**Course Title: Digital Switching and Tele-Traffic Engineering**
**Course Code: ETEG 417**
**Credit Hours: 3**

**Course Description:**
This course intends to provide a grasp of the hardware and services of modern digital switching technology and tele-traffic engineering.

**Course Contents:**

**MODULE I: Switching Systems**

**Unit 1: Introduction to Switching System**
Evolution, Basics of switching systems, Digital and time division switching SPC

**Unti 2: Switching System Architecture**
Subscriber and line interface, Switching network, control unit timing and synchronization, Operation and maintenance

**Unti 3: Internal Structure of the Digital Switch**
Time switches and space switches, Matrix and channel graph representations, Path searching, non-blocking networks

**Unti 4: Signaling Equipment and Systems**
Signaling functions, Analog and digital subscriber signaling, Signaling within an exchange, Voice frequency and outband register, Line signaling, Common channel signaling; New trends in switching systems- a case study

**MODULE II: Tele-traffic Engineering**

**Unit 5: Introduction to Tele-traffic Engineering**
Basic Terminologies; Traffic and Traffic Unit; Blocking, Lost calls and Grade of Service; Traffic variations and subscriber behavioral model

**Unit 6: Loss Systems**
Introduction to various distributions, Exponential distribution, Binomial distribution, Weibull distribution, Erlang-k distribution, Poisson's distribution; State transition diagrams; Truncated Poisson's Distribution; Erlang's B formula

U**nti 7: Delay Systems**
Introduction to queuing theory; Erlang delay system and Erlang's C formula; Moe's principle for delay system; Waiting time distribution; Single server queuing

**References:**

1. B.E. Briley, *An Introduction to Telephone Switching*, Addison-Wesley 1983.
2. J.C. MccDonald, *Fundamentals of Digital Switching*, Plenum Publishing 1983.
3. ThiagarajanViswanathan, Telecommunication Switching Systems and Networks, Prentice Hall, 1998.
4. J.E. Flood, Telecommunications Switching, Traffic and Networks, Pearson Education Ltd., 1999.