MURRAY STATE UNIVERSITY
DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

COURSE NUMBER: TSM 421 CREDIT HOURS: 3

I. TITLE: **Mobile Satellite Communications**

II. CATALOG DESCRIPTION:
This course examines elements of architecture mobile satellite service network. The course considers air interface, systems for processing and completing telephone and data calls, and the regulatory issues that hamper the creation of a viable business. Prerequisite/co-requisite : TSM322

III. PURPOSE:
An in depth study of the major aspects of a state-of-the-art mobile satellite service network. The course will identify how a new system can conceive and direct itself toward a success strategy; consideration of how any of the existing systems might expand their application base is also given.

IV. COURSE OBJECTIVES:
To build a foundation in fundamental techniques for the major aspects of a state-of-the-art mobile satellite service network. At the end of this course, the students will be able to understand technical aspects of multimedia and personal mobile satellite communications.

CONTENT OUTLINE:

1. Mobile Satellite Orbits and Radio Links
   uses of satellites; history; orbital mechanics; launch vehicles; antennas; radio propagation; transponders; power; propulsion/stability; reliability; ground terminals; military systems; commercial systems; scientific systems
2. Air Interface Principles
   The mobile satellite terminal air interface**,** How the satellite orbit affects handset design, Fundamental air interface options in a digital world, Time division multiple access (TDMA),Code division multiple access (CDMA)
3. The Network Demanded by an MSS System

   Alternatives for the overall satellite network plan, Requirements for ground entities to support the network alternatives, signaling activity to set up a call in each case, managing data connections
4. MSS Service Area Coverage, setting Up a connection, market access and service provision, regulatory and risk management
5. Disaster Recovery and Emergency Situation
6. Space Communication and Debris: Challenges and technology advancements
7. Nano Satellites and Pico Satellites

VI. INSTRUCTIONAL ACTIVITIES:
Lecture, Discussion and Demonstration

VII. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:
None

VIII. RESOURCES:
Web-page references, Class Notes

IX. GRADING PROCEDURES:
Grading Scale: 90-100% A, 80-89% B, 70-79% C, 60-69% D, Below 60% E
Two tests, at least 4 HWs, one project and quizzes.

X. ATTENDANCE POLICY:
This course will adhere to the policy published in the current MSU Undergraduate Bulletin.

XI. ACADEMIC HONESTY POLICY:
This course will adhere to the policy published in the current MSU Undergraduate Bulletin.

XII. TEXT AND REFERENCES:

TEXT : Mobile Satellite Communication Networks by Ray E. Sheriff & Y. Fun Hu . ISBN 0-471-72047-X

- Class Notes
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XIII. PREREQUISITES/Co-requisite:

TSM 323 or TSM322

STATEMENT OF AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY:

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.