Specialization (https://ts.sunykorea.ac.kr/ts/html/sub01/010104.html)

Each TSM student is required to have a specialization. A specialization is a cluster of **seven** related courses, totaling at least **21 credits**, with at least three courses, totaling at least nine credits, at the 300 or 400 levels.

Currently, students have the option of **three (3) specializations**:

- **Applied Mathematics and Statistics (AMS) Specialization**

    o **AMS 210** Applied Linear Algebra

    o **AMS 261** Applied Calculus III

    o **AMS 301** Finite Mathematical Structures

    o **AMS 310** Survey of Probability and Statistics

    o **AMS 315** Data Analysis

    o AMS 200, 300 or 400 level

    o AMS 200, 300 or 400 level

All courses taken to satisfy requirements must be taken for a letter grade. A grade of C or higher is required in all.

- **Computer Science (CS) Specialization**

Students specializing in Computer Science must take the following four courses:

    o **CSE 101 Computer Science Principles**

    o **CSE 114 Introduction to Object-Oriented Programming**

    o **CSE 214 Data Structures**

    o **ISE 218 Fundamentals of Information Technology**

Students must also select three courses from the following list:

    o **ISE 305 Database Design and Practice**

    o **CSE 310 Computer Networks OR ISE316 Introduction to Networking**

- CSE 337 Scripting Language

- CSE 373 Analysis of Algorithms

- Up to two courses from CSE 390-CSE 391-CSE 392 Special Topics

All courses taken to satisfy requirements must be taken for a letter grade. A grade of C or higher is required in all.

- **Information and Communications Technologies for Development (ICT4D) Specialization**

Digital Information and Communication Technologies (ICTs) are helping to revolutionize human lives. As part of this process, they have changed development patterns in countries and regions around the world. This specialization is intended to expose students to necessary concepts and skills to participate in ICT4D. Students will learn to apply technical aspects of ICTs as well as international development, culture, and sustainability.

Required courses (9 credits)

- EST 230 Information and Communications Technology for Sustainable Development

- CSE 114 Introduction to Objective-Oriented Programming

- EST 205 Introduction to Technological Design: Innovation and Design Thinking

Four more courses (12 credits), with at least one from each of the below three categories: At least three must be 300 or above level courses

Important TS courses relating to ICT

- EST 320 Communication Technology Systems

- EST 371 Data Science Management

- EST 372 The Mobile Revolution in Development

Hardware-Networks

- ESG 281 Engineering Introduction to the Solid State

- ESE 123 Introduction to Electrical and Computer Engineering

- ESE 231 Introduction to Semi-conductor Devices

- ESE 271 **Electrical Circuit Analysis**

- ESE 305 **Deterministic Signals and Systems**

- ESE 372 **Electronics**

- EST 323-**CSE 323-ISE 323* Human-Computer Interaction**

- CSE 334 **Introduction to Multi-Media Systems**

- CSE 373 **Analysis of Algorithms**

- ISE 218 **Fundamentals of Information Technology**

- ISE 316 **Introduction to Networking**

- MEC 220 **Practical Electronics for Mechanical Engineers**

Design

- CSE 390 **Special Topics in Computer Science Benevolent Computing**

- EHM 391 **Nature & Nurture for Sustainable Health: Humans, Livestock & Vectors in the Turkana Basin**

- EHM 392 **Water Security and Sustainable Development in the Turkana Basin**

- EST 207 **Interaction Design**

- EST 209 **Introduction to Italian Design: Theory and Practice**

- EST 240 **Visual Rhetoric and Information Technology**

- EST 310 **Design of Computer Games**

- MEC 101 **Freshman Design Innovation**

- SUS 308 **Economic Development**

Students are encouraged to take additional coursework in the three categories in place of one to three departmental electives.