course Description:**
Offer students skills of how to take care of laboratory animals, handling and rearing Drosophila, setting up aquarium, propagation of plants, anatomy of flowering plants, and dissection of fish and mammals. Introduces students with ecological techniques such as sampling, collection, distribution of organisms, estimating the size of population and principles of wildlife conservation. It also introduces techniques to dry and wet preservation of plant and animal specimens.
### ASAB 2103
**Microbiology**

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<th>Credit Hours:</th>
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<td>Contact Hours:</td>
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<td>Pre-requisites:</td>
<td>ASAB 1101</td>
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<td>Specialization Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>C</td>
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</tbody>
</table>

**Course Description:**
This course introduces the students to the study of microorganisms and offers basic laboratory skills required to perform microbiological investigations. Basic staining techniques in microbiology as well as basic techniques of water Microbiology are also covered.

### ASAC 2105A
**Chemistry II**

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<tr>
<th>Credit Hours:</th>
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<tbody>
<tr>
<td>Contact Hours:</td>
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<tr>
<td>Pre-requisites:</td>
<td>ASAC 1204</td>
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<td>Departmental Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>C-</td>
</tr>
</tbody>
</table>

**Course Description:**
This course elaborates on the basic concepts of chemistry taken in earlier courses. It involves chemical kinetics and the kinetic theory (collision theory and T.S.); extend knowledge of equilibrium of acid-base to understanding of ionic equilibrium in solution and buffers; and study of the d-block elements in the periodic table and the coordination compounds. Moreover, it explains some of the physical characteristics observed in solutions as colligative properties and colloids. Laboratory work in an essential feature of the teaching method used and constitute not less than 30% of the course.
ASAC 2313
Analytical Chemistry I

Credit Hours:  3
Contact Hours:  6
Pre-requisites:  ASAC 2105
Type of Course:  Departmental Requirement
Passing Grade:  C-

Course Description :
It shows the scientific principles, concepts and skills to help the student understand and perform some of the processes involved in Analytical Chemistry. The principles governing standard analytical techniques like chromatography, polarimetry, colorimetry, atomic and molecular spectroscopy are discussed. The opportunity to obtain hands-on experience with some of these techniques is also provided with selected experiments. Statistical approach to quantitative analytical techniques regarding aspects like accuracy and reliability of results forms an important aspect of this course in addition to the presentation, reporting and evaluation of data. The course is primarily concerned with the acquisition of skills and 70% of it devoted to practical work.

ASAB 2207
Biochemistry

Credit Hours:  3
Contact Hours:  4
Pre-requisites:  ASAB 2101
Type of Course:  Specialization Requirement
Passing Grade:  C

Course Description :
This course helps students to understand the physiology of living organisms, the cells, the organs and the systems of living organisms work. It deals with structure, classification and functions of bio-molecules e.g. carbohydrates, proteins, lipids, enzymes and nucleic acids. It also provides an outline on metabolism of carbohydrates, proteins, lipids. The structure, specificity and chemical composition of enzymes are dealt to supplement the understanding of living processes. It also introduces students to nucleic acids structure, replication, transcription and synthesis of proteins in the living cells. Furthermore, basic techniques for qualitative and quantitative analysis of bio-molecules are also included.
### ASAB 2308
**Introduction to Biotechnology**

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<th>Credit Hours:</th>
<th>3</th>
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<tbody>
<tr>
<td>Contact Hours:</td>
<td>4</td>
</tr>
<tr>
<td>Pre-requisites:</td>
<td>ASAB 2103</td>
</tr>
<tr>
<td>Type of Course:</td>
<td>Specialization Requirement</td>
</tr>
<tr>
<td>Passing Grade:</td>
<td>C</td>
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</tbody>
</table>

**Course Description:**
This course introduces the students to the basic concepts and methods of Modern Biotechnology with the major focus on recombinant DNA technology. The course also provides an integrated overview about Biotechnology in different fields which covers Microbial Biotechnology, Animal Biotechnology, Plant Biotechnology, Marine Biotechnology and Medical Biotechnology including Bio safety and Bio security.

