MATH157: ALGEBRA

CHAPTER 0

First Contact

January 18, 2021

Outline

1 My Team

2 Syllabus

3 Reading Materials

4 Teaching and Assessment

5 Learning Outcomes

6 Course Policies

7 Contact

Lecturer : Dr. Kossi Amouzouvi

Homological Algebra and Deformation Theory, Density Functional Theory, Quantum Mechanics and Machine Learning & Biomathematics.

Teaching Assistants: (1) M. Emmanuel Assamoah

Bsc. Mathematics: Population Dynamics.

(2) M. Albert Megbenyo

Bsc. Mathematics: Fluid Dynamics.

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This course refreshes student's knowledge in

Elementary Set Theory: Set and subsets, Complement and set difference, Union and intersection, Venn diagram, Algebra of sets.

Indices and Logarithms: Indices, Laws of indices, Exponential equations, Logarithmic, Converting indices and logarithms, Laws of logarithms, Exponential functions,

Quadratic equations: Roots of quadratics equations, Sums and products of the roots, Useful identities, Cubic equations, Quartic equation.

Trigonometric Functions: Trigonometry functions and angles, Trigonometric identities and equations, Reciprocal trigonometric functions, Relevant applications.

Series and sequences: Series, Sigma notation, Arithmetic and Geometric Progression, Applications to practical problems.

Combinatorial Analysis: Permutations and Combinations, Binomial theorem, Binomial series.

Matrices: Addition, Subtraction and Multiplication of matrices, Determinants and Inverses of matrices, Applications to systems of linear equations.

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1. C. Schumacher , *Chapter zero: Fundamental Notions of Abstract Mathematics*. Addison-Wesley (2001), Chapter 2.
2. Lang L. *Painless Algebra*. 2nd Edition. Barron's Educational Series (2006).
3. Selby P. H & Slavin S. *Practical Algebra- A Self Teaching Guide*. 2nd Edition. John Wiley & Sons. Inc (1991).
4. Ann Xavier Gantert. *Algebra 2 and Trigonometry.* Amsco School Publications, Inc (2009).

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Contact Hours: 3h for lecture and 1h for tutorial per week.

Assessment:

- 15% contribution from continuous assessment comprising of attendance and participation in tutorials, short quizzes, assignments or group works.
- 15% mid-semester exams.
- 70% contribution from end of semester exams.

Resit Type: Exam.

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By the end of this course, students should be able to:

- have the ability to describe, manipulate, and prove results about sets and functions using standard mathematical notation;
- use the concept of indices to evaluate problems;
- apply the concepts of functions to solve practical problems;
- examine sequences and series and make valid inferences on practical problems using the idea of series and sequences;
- make basic addition, scalar multiplication, determinant and inverse computations of matrices;
- apply the concept of matrices to solve systems of linear equations;
- determine equations of straight lines under certain situations as well as applying to relevant problems;
- use trigonometry to address relevant problems.

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- All deadlines must be adhered.
- Students must avoid any forms of cheating and plagiarism.
- There will be no discrimination based on sex, race, religion, race, nationality, age against any individual.
- The use of electronic devices (phones, laptops) must be either in silent mode or switched off.
- Students must always wear their face masks.

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