



## **ENGINEERING SCIENCE DIPLOMA DEPARTMENT**

### **General Information**

Mumford Institute of Technology offers Engineering Science Diploma.

Engineering Science Diploma a two-year University Curriculum designed to prepare the students with keen interest in Engineering and provides them thorough preparation in mathematics, physical sciences and the arts. This curriculum will equip the graduate with the confidence to pursue any of the Engineering specialization of his or her choice.

### **Engineering Science Diploma**

The Engineering Science program is a general science curriculum that assures that graduates have the requisite skills and knowledge in reading, writing, and communication that are necessary to function effectively in work and Engineering environment. Graduates in this program may continue to earn University baccalaureate degree in any of the engineering fields in another two or more years. 73 credits are required to earn the Engineering Science Diploma.

### **Program Objectives:**

Within two or more years after graduation:

- Students in Engineering Science program are expected to be graduates of a four-year baccalaureate University program in Engineering or pursuing additional formal education
- Gainfully employed in Engineering and attaining increasing levels of responsibility in their chosen career
- Must be respectful of cultural diversity and must be practicing professional and ethical responsible manner

### **Required Core courses**

#### **A. Mathematical and Quantitative Reasoning**

- Math 101-01 Analytic Geometry and Calculus I (3 Credits)
- Math 101-01 Analytic Geometry and Calculus II (3 Credits)
- Math 203-02 Analytic Geometry and Calculus III (3 Credits)
- Math 203-03 Differential Equations and selected topics in advanced calculus (3 Credits)
- Probability and Statistics (3 Credits)

## **B. Chemistry**

- Chem 103-01 General Chemistry for Engineers I (3 Credits)
- Chem 104-01 General chemistry for Engineers II (3 Credits)
- Organic Chemistry I (3 Credits)

## **C. Physics**

- Phys 107-01 General Physics 1 (4 Credits)
- Phys 108-01 General Physics II (3 Credits)

## **D. English**

- Engl 101-01 Freshman Composition I (3 Credits)
- Engl 101-01 Freshman Composition II (3 Credits)
- Scientific and technical Writing (3 Credits)

## **E. Engineering**

- Engr 204-02 Engineering Circuit Analysis 1 (3 Credits)
- EE 205-02 Circuit analysis Lab. (1 Credits)
- EE241-02 Electronics I (3 Credits)
- EE 206-02 Digital Logic Design (1 Credits)
- EE 206-02-1 Digital Logic Design Lab (3 Credits)
- Engr 101-01 Engineering Graphics (Design) (1 Credits)
- Engr 102-01 Engineering Orientation (3 Credits)
- Engr 103-01 Introduction to Computers for Engineers (3 Credits)
- Engr 210-02 Thermodynamics (3 Credits)

- Econ 101-10      Engineering Economics      (3 Credits)

**F. History**

- African History (African perspective)      (3 Credits)
- World History      (3 Credits)

**G. Arts**

- Philosophy      (3 Credits)
- Psychology      (3 Credits)

**Two– Year Engineering**

**Curricula**

**First – Year Program**

**Pre-Engineering Courses**

**Biology 90      Introduction to Biology      ( 0 cr.)**

The strategy of life: The basic properties of living systems with emphasis on human beings as functioning biological entities. Prereq.    Math 80

**English      University Skills 1      ( 0 cr.)**

This course is designed to prepare the students for successful performance in university courses. Assignment to this course is based on the level of competence indicated by the student’s high school English record.

**English      University Skills 2      ( 0 cr.)**

Evaluation of individual reading and study skills in English. Instruction and practice is based on individual basic reading comprehension, vocabulary, and study skills to university content areas.

**Chemistry 90 Introduction to Chemistry** ( 0 cr.)

The fundamental principles of chemistry and their applications to social issues. Problem solving in chemistry. Prereq. Math 80, Coreq. Math 90

**Math 80 Fundamentals of Algebra and Geometry** (0 cr.)

Linear equations and graphs, functions, the point-slope equation, linear inequalities, polynomial functions, rational expressions, radicals, quadratic equations, sequences, series, and the binomial theorem. Prereq. Math70

**Math 90 Intermediate Algebra and Trigonometry** (0 cr.)

Rational expressions, rational exponents and radicals, conic sections and systems of equations, binomial theorem, introduction to trigonometry. Prereq. Math 80.

**Math 100 Pre-calculus** ( 3 cr.)

Intervals, inequalities, introduction to functions, polynomial and rational functions, exponential and logarithmic functions, trigonometric functions and formulas. Prereq. Math 90

**Physics 100 Introductory Physics** (0 cr.)

This course is with two themes:

- How nature works the interplay of space, time, matter, and energy;
- Structures are born, live out their life cycles, and die. These include us, the stars, and perhaps the universe. This theme may be called scientific story of genesis. Prereq. Math 80, Coreq. Math 90

**First- Year (Freshman year)**

**First-Term**

Math 101-01 Analytic Geometry and Calculus I (3 cr.)

Chem 103-01 General Chemistry for Engineers (3 cr.)

Engl 101-01	Freshman Composition I	(3 cr.)
Phys 107-01	General Physics 1	(4 cr.)
Engr 101-01	Engineering Graphics (Design)	(1 cr.)
Engr 102-01	Engineering Orientation	(3 cr.)
		-----
		17 cr.

### **Second –Term**

Math 102-01	Analytic Geometry and Calculus II	(3 cr.)
Chem 104-01	General chemistry for Engineers II	(3 cr.)
Engl 101-01	Freshman CompositionII	(3 cr.)
Engr 101-01	Introduction to Computers for Engineers	(3 cr.)
Econ 101-10	Engineering Economics	(3 cr.)
Engl 102-01	Freshman Composition II	(3 cr.)
His 101-01	African History	(3 cr.)
		-----
		21 cr.

### **Second-Year Program (Sophomore Year)**

#### **First-Term**

Math 203-02	Analytic Geometry and Calculus III	(3 cr.)
Engr 204-02	Engineering Circuit Analysis 1	(3 cr.)

EE 205-02	Circuit analysis Lab. 1	(1 cr.)
EE 206-02	Digital Logic Design	(3 cr.)
EE 207-02	Digital Logic Design Lab	(1 cr.)
Engr 210-02	Thermodynamics	(3 cr.)
Csc 102-02	Introduction to Computing - C++	(3 cr.)

-----

17r.

### **Second-Term**

Math 291-02	Methods in Differential Equations	(3 cr.)
Math 292-02	linear Algebra	(3 cr.)
Phys 108-02	general Physics II	(3 cr.)
EE241-02	Electronics I	(3 cr.)
EE241-02-1	Electronics Lab	(1 cr.)
EE 210-02	Engineering Circuit analysis II	(4 cr.)
EE 211-02	Circuit analysis Lab. 2	(1 cr.)

-----

18 cr.