### ASAC2210
**Instrumentation**

<table>
<thead>
<tr>
<th>Credit Hours:</th>
<th>3</th>
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</thead>
<tbody>
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<td>Contact Hours:</td>
<td>5</td>
</tr>
<tr>
<td>Pre-requisites:</td>
<td>ASAC 1202/ASAC 1307</td>
</tr>
<tr>
<td>Type of Course:</td>
<td>Departmental Requirement</td>
</tr>
<tr>
<td>Passing Grade:</td>
<td>C-</td>
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</tbody>
</table>

**Course Description:**
This course provides the student with the skills needed to operate and maintain specific laboratory equipments. It introduces the student to the safety measures and hazards associated with the electrical equipments, the effects of the environmental factors on the performance of instruments and the necessary steps to be taken to reduce these effects. The student is also trained on the use of different testing and measurements instruments, different maintenance strategies and fault diagnosis. A minimum of 40% of the course is devoted to practical work.
ASAB 2413A
Project IA

Credit Hours: 3
Contact Hours: 6
Pre-requisites: ASAC 2102
Type of Course: Specialization Requirement
Passing Grade: C

Course Description:
Train the student how to plan, seek information, implement information experimentally, interpret data, relate observations to project objectives, evaluate findings and present a structured project effectively in writing and orally.

ASAB 2413B
Project IB

Credit Hours: 3
Contact Hours: 6
Pre-requisites: ASAB 2413
Type of Course: Major Requirement
Passing Grade: C

Course Description:
Train the student how to plan, seek information, implement information experimentally, interpret data, relate observations to project objectives, evaluate findings and present a structured project effectively in writing and orally.

General Education Courses

PHIL 2200
Formal Logic

Credit Hours: 3
Contact Hours: 3
Pre-requisites: ENTW 1200
Type of Course: College Requirement
Passing Grade: D

Course Description:
This course develops the ability to think and function effectively, logically, and analytically; and effectively using oral and written communication skills. It also enable students in identifying and solving problems logically; dealing with people rationally; applying oral and written communication skills argumentatively with logic; function creatively in presenting a reasoned argument.
**ENTW 2100**  
**Technical Communication**

Credit Hours: 3  
Contact Hours: 4  
Pre-requisites: ENTW 1200  
Type of Course: College Requirement  
Passing Grade: D

**Course Description:**
This course introduces the student to the theories, principles, and processes of effective written communication in the technical disciplines with attention to the major strategies for composing technical discourse; techniques for analyzing and writing situations, and for organizing data and information. Write to manipulate audiences for various purposes and understand how workplace readers process and use documents. Plan and manage short and long-term writing projects in terms of drafting, designing, revising, and editing documents. Work with various writing technologies and electronic genres. Identify and explore problems in organizations; design and implement appropriate research strategies; and evaluate sources. Write collaboratively (e.g. co-authorship) and provide colleagues with useful feedback on their work. Develop effective style and tone and follow and adjust business and technical writing conventions. Design visually effective documents (e.g. layout, formatting, incorporating graphics and visuals into documents). Write ethically and responsibly within the business organization and as a member of society.

**PHIL 3108**  
**Business Ethics**

Credit Hours: 3  
Contact Hours: 4  
Pre-requisites: -  
Type of Course: College Requirement  
Passing Grade: D

**Course Description:**
To equip the student with the highest ethical standards that will guide him/her through real life dilemmas. Define the concept of values. Define how values develop. Understand the effects of religion and society on values. Understand the effects of Islamic and Omani values on work ethics. Define the concept of ethnic and cultural diversity. Understand the importance of ethnic and cultural diversity for society and the world. Work with people from different ethnicities/cultures. Function in a moral and ethical manner in his/her life.
### ASAB 3110
**Plant Science**

| Credit Hours: | 3 |
| Contact Hours: | (NA) |
| Pre-requisites: | ASAB 2101 |
| Type of Course: | Specialization Requirement |
| Passing Grade: | (NA) |

**Course Description:**
This course introduces students to plant diversity. It provides in-depth knowledge of plant science for future employment in related areas or background knowledge for environmental studies. It introduces students to current theory and practice in flowering and non-flowering plants e.g. bryophytes, pteridophytes and gymnosperms.

