



CENTRE FOR EDUCATION PROGRAMMES

COURSE OUTLINE

COURSE CODE: SCIE1001	COURSE NAME: Introduction to Science	COURSE LEVEL: Undergraduate	YEAR: 2013/2014 SEMESTER : 3	
HOURS PER WEEK: 9	TOTAL HOURS: 45	CREDITS: Three (3)	START DATE: 27/05/14	END DATE: 26/06/14
PREREQUISITES: None				
COURSE COORDINATOR: Dr. Jerome Joseph	Phone: Office 642-8888 ext. 29177 Cell: 728-8341	Office Hours: 10:00-11:00 a.m. (T, F) 1-2 p.m. (W, Th)	E-mail: jerome.joseph@utt.edu.tt msjiose@gmail.com	
INSTRUCTORS : Dr. Jerome Joseph Dr. Balmattee Sukha Mr. Kishore Lal	Cell: 688-9260		kishore.lal@utt.edu.tt	

ESSENTIAL TEXT/RESOURCES:

1. Nazir, Joanne, (2010). Chemistry explained. Caribbean Educational Publishers.
2. Cracolice, M. S., Peters, E. I. (2012). Introductory Chemistry: An Active Approach, 5th ed. Brooks/Cole.
3. Hewitt, P. G., Lyons. S. A., Suchocki, J. A., Yeh, J. (2012). Conceptual Integrated Science 2nd ed. White Plains, NY: Addison-Wesley.

COURSE RATIONALE

A good foundation is essential to the pursuit of undergraduate courses in science and agriculture. This course, therefore, is intended to give the student a platform that would serve as a foundation that would allow the student to successfully pursue courses being offered in the Natural Science and Agriculture specialisations.

COURSE DESCRIPTION

Effectively this course examines the characteristics of living organisms and relates their existence to the chemicals that are required for the functioning of living organisms. Emphasis is placed on life processes which depend on chemical reactions within specialized areas of the organism's cells. Topic in Physics would include Motion, Forces, Work and Energy. The student is also exposed to a working knowledge of basic chemistry as it relates to agricultural chemical products. Topics include States of Matter, Atomic Structure, Charges and Bonding Relationships, Chemical Equations and Equilibrium, Acids, Bases, Salts and Buffers. The course concludes by applying a basic knowledge of chemistry to chemicals used in agriculture to include fertilizers etc.

COURSE GOALS

- To allow the student to evaluate the importance of selected physiological systems
- To foster in students an understanding of matter, atomic structure and chemical reactions
- To provide an understanding of the importance of various chemicals found in biological systems
- To give students a basic understanding of motion, forces, work and energy
- To enable students to appreciate the role of science in Agriculture

GENERAL OBJECTIVES

At the end of the course, students would be able to

1. Classify organisms on the basis of their basic characteristics
2. Explain the importance of photosynthesis and respiration
3. Describe the role of biogeochemical cycles and their significance to Agriculture
4. Explain the difference between autotrophic and heterotrophic nutrition
5. Define matter and understand its Properties
6. Understand that all matter is made up of elements arranged in a Periodic Table.
7. Use the periodic properties of the elements to be able to write formulae, using chemical symbols and write equations for common reactions.
8. Understand the structure of atoms and how the electronic configuration influences their behavior in chemical reactions and the types of bonding involved
9. Name the components of the atom

10. Demonstrate that energy can be converted from one form to another
11. Describe the motion of an accelerating body
12. Design and implement investigations in living organisms
13. Apply biological principles to crop and livestock production
14. Define pH and identify substances that behave as acids or bases.
15. Classify energy changes in chemical reactions as endothermic and exothermic.
16. Demonstrate an understanding of the meaning and maintenance of buffering capacity and the importance of buffers in everyday life
17. Demonstrate an appreciation of the difference between vector and scalar properties
18. Apply units to calculate physical quantities
19. Demonstrate basic laboratory skills associated with experiments encountered in the Natural Sciences
20. Use the concepts and techniques acquired in the classroom
21. Accurately carry out measurements of Length, Mass and Time

METHODS OF INSTRUCTION

A number of approaches would be used in the delivery of this course. These include the following:

- i. Lectures
- ii. Tutorials
- iii. Laboratory exercises
- iv. Assignments

COURSE UNITS

Unit 1: The Cell

Unit 2: Nutrition, Respiration and Photosynthesis

Unit 3: Nature of Matter

Unit 4: Reactions of Matter

Unit 5: Motion and Forces

Unit 6: Momentum and Energy

COURSE REQUIREMENTS

Attendance of at least 80% of all class and laboratory sessions and submission of all written assignments and examinations.

