

## **750771, Multimedia Systems Technology**

3 hours per week, 3 credit hours, prerequisite: **none**

**Teaching Method:** 37 hours Lectures (2-3 hours per week), 8 hours Seminars (1 per 2 weeks)

**Aims:** The module aims to introduce topics in digital audio and video, different interchange formats, multimedia hardware, multimedia software, multimedia communications, videoconference, and multimedia systems.

### **Learning Outcomes:**

On completion of this module, the student should be able to:

- Understand different multimedia hardware and software.
- Understand some real-time transfer and control protocol.
- Design audio and video applications.
- Work with animation.

### **Textbooks and Supporting Materials:**

1- Chan-Hwa Wu and J. David Irvin, Emerging Multimedia Computer Communication Technologies, Prentice Hall, 1998.

### **Synopsis:**

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1. Introduction: What is multimedia; Multimedia systems; Quality of service; Synchronization and orchestration; Standards; Convergence; Value chain;
2. Hardware: Multimedia computers; Video and graphics; Audio; Telephone, videoconference, and networks; CD and DVD; USB and FireWire; Processors; Video for Windows, DirectX, and ActiveMovie.
3. Software: Introduction; Browser based software architecture; Distributed software; Servers; Network Terminals.
4. Audio and Video I: Introduction; Digital audio; Psychoacoustics; Digital presentation of sound  
Digital images; JPEG.

5. Audio and Video II: Video signal; Camera sensors; Colors; Color television; Equipment; Compression systems; Basics of video compression; Methods; Algorithms.
6. Interchange Formats: Introduction; Application areas; Requirements; Track and object model Real-time transfer; Different transfer formats; Comparison.
7. Authoring Tools: Introduction; Production process; Tools; Barriers; Development areas
8. Communications: QoS; ATM; QoS implementations; Integrated Services; Differentiated Services.
9. Multicast: Introduction; Group control; Routing; Real-time transfer and control protocols; Resource reservation; Session control; Mbone .
10. Video Conference: Introduction; Standards; Products; Internet telephony; CTI (Computer Telephony Integration).
11. Access Networks: Introduction; Cable television; Digital subscriber lines; UMTS; Digital television; Conclusions.

**Assessment:** Two 1-hour midterm exams (15% each); Assignments (10%); Seminars (10%); 2-hours

Final Exam (50%)