### ASAB 3111
**Molecular Biology**

| Credit Hours: | 3 |
| Contact Hours: | (NA) |
| Pre-requisites: | ASAB 2101 |
| Type of Course: | Specialization Requirement |
| Passing Grade: | (NA) |

**Course Description:**
This course will lead the students to be familiar with the nucleic acids structure, replications, transcription, and functions and synthesis of proteins in the living cells. This course will also include DNA damage, repair, gene structure, its function, and expression. DNA fingerprinting, forensic analysis, genome and proteomics as well as transgenesis will be discussed.
### ASAB 3112
**Food Microbiology**

| Credit Hours: | 3 |
| Contact Hours: | (NA) |
| Pre-requisites: | ASAB 2103 |
| Type of Course: | Specialization Requirement |
| Passing Grade: | (NA) |

**Course Description:**
This course introduces the students to an understanding of different food producing and processing processes, major role of microorganisms in human diseases, fermentation and in determining the shelf life of food products, ways of controlling the microbiological quality and safety of food including HACCP. Techniques of water and food microbiology are included in this course.

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### ASAC 3120
**Statistics & IT**

| Credit Hours: | 3 |
| Contact Hours: | (NA) |
| Pre-requisites: | ITES 1100 |
| Type of Course: | Departmental Requirement |
| Passing Grade: | (NA) |

**Course Description:**
Provides the student with the working knowledge of the statistical techniques that he/she needs to use in his/her work as a scientist. It includes, Records, display and summaries of scientific data, classification, descriptive data; Basic statistic concepts, discrete and normal distribution, sampling and hypothesis testing; Statistical techniques, the t-test and non-parametric tests, analysis variance, Chi-squared and correlation and regression. It consists mainly of practical IT sessions while explaining the statistical background to enable the student to gain hands-on experience of using the statistical techniques.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Hours</th>
<th>Contact Hours</th>
<th>Pre-requisites</th>
<th>Type of Course</th>
<th>Passing Grade</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASES 2205</td>
<td>Ecology</td>
<td>3</td>
<td>(NA)</td>
<td>ASAB 3110</td>
<td>Specialization Elective</td>
<td>(NA)</td>
<td>This course deals with the environment. The course includes fundamental principles of ecology, principles employed in the study and analysis of the relationships between organisms and their physical environment; population growth, regulation and interactions; the nature and diversity of biological communities; ecosystem structure and function; the world biomes and flow of energy through an ecosystem and the cycling of matter and nutrients within an ecosystem. The concept of how evolution, biogeography and the influence of humanity has an impact on global biodiversity is introduced. Exposure to data collection and analysis techniques pertinent to the study of ecology to appreciate the quantitative nature of the science of ecology is also taught.</td>
</tr>
<tr>
<td>ASAB 3213</td>
<td>Ecological Sampling &amp; Environmental Toxicology</td>
<td>3</td>
<td>(NA)</td>
<td>ASAB 3110</td>
<td>Specialization Requirement</td>
<td>(NA)</td>
<td>This course introduces students to the fields of ecological sampling and environmental toxicology and teaches them practical skills in the ecological systems, sampling techniques and toxicity assessment due to environmental pollution. Enables students to develop a detailed knowledge of ecological systems and eco-toxicological principles. Prepares students to utilize ecological techniques in the field and in preparing critical scientific reviews especially in the important areas of eco-toxicology and environmental biology.</td>
</tr>
</tbody>
</table>
ASAB 3215
Genetics

Credit Hours: 3  
Contact Hours: (NA)  
Pre-requisites: ASAB 3111  
Type of Course: Specialization Requirement  
Passing Grade: (NA)

Course Description:
This course deals with Mendelian laws of inheritance and how individual characters are determined by the genes located on the chromosomes and how to locate and map the genes on chromosomes by crossing over, recombinants and linkage studies. Interaction of genes and their modifications, sex determination, sex linked inheritance; multiple alleles are integral part of the course. Mutations (spontaneous and induced) and factors affecting mutation, genetic variation, its consequence, population genetics and evolution are also dealt with.

ASAB 3205
Mammalian Physiology

Credit Hours: 3  
Contact Hours: (NA)  
Pre-requisites: ASAB 2101  
Type of Course: Specialization Requirement  
Passing Grade: (NA)

Course Description:
This course provides a general understanding of the arrangement, structure, function of the mammalian body system and organs; physiological and biochemical concepts that control activities of different animal organs. The course also introduces students to the basic biological life processes in organisms such as nutrition, digestion, blood, respiration, reproduction, hormones, excretion, osmo-regulation, communication, and coordination. It includes several practicals to supplement the understanding of living processes.
General Education courses

PHIL 3201
Formal Arabic Communication

Credit Hours: 3
Contact Hours: (NA)
Pre-requisites:
Type of Course:
Passing Grade: (NA)

Course Description:
This course deals with basic skills in communicating and writing in modern Arabic language; introduction of ideas in clear and critical meanings; modern methods of writing in a scientific way so as to avoid linguistic mistakes; developing skills in communication and correspondence. This also introduces the students to express the linguistic functions and be able to control his native Arabic language.