RECOMMENDED COURSE CONTENT

Learning Outcomes or	Recommended content	Teaching-Learning
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Specific Objectives		Resources
SEE GENERAL OBJECTIVES	Unit 1: The Cell Components plant and animal cells Unicellular organisms Multi-cellular organisms	Lectures, Website Text, assignment Laboratory activities
	Unit 2: Nutrition, Respiration and Photosynthesis Autotrophic versus heterotrophic nutrition Nutrition in animals Photosynthesis Respiration in unicellular and multicellular animals Respiration in flowering plants Biogeochemical cycles Fertilizers and pesticides	Ditto
	Unit 3: Nature of Matter Properties of matter Atomic structure Ionic compounds Atomic weights, Molecular weights and Moles. Introduction to the Periodic table: Group 1, 11 and Transition Metals, 11, VII (Halogens) Chemistry of non-metals C and S	Ditto
	Unit 4: Reactions of Matter Chemical Reaction Solutions, Mixtures, Measurement of concentration. pH, Acids, Bases and Salts Solubility and hydrolysis	

	<p>Unit 5: Motion and Forces</p> <p>Vectors and Scalars Mass and Weight Net Force Friction Mechanical Equilibrium Motion in one Dimension - Speed and Velocity, Acceleration</p> <p>Aristotelian vs. Galilean Motion Newton's Laws of Motion</p> <p>Gravity Motion in Two dimensions</p>	<p>Ditto</p>
	<p>Unit 6: Work and Energy</p> <p>Momentum Impulse Conservation of Momentum Energy Power</p> <p>Potential Energy Kinetic Energy Work and Energy Conservation of Energy Simple Machines</p>	<p>Ditto</p>

EVALUATION AND GRADING

The course will be evaluated on the basis of performances in laboratory exercises, assignments, mid semester and final examinations.

EVALUATION

Source of Marks	Marks
Laboratory Reports	5%
Unit Exams	45% (15% each)
Final Examination	50%

GRADING:

UTT Grading System (Version 5)			
Lower Bound	Upper Bound	Grade	Grade Points
95	100	A+	4.0
89	94	A	4.0
84	88	A-	3.7
78	83	B+	3.3
72	77	B	3.0
66	71	B-	2.7
60	65	C+	2.3
50	59	C	2.0
0	49	F	0.0

COURSE POLICIES:

Class Structure

The structure of this class will be a combination of lectures, in-class activities, individual lab work, and assignments.

Attendance

The study of science is cumulative (i.e., an understanding of earlier material is necessary to grasp later covered concepts.) Past experience has shown a high relationship between absences and low grades. Furthermore, absences will severely limit interaction with other students. It is very important that you make every effort to attend every class. Please be guided by UTT's policy on class attendance to qualify to graduate from this course

Late Assignment:

Any late assignment received within one week after the date due will be graded and then assigned a score equivalent to 80% of the earned grade. Assignments will not be accepted more than one week after the assignment is due.

Academic Integrity

Academic integrity is submitting one's own work and properly acknowledging the work of others. Any violation of this principle constitutes academic dishonesty and is liable to result in disciplinary action. Forms of academic dishonesty include:

- Plagiarism - submitting all or part of another's work as one's own in an academic exercise, such as an examination, computer program, or written assignment. Please note that allowing someone to submit your work also constitutes plagiarism on your part.
- Cheating - using or attempting to use unauthorized materials on an examination or assignment, such as using unauthorized texts or notes or improperly obtaining, or attempting to obtain, copies of an examination or answers to an examination.
- Facilitating Academic Dishonesty - helping another commit an act of dishonesty, such as substituting for an examination or completing an assignment for someone else.
- Fabrication - altering or transmitting, without authorization, academic information or records.

COURSE SCHEDULE

Week	Unit/Session Topics Only the topic for the session, not details of content	Methodology
27/5/14 Physics (Lal)	Vectors and Scalars Mass and Weight Net Force Friction Mechanical Equilibrium Motion in one Dimension - Speed and Velocity, Acceleration	Lectures ,group presentations, laboratory demonstration and assignments
28/5/14 Chemistry (Sukha)	Properties of matter Atomic structure	Ditto
29/5/14 (Biology) Joseph	Classification of plants and animals The cell as a unit of life Unicellular organisms	Ditto
3/6/14 (Physics) Lal	Aristotelian vs. Galilean Motion Newton's Laws of Motion	Ditto
4/6/14 Chemistry (Sukha)	Atomic weights, Molecular weights and moles Introduction to the periodic table: Group I, II and transition metals, III, VII (halogens)	Ditto
5/6/14 Biology (Joseph)	Multi-cellular animals Chemicals necessary for life	
10/6/14 Physics (Lal)	Gravity Motion in Two dimensions	Ditto
11/6/14 Chemistry (Sukha)	Chemistry of non-metals	Ditto
12/6/14 Biology (Joseph)	Autotrophic versus heterotrophic nutrition Nutrition in animals	Ditto
17/6/14 Physics (Lal)	Momentum Impulse Conservation of Momentum Energy Power	Ditto
18/6/14 Chemistry (Sukha)	Chemical reactions Solution, mixtures, measurement of concentration	Ditto
19/6/14 Biology (Joseph)	Photosynthesis Respiration	Ditto

24/6/14 Physics (Lal)	Potential Energy Kinetic Energy Work and Energy Conservation of Energy Simple Machines	Ditto
25/6/15 Chemistry (Sukha)	pH, acids, bases and salts Solubility and hydrolysis	Ditto
26/6/14 Biology (Joseph)	Hydrogen cycle, nitrogen cycle, carbon cycle Fertilizers and pesticides	Ditto
	Final Examinations	