BABCOCK UNIVERSITY

COURSE OUTLINE

SCHOOL: Science and Technology

DEPARTMENT: Basic Sciences

FIRST SEMESTER /SESSION: 2016/2017

COURSE CODE AND TITLE: MATH 201: Engineering Math.1

DAY OF CLASS: Tuesday &Wednesday

NO OF UNITS: 3

VENUE FOR CLASS: B007&A008

TEACHER'S: NAME: Ayinde, S.A

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OUR VISION STATEMENT

A first-class Seventh-day Adventist institution, building servant leaders for a better world

OUR MISSION STATEMENT

Building leadership through Christian education; transforming lives, impacting society for positive change

To achieve our mission, we are committed to:

- Achieving excellence in our teaching, research program, and service delivery
- Imparting quality Christian education
- Instilling Christ-like character to the members of our Community

OUR CORE VALUES

- Excellence -Our Culture
- Integrity -Our Promise
- Accountability -Our Moral
- Servant Leadership -Our Strength
- Team Spirit -Our Dignity
- Autonomy and Responsibility -Our Passion
- Adventist Heritage -Our Commitment

OUR PHILOSOPHY

Babcock University's philosophy is anchored on the harmonious development of the intellectual, physical, social, and spiritual potentials of our students, inspiring stable and noble character needed for effective leadership and service in the society.

CORPORATE IMAGE STATEMENT: A center of excellence for character development and scholarship; a socially responsive, responsible, and accountable institution in matters of commitment and action.

COURSE DESCRIPTION: The course aims at teaching real valued functions of one, two and three variables, differentiation and integration of functions of two or three variables. Mean value theorem and Taylor series expansion of real valued functions of up to three variations. Emphasis is placed on partial derivatives of function of up to three variables

lagrange multiplier, linear approximation, increment and evaluation of line and multiple integrals are also considered. The course teaches the concepts of dependent and independent variables of one to three variables. Going through the course gives ability to differentiate not only function of one variable but also functions of several variables partially. This is an added knowledge which leads to excellence.

COURSE CONTENT: Concept of real valued functions Review of differentiation, integration and their application. Mean value theorem and its applications. Progression from linear approximation to quadratic approximation and then to their generalization i.e Taylor series. Partial differentiation and Taylor series in 2 and 3 variables Derivation of small change from Taylor series in 2 variable. Applications of the derivation of small change from Taylor series. Extrema: maximum, minimum and saddle points. Lagrange's undetermined multiplier
Evaluation of line and multiples integrals.

COURSE OBJECTIVES: At the end of the course student should be able to:

- ✓ use mean value theorem to solve problems and also identify its link to linear approximation
- ✓ construct the Taylor series for different types of functions
- ✓ apply small increment to solve problems like rate of change, change of variables, inverse etc.
- ✓ determine the stationary points by using different methods
- ✓ solve problems on line and multiple integrals

REQUIRED TEXTBOOKS/JOURNALS:

Kreyszig, E. Further engineering Mathematics New York Chichester Brisbane Toronto John Wiley & Sons 1990.
Liadi M.A., Osinuga I.A. A first course in Mathematical Methods for scientist and engineers Rasmed publications limited, Ibadan. 2011

COURSE REQUIREMENTS:

CLASS ATTENDANCE: - "Every student is required to attend classes regularly and punctually, unless ill or prevented by some recognized emergency. Students who absent themselves from class for more than three weeks during the semester shall merit an F grade. Authorized leave of absence from campus does not excuse the student from classes, or relieve the student of the required course work'*(BU Academic Bulletin 2012-2015 p.13).*

PARTICIPATION: -Students are to actively engage in topic discussion and sharing of ideas in class.

TARDINESS/CONDUCT OF STUDENTS IN CLASS: - Lateness to class is unacceptable; students are not allowed to operate their cell phones, iPods and other electronic mobile gargets during classes, except with the permission of the teacher. Eating and chewing off bubble gums and drinking (water exempted) is also not allowed except with the permission of the teacher. Very importantly, students are required to dress in compliance with the university dress code and wear their identity cards while in class.

SHORT DEVOTIONALS/PRAYER: - Spiritual nurture is a part of whole person development, and team spirit is our strength; thus, every student is required to participate in the devotional exercise and prayer in class.

SUBMISSION OF ASSIGNMENT: As the teacher wishes to receive the assignments with the regulations of the Academic Bulletin.

LATE ASSIGNMENTS: Assignments could be turned in earlier, but not later than the deadline set by the teacher.

GUIDELINE FOR WRITTEN WORK: Teacher should determine the guidelines.