ASAC 3341A
Quality Assurance & Quality Control

Credit Hours: 3
Contact Hours:
Pre-requisites:
Type of Course: Departmental Requirement
Passing Grade: C-

Course Description:
It provides the student with the concepts of quality assurance systems and encourages their applications to familiar situations while considering related statistical methods. It involves quality systems and their applications; quality control in industry; specification and non-conformance; statistical process control and sampling and inspection plans. It also introduces the student to the application of the quality techniques in a range of industries and their implementation. Industrial visits are integral part of this course.
ENGL 3100
Public Speaking

Credit Hours: 3
Contact Hours: 4
Pre-requisites: ENTW 1200
Type of Course: College Requirement
Passing Grade: D

Course Description:
To introduce the student to the principles of public speaking to foster critical thinking and to equip him/her with the skills necessary for producing effective and credible presentations that are suitable for their audiences and purposes. Develop skills in speech development strategies and delivery techniques. Develop skills in rhetorical sensitivity and critical thinking. Observe, analyze, critique, and provide feedback on developing speech forms. Describe the basic principles of public speaking. Organize an informative and persuasive speech. Analyze audiences for the purpose of preparing speeches. Prepare visual aids proper to the purpose of the speech. Describe the different methods of persuasion. Perform an introductory speech, a demonstration speech, an informative speech, a persuasive speech, and a special occasion speech. Identify and define personal speaking styles to business, government, and industry functions.
**ASAB 4116**  
**Plant Physiology**  

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<th>Credit Hours:</th>
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<td>Pre-requisites:</td>
<td>ASAB 3110</td>
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<td>Type of Course:</td>
<td>Specialization Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>C</td>
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</tbody>
</table>

**Course Description:**  
This course deals with plants viewed from the physiological aspect as systems that use solar energy and simple inorganic molecules to assemble complex chemical structures. These processes that enable the plants to complete these activities are the sum of the multiple physical and chemical processes. This includes the harvesting of solar energy (photosynthesis) to synthesize not only the carbohydrates, in the presence of water and minerals, but also other primary (proteins, fats etc.) and secondary (hormones, phenols etc.) metabolites, required for the regulation of growth (vegetative and reproductive) and development. These aspects are covered to familiarize the students with the functioning of the processes, involved.

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**ASAB 4117**  
**Histology & Haematology**  

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<td>Contact Hours:</td>
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<td>Pre-requisites:</td>
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<td>Type of Course:</td>
<td>Specialization Requirement</td>
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<tr>
<td>Passing Grade:</td>
<td>C</td>
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</tbody>
</table>

**Course Description:**  
This course introduces the students to an area of blood constituents cells and plasma, blood clotting, blood cell formations, blood transfusions and bone marrow transplantation. Blood diseases leukemia, anemia, hemophilia are discussed. The study of different animal tissues particularly mammalian tissues and study the tissue injuries, cellular and tissue repair, cell culture and tissue engineering will be are included in this course.
ASAB 4118
Plant Biotechnology & Pathology

Credit Hours: 3
Contact Hours: 4
Pre-requisites: ASAB 2308
Type of Course: Specialization Requirement
Passing Grade: C

Course Description:
This course deals with gene technology in plants with the major focus on plant tissue culture and genetic engineering. The course also deals with the major strategies that have been applied to crop improvement, genetically engineered traits, biotech revolution, genetically engineered food, nutritionally enhanced plants and molecular farming. Moreover, the course also includes plant pathology, in which the basic concepts of pathology are discussed. It deals with the Epidemiology of diseases, Host-plant recognition, Mechanism of pathogenecity, types of diseases and Disease management

ASAB 4223A
Project IIA

Credit Hours: 3
Contact Hours: 6
Pre-requisites: ASAB 2409
Type of Course: Specialization Requirement
Passing Grade: C

Course Description:
Provides experience to select and apply knowledge and skills from those developed during the program to an extended individual study. It involves planning, seeking information, implementation, interpretation of results, evaluation and presentation of the project in writing and orally.
ASAB 4223B
Project IIB

Credit Hours: 3
Contact Hours: 6
Pre-requisites: ASAB 4223A
Type of Course: Specialization Requirement
Passing Grade: C

Course Description:
Provides experience to select and apply knowledge and skills from those developed during the program to an extended individual study. It involves planning, seeking information, implementation, interpretation of results, evaluation and presentation of the project in writing and orally.

