

**OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE**

**DEPARTMENT OF MATHEMATICS**

**MTH 101 TEACHING SCHEDULE FOR 2021/2022 SESSION, HARMATTAN SEMESTER**

1. **LECTURER:** Dr. O. O. Fadodun.

**Assigned Topic: Set Theory**

Definition, Notation, Examples: Finite and Infinite sets, Empty set, Universal set; Concepts of Subset, Proper subset, Equality and Order of sets, Power set.

Set Operations: Union, Intersection, Difference, Complement, Symmetric difference, De-Morgan's Laws.

*Duration:* 17<sup>th</sup> January to 26<sup>th</sup> January, 2022 (1½ Weeks).

2. **LECTURER:** Dr. A. S. Borokinni.

**Assigned Topics: Set Theory; Functions**

Algebra of sets: Idempotent, Commutative, Associative, Distributive, Identity, Duality; Venn diagram; Cartesian product of set.

Functions: Domain and Range of functions, Composite functions, Injective, Inverse, surjective and bijective maps.

*Duration:* 27<sup>th</sup> January to 4<sup>th</sup> February, 2022 (1½ Weeks).

3. **LECTURER:** Prof. O. P. Layeni.

**Assigned Topics: Operations with Real Numbers; Complex Numbers**

Set of Numbers: Natural numbers, Integers, Rational numbers, Irrational numbers, and Real numbers.

Operations with Real Numbers: Addition, Subtraction, Multiplication and Division.

Surds: Operations on surds, Square roots of surds.

Complex Numbers: Introduction, Rules for manipulating complex numbers, Geometric representation of complex numbers, Modulus and Argument of complex numbers, and Polar form of complex numbers.

*Duration:* 7<sup>th</sup> February to 16<sup>th</sup> February, 2022 (1½ Weeks).

4. **LECTURER:** Dr. A. A. Aderogba.

**Assigned Topics: Theory of Quadratic Functions and Equations; Inequalities**

Theory of Quadratics: Quadratic functions and equations, Nature of roots of quadratic equations, Relation between roots and coefficients of quadratic equations, Finding quadratic equations from given roots, Conditions for two quadratic equations to have a common root, Simple proofs relating the coefficients of quadratic equation via the roots, Maximum/Minimum value of quadratic functions.

Equations in two Variables (Systems of Equations): One linear and One Quadratic.

Inequality: Solutions to inequalities.

*Duration:* 17<sup>th</sup> February to 25<sup>th</sup> February, 2022 (1½ Weeks).

5. **LECTURER:** Mr. A. R. Babalola.

**Assigned Topics: Equations in One Variable, Partial Fractions, Indices and Logarithms**

Polynomials: Polynomial equations, Remainder and Factor theorems Bi-Quadratic equations, Special quadratic equations, Equations involving square roots.

Partial Fractions: Consider all known cases

Indices and Logarithms: Laws, Applications, and Indicial Equations.

*Duration:* 28<sup>th</sup> February to 9<sup>th</sup> March, 2022 (1½ Weeks).

6. **LECTURER:** Dr. S. O. Ezeah.

**Assigned Topics: Sequence and Series**

Sequence: Infinite and finite sequences, Arithmetic sequence, Arithmetic Mean (A.M.), Finite geometric sequence, Geometric Mean (G.M.), Harmonic Sequence.

Series: Finite and Infinite series, Arithmetic finite series, Geometric Finite and Infinite series, Harmonic series, Series of the power of the first  $n$  natural numbers.

*Duration:* 10<sup>th</sup> March to 18<sup>th</sup> March, 2022 (1½ Weeks).

7. **LECTURER:** Prof. S. S. Okoya.

**Assigned Topics: Mathematical Induction; Permutations and Combinations; Binomial Expansion**

Mathematical Induction: Principle, Elementary examples in the use of induction.

Permutation and Combination: Definitions of Permutation and Combination, Combination with restrictions on some of the objects, Permutation in which objects may be repeated, Circular Permutation; Combination when some of the objects are alike.

Binomial Theorem: Pascal Triangle, Binomial theorem and its proof for positive integral index, The use of the expansion  $(1 + x)^n$ , where  $n$  is fractional or negative, Approximation using Binomial theorem.

*Duration:* 21<sup>st</sup> March to 30<sup>th</sup> March, 2022 (1½ Weeks).

8. **LECTURER:** Dr. A. A. Olosunde.

**Assigned Topics: Matrices and Determinants**

Matrices: Definition of a matrix, Types and Examples of Matrices.

Operations on Matrices: Addition, Multiplication by a scalar, Transposition, Product of Matrices.

Determinants of Matrices and Properties: Evaluating Determinants, Cramer's rule for solution of linear equations.

Inverse of a matrix: Application to solving systems of linear equations, Consistency and linear dependency.

*Duration:* 31<sup>st</sup> March to 8<sup>th</sup> April, 2022 (1½ Weeks).