BABCOCK UNIVERSITY

COURSE OUTLINE

SCHOOL: Science and Technology

DEPARTMENT: Basic Sciences

FIRST SEMESTER /SESSION: 2015/2016

COURSE CODE AND TITLE: MATH 301: Engineering Mathematics 2
DAY OF CLASS: Tuesday & Thursday
NO OF UNITS: 3
VENUE FOR CLASS: E001
TEACHER'S: NAME: Ayinde, S.A   OFFICE ADDRESS:SAT C114

TELEPHONE NO:08056131809
EMAIL ADDRESS: ayindes@babcock.edu.ng

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: This course aims at introducing first and second order ordinary differentiate equations and different methods of solving them. Laplace transform which happens to be a powerful tool in solving ordinary differential equations, even in its

simultaneous equations form is also taught. Another useful series more robust and better than Taylor series i.e the Fourier series is also introduced. The concept of complex analysis, a higher version of read analysis is considered. Ordinary differential equations is the form at which majority of our model problems come. It involves the rate at which one variable changes with another. The way and pattern God created everything come into mind. We see perfection in creation with proper timing.

COURSE CONTENT: Introduction of the link between real life situation and ordinary differential equations. Treatment of methods of solution of differential equations. Application of first order ordinary differential equations. Methods of solutions of 2nd order ordinary differential equation. Application of 2nd order ordinary differential equations. Introduction of Laplace transform and its application in solving ode. Introduction of Fourier series and its applications. Complex analysis: limit continuity and differentiability of complex functions. Contour integrals.

COURSE OBJECTIVES: At the end of the course student should be able to:
- explain how ordinary differential equations arise

- identify any type of first order ordinary differential equations and use appropriate method to solve it,

- covert linear second order ordinary differential equations with constant coefficients to algebraic form and solve it,

- model some known physical problems to first and second order ordinary differential equations and solve,
- transform functions to Laplace transform and also determine inverses of Laplace transform,

- solve first and second order ordinary differential equations with initial conditions by using Laplace transform,

- solve problems on Fourier series.

 REQUIRED TEXTBOOKS/JOURNALS:
 Erwin Kreyszig, Advance Engineering Mathematics John Wiley and Sons Inc. 5th edition, July 1988.
 K.A. Strond:: Further Engineering Mathematics third edition.),Macmillan Press Ltd. 1996

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 sharingof 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.Theyshoulddo thefollowingto 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 University Senate translates as follows:

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		TOPIC	CLASS ACTIVITIES	ASSIGNMENTS DUE
1	Sept.8&10 2015	Devotion. Discussion of course outline and introduction.	Questions and answers.	
2	Sept.15&17, 2015	Introduction of the link between real life situation and ordinary differential equations	Exercise	
3	Sept.22&24 , 2015	Treatment of methods of solution of differential equations	Exercise	
4	Sept.29, 2015	Treatment of methods of solution of differential equations. Cont.	Exercise	
5	Oct.6&8, 2015	Application of first order ordinary differential equations	Exercise	
6	Oct.13&15 2015	Methods of solutions of 2nd order ordinary differential equations	Exercise	Application of Differential equations to your course of study.
7	Oct.20&22 , 2015	Methods of solutions of 2nd order ordinary differential equations. Cont.	Class discussion on first and second order ODE and its relations to creation.	
8	Oct.27&29, 2015	Application of 2nd order ordinary differential equations	Exercise	
9	Nov.4&6, 2015	Introduction of Laplace transform and its application in solving ode	Exercise	

10	Nov.11&13, 2015.	Introduction of Laplace transform and its application in solving ode	Exercise	Apply Laplace transform to solve initial value problems discussed earlier in the course.
11	Nov.18&20, 2015.	Introduction of Fourier series and its applications	Exercise	
12	Nov.25&27, 2015.	Complex analysis: limit and continuity and	Exercise	
13	Dec.1&3, 2015.	Differentiability of complex functions. Contour integrals	Exercise and Revision.	