ACADEMIC INTEGRITY/HONESTY:"Babcock University has a zero tolerance for any form of academic dishonesty. Morally and spiritually, the institution is committed to scholastic integrity. Consequently, both students and staff are to maintain high, ethical Christian levels of honesty. Transparent honest behavior is expected of every student in all spheres of life. Academic dishonesty include such things as plagiarism, unauthorized use of notes or textbooks on quizzes and examinations, copying or spying the test or paper of another student (formal or take-home), talking to another student during examinations. Academic matter would automatically result in a failing grade for the examination, and suspension, or outright dismissal from the university. Academic dishonesty issues are referred to SPEAM (Senate Panel on Examination and Academic Misconduct) who investigates and makes recommendations to Senate. Penalties for examination and academic misconduct are spelt out in the *student's handbook* and in other regulations as published from time to time" *(BU Academic Bulletin2012-2015 p.18).*

GRIEVANCEPROCEDURE
"Studentswhobelievethattheiracademicrightshavebeeninfringeduponorthattheyhavebeenunjustly treated with respect to theiracademicprogramareentitledtoafairandimpartialconsiderationoftheircases.Theyshoulddothefollowingto effect a solution:

1.Presenttheircasetotheteacher(s)concerned

2.If necessary, discuss the problem with the Head of Department

3.Ifagreementisnot reached at this level, submit the matter to the School Dean

4.Finally, ask for a review of the case by the Grievance Committee

5. A fee is charged for remarking of scripts. If a student's grievance is upheld after an external examiner has remarked the script, the grade would be credited to the student. The lecturer will be given a letter of reprimand and will be asked to refund the fees to the student. If the student's grievance is not sustained, the student will be given a letter of reprimand and the original grade retained" *(BU Academic Bulletin2012-2015 p.18).*

TEACHING/LEARNING METHODOLOGIES: Teachers are to determine their strategies for teaching their students. However, interactive strategies are encouraged, and there should be integration of faith and BU core values in the learning process.

In adherence to Babcock University core value for course delivery, the following methodologies are adopted.

Well-structured instructions
White board & marker and projector
Students- teacher interaction

Direct Instruction.
Guided Inquiry.
Discourse.
Cooperative Learning.
Problem-based Learning.
Visual Representations and Concrete Models.
Assignments

COURSE ASSESSMENT/EVALUATION
Continuous Assessment:

Class Attendance: 5%}
Quizzes & Tests: 10%}
Assignments: 10%} =40%
Mid-Semester Exam: 15%}
Final Semester Exam: 60%

GRADE SCALE

Currently, the 5-pointgradingsystemadoptedbythe UniversitySenatetranslatesasfollows:

Grades	Marks-Quality	Range Points	Definition
A	80-100	5.00	Superior
B	60-79	4.00	Above Average
C	50-59	3.00	Average
D	45-49	2.00	Below Average
E	40-44	1.00	Pass
F	0-39	0.00	Fail

INCOMPLETE GRADE: An incomplete grade may only be assigned to a student upon request, due to an emergency situation that occurred within that semester, which prevented completion of an/some assignments, quizzes, or examination. Such a student would complete a contract form, obtainable from the Registrar, after agreement with the teacher. The form must be signed by the teacher, the student, the HOD, the dean, the Registrar, and the Senior Vice President (SVP) before contract begins. The original copy of the incomplete form will be sent to the Registrar with copies to the teacher, the student, the HOD, the dean, and the SVP. An incomplete grade(I) reverts to the existing grade if contract is not completed by the end of the following semester (including summer semester, except for examinations), *(BU Academic Bulletin 2012-2015 p. 20).*

FURTHER READINGS:

STUDENTS WITH DISABILITY
"Babcock University seeks to provide a conducive environment for optimal living and learning experience. While the university is working towards facilities that accommodate

persons with disabilities, provisions will be made for students with disabilities under the following conditions. Students with disabilities are to:

a. Report to Student Support Services for assessment, and obtain a clearance/recommendation at the commencement of the semester or as soon as disabling incidence occurs
b. Show the clearance/recommendations to relevant university officials at the commencement of the semester or as soon as disabling incidence occurs
c. Maintain ongoing contact with Student Support Services" *(BU Academic Bulletin2012-2015 p. 20).*

PROPOSED DAILY/WEEKLY OUTLINE OFSCHEDULE:

WEEK		**TITLE**	**CLASS ACTIVITIES**	**ASSIGNMENTS DUE**
1	Sept.5&7 2016	Devotion. Discussion of course outline and introduction.	Questions and answers.	
2	Sept.12&14, 2016	Concept of real valued functions	Exercise	
3	Sept.19&21 , 2016	Review of differentiation, integration and their applications	Exercise	
4	Sept.26&28 , 2016	Mean value theorem and its applications	Exercise	
5	Oct.3&5 , 2016	Progression from linear approximation to quadratic approximation and then to their generalization i.e Taylor series	Exercise	
6	Oct.10&12, 2016	Progression from linear approximation to quadratic approximation and then to their generalization i.e Taylor series	Exercise	Application of mean value theorem and Taylor series in programming..
7	Oct.17&19, , 2016	Partial differentiation and Taylor series in 2 and 3 variables	Class discussion on rate of change of variables as it relates to real life situation bearing in mind biblical principles.	
8	Oct.24&26 , 2016	Derivation of small change from Taylor series in 2 variables	Exercise	

9	Oct.31& Nov,2 , 2016	Applications of the derivation of small change from Taylor series	Exercise	
10	Nov.7&9, 2016.	Applications of the derivation of small change from Taylor series	Exercise	
11	Nov. 14&16, 2016.	Extrema: maximum, minimum and saddle points	Exercise	
12	Nov.21&23, 2016.	Lagrange's undetermined multiplier	Exercise	
13	Nov.28.&30, 2016.	Evaluation of line and multiples integrals.	Exercise and Revision.	