ASES 3111
Pollution & Its Control

Credit Hours: 3
Contact Hours: 4
Pre-requisites: ASAB 1101
Type of Course: Departmental Elective
Passing Grade: C-

Course Description:
This course introduces students to general understanding of pollution and the role of man in defaulting his own environment. The sources of air, water, soil, radioactive and noise pollutions, the types of their pollutants and methods of controlling or minimizing air, water, soil, radioactive and noise pollutions are discussed.
ASES 4301
Nutrition
Credit Hours: 3
Contact Hours: 4
Pre-requisites: -
Type of Course: Departmental Elective
Passing Grade: C

Course Description:
This course provides an integrated overview of the physiological requirements and functions of protein, energy, and the major vitamins and minerals that are determinants of health and disease. Topics include dietary sources, intake levels, and biological determinants of nutrient requirements; assessment of nutrient status in individuals and populations; the role of nutrition in growth and health through the life cycle; the rationale for the development of dietary guidelines and of nutrition policies in different countries; and the role of diet on the development of chronic diseases, such as cardiovascular disease, cancer, diabetes, etc.

ASES 4202
Zoology
Credit Hours: 3
Contact Hours: 4
Pre-requisites: ASAB 4117
Type of Course: Specialization Elective
Passing Grade: C

Course Description:
This course deals with the study of invertebrates (Protozoa to Echinodermata including their morphology, anatomy, classification, function of their organs, their environment and the evolution with other animals. The study of Phylum Chordate using the structural, functional and evolution embryonic development in the study of the major anatomical system.
ASES 4201
Food Analysis

Credit Hours:  3
Contact Hours:  4
Pre-requisites: ASAB 2207
Type of Course: Specialization Elective
Passing Grade: C

Course Description:
This course deals with the investigations in food science and technology, whether by the food industry, governmental agencies, or universities. Provide information about determination of food composition and characteristics, trends and demands of consumers, the food industry and national and international regulations challenge food scientists as they work to monitor food composition and to ensure the quality and safety of food supply. Present students with the knowledge of quality management program which is required in all food products analysis.

ASAB 4210
Biological Control

Credit Hours:  3
Contact Hours:  4
Pre-requisites:  
Type of Course: Specialization Elective
Passing Grade: C

Course Description:
Biological control has been defined as "The action of parasites, predators, or pathogens in maintaining another organisms' population density at a lower average than would occur in their absence. "It was also defined as "Manipulation of natural enemies of plant, animals and humans, by man to control pests' predator or pathogens".

The ecological principles and applied practices of modern biological control of virus, bacteria, fungi, parasites, insects, weeds and plant, animal and human pathogens will all be studied in this course.
**General Education Courses**

**PHIL 4200**  
Islamic Education

| Credit Hours: | 3 |
| Contact Hours: | (NA) |
| Pre-requisites: | |
| Type of Course: | College Elective |
| Passing Grade: | (NA) |

**Course Description:**
This course deals with the basic sciences as per Muslims:

The Holy Quran (how did the holy prophet and his successors caliphs were very keen in maintaining it’s records.)

- Altafseer (the art of interpretation of the Holy Quran) it’s emergence, importance, development & the role of Omanis in that.
- Al Hadeeth (Speeches and instructions of the Holy Prophet) it’s origins, ways and methods of recording Hadeeth, types of Hadeeth, & the art of categorizing Hadeeths).
- Fiqh (Islamic schools of thought) characteristic of the different Islamic schools of thoughts:
  - Malik school of thought
  - Sahafei school of thought
  - Hanafee school of thought
  - Hanbaly school of thought
  - Alzaydee & Al Jafaree school of thought
  - Alabadee school of thought.
  - Judiciary system during the Holy Prophet (PBOH) Era
  - Judiciary system during Alrashidons’ era
  - Judiciary system during Bani Umaia & Bani Al Abas era
  - The characteristic of a judge
  - Grievances and complaints
  - Accountability system in Islam.

**Arabic Language**

- Factors helped in the development of Arabic language
- Arabic literature
- The contribution of Omanis in developing the Arabic language.
- Omani poetries and scholars in different eras

**History**

Geography and why it’s important for Arabs.