Math 1115 Course Outline
Fundamental Mathematics for the General Sciences I

Academic Year 2018-2019 (Semester 1)

Group Information (G1, G3 & G4)

GROUP 1

Ebiakpo Sonron ✉ ebiakpo.sonron@sta.uwi.edu

Office Hours Mondays 9:00 - 10:00 a.m. & Tuesdays 9:00 - 10:00 a.m. Otherwise by appointment.

GROUP 3

Alana Sankar-Ramkarran ✉ alana.sankar@sta.uwi.edu

Office Hours Monday 2-4 p.m. & Wednesday 1-2 p.m. and 3-5 p.m. Otherwise by appointment.

GROUP 4

Rhea Alexander ✉ rhea.alexander@sta.uwi.edu

Office Hours Monday 8-9 a.m. & Tuesday 8-9 a.m. Otherwise by appointment.

Level: First level undergraduate service course

Number of Credits: 3 Credits

Group: 1, 3 & 4 (please note there is no Group 2).

Please ensure you have been assigned to a group. Check the notice board outside the Department of Mathematics and Statistics (the glass one closest to the department) to verify that your name is on the listing. Listing will also be made available on MyeLearning.

Pre-requisites: None
NB: Students with any two units of Cape level mathematics (or equivalent), AGRI 1003 (Mathematics for Scientists) and/or MATH 0100 (Pre-Calculus) will **not** receive credits for this course.

Teaching Methodology:

- Two lecture sessions each week. Both are mandatory.
- One tutorial session each week (50 minutes each). These tutorials will serve as a forum for discussing concrete examples that students will encounter in their respective fields.
- Two mandatory 2- hour practical computer lab sessions in EXCEL. Students will be assigned to an appropriate computer lab group.

Course Rationale:

Over the years, we have observed that students entering the Faculty of Science and Technology without having done Cape Advanced level mathematics have a general deficiency in basic mathematical skills. This course has been specially crafted to address this problem. This foundation course is designed to meet the demands of several disciplines within the Faculty of Science and Technology that do not have their own courses in basic mathematics. The Faculty of Science and Technology has seen it necessary to ensure that entering students possess the necessary mathematical skills to excel in their chosen discipline within the Faculty, without having to take courses specifically designed for students of Mathematics.

Students wishing to enter the Faculty of Science and Technology without the necessary CSEC Mathematics qualifications will be given the option to take and pass the course "Fundamental Mathematics for the General Sciences I" during the summer semester in order to matriculate into the Faculty.

Students with any two units of Cape Advanced Level Mathematics or equivalent will not receive credits for this course. It should be noted that this course **cannot be considered** as a substitute or a pre-requisite for any of the courses offered by the Department of Mathematics and Statistics.

Course Description:

The main objective of this course is to provide entering undergraduate students with a set of mathematical tools and methods that can be applied to their scientific field of choice.

The major topics will be prefixed by typical mathematical problems that arise frequently in practical applications of the varying fields of science. As a service course in Mathematics, it should be considered as a broad introduction of the typical methods utilized in the applied sciences for solving problems. Little attention will be given to the underlying concepts of mathematical theory during lecture hours. Emphasis will be placed on the use of Microsoft Excel as a tool for the presentation of data in Laboratory Reports. A sound knowledge of all concepts from CSEC Mathematics will be assumed. It should be stressed that it is **not** meant to be a pre-requisite for any other mathematics course offered by the Department of Mathematics and Statistics.

Course Content:

- Algebra: Types of numbers, scientific notation, precision and accuracy, manipulating numbers, factorials, inequalities, simultaneous equations, indices, partial fractions, quadratic equations, remainder theorem, solving polynomial equations.

- Functions: Logarithms, exponentials, inverse functions.

- Trigonometry: Trigonometric functions and their graphs, common identities, solution of trigonometric equations.

- Coordinate Geometry: Gradients and intercepts, extrapolation techniques, linear regression.

- Statistics: Introduction to descriptive statistics, frequency distribution, mean, median, mode and standard deviation, measures of central tendency, normal and binomial distributions, chi-squared test.

Learning Outcomes:
Upon successful completion of the course, students will be able to:

- Recognize types of numbers (Naturals, Integers, Rationals, Reals, Complex).
- Utilize scientific notation.
- Maintain precision and accuracy in numerical calculations.
- Solve simple equations and inequalities.
- Manipulate numbers: negatives, absolutes, fractions, decimals and percentages.
- Calculate ratios and proportions.
- Evaluate factorials, reciprocals and exponentials.
- Utilize the basic rules of indices and logarithms.
- Find the inverse of a function.
- Manipulate trigonometric functions and their graphs.
- Utilize common trigonometric identities.
- Solve trigonometric equations, quadratics and polynomial equations.
- Utilize the remainder theorem.
- Simplify fractions via the rules of partial fractions.
- Calculate gradients and intercepts.
- Determine the mean and standard deviation for a set of data.
- State and use the basic rules of probability.
- Interpret normal and binomial distributions.
- Utilize the chi-squared test.
- Solve problems that arise in their own field of study, by making use of the basic mathematical concepts outlined in the course.

Assessment:

- Final Examination (One 2-hour written paper) – **60%**
- Coursework – **40%**
  - Two Coursework Examinations – each worth 10% for a total of 20%
  - Assignments – 10%
  - Two Computer Lab Assessment – each worth 5% for a total of 10%

Note:

- Your assignments' solution must be submitted in the Department of Mathematics & Statistics. There, you will find the submission boxes for this course for **YOUR ASSIGNED GROUP**. You may submit in either of the two boxes labelled for **YOUR GROUP**. If you submit your assignment elsewhere, it would not be marked unless such is received before the respective deadline, so please be very careful when you are submitting. It is important that you submit your assignments' solution by the deadline. Those assignments received after the respective deadline will not be marked.
- On each assignment you will be submitting, please put **your name, your id number, the course code, group number, assignment number and my name**. Please submit your assignment's solutions stapled, the department will not be responsible for those pages lost due to unstapled assignments submitted. Please do not use red ink in your assignments you are submitting.
- Marked scripts will be returned in lectures any uncollected scripts can be collect from the tutor during tutorial hours.
- If medicals are to be submitted for missing a coursework examination, please submit such directly to the UWI Campus Medical Officer at the Health Services Unit for approval.
- There are special sessions called **Help Desk**, which you can attend to assist you in this course. Please attend as many as you wish (see timetable).
- You can also visit the **Mathematics Help Center** (Monday-Friday from 9 a.m.- 1 p.m.)
- Visit regularly the **MyeLearning** Math 1115 Course Learning Environment. It will contain this outline document, assignments, labs, coursework notices, your marks, tutorial worksheet and other important discussions and notices relevant to this course. Please check at least once per week, to make sure that all your marks (assignments, coursework exams and lab) have been accurately recorded. If there is a problem, please bring it to my attention within one week after the respective results have been posted. Late queries will not be entertained.

Required Reading:

- Fundamental Mathematics for the General Sciences (by Dayle Jogie and Donna Comissiong). Available at the UWI Bookstore.

Additional Reading:

- Core Mathematics Advanced Level (by Linda Bostock and F. S. Chandler). Oxford University Press.

Good luck!
Should you have any further questions, please contact your lecturer.