Application for New Course

1. Submitted by the College of Engineering
   Department/Division offering the course: Computer Science
   Date: August 1, 2000

2. Proposed designation and Bulletin description of this course:
   (a) Prefix & Number: CS 634
   (b) Full Title: Multimedia Systems
       Abbreviated Title (≤ 24 characters): Multimedia Systems
   (c) Lecture/Discussion hours per week: 3
   (d) Laboratory hours per week: 0
   (e) Studio hours per week: 0
   (f) Credits: 3
   (g) Course description:
       This course covers fundamental techniques in multimedia systems for capturing,
       managing, accessing and delivering digital media over local, wide-area and wireless
       network technology. The core topics will emphasize the digital media (images, video,
       audio) and the algorithms to generate, store, access and process it. Network concepts will
       be presented at a high level only.

   (h) Prerequisites (if any): Prerequisites: CS335 or consent of instructor.
   (i) May be repeated to a maximum of: N/A

4. To be cross listed as: N/A
   Signature of cross-listing chair: ______________________________

5. Effective date: Fall 2001

6. Course to be offered: Fall Spring Summer
   X

7. Will the course be offered annually; explain if not: Yes

8. Why is the course needed? This course covers new material in an emerging scientific
   area. No coverage of this topic is currently offered in the Computer Science curriculum.

9. (a) By whom will the course be taught? Brent Seales or Chris Jaynes
     (b) Are facilities for teaching this course now available? Yes
        If not, what plans have been made for providing them?

10. What enrollment may reasonably be expected? 20

11. Will this course serve students in the Department primarily? Yes
    Will it be of service to a significant number of students outside the Department? No
        If yes, under what area?

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12. Check the category most applicable to this course:
   ___ traditional; offered in corresponding departments elsewhere;
   ☒ relatively new, now being widely established;
   ___ not yet found in many (or any) other universities

13. Is this course part of a new proposed program?  No
    If yes, which?

14. Will adding this course change the degree requirements in any programs? ¹ No
    If yes, explain:

15. Attach a list of the major teaching objectives of the proposed course and outline and/or a reference list to be used:  See attached

16. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.
    Not applicable

17. Within the Department, who should be contacted for further information about the proposed course?
    Name:  Brent Seales or Chris Jaynes  Phone:  257-6750/257-6240

¹Approval of this course will constitute approval of the program change unless other program modifications are proposed.
Signatures of Approval:

Department Chair: __________________________       Date: 11/14/2023
Dean of the College: __________________________    Date: 2/8/01
Date of Notice to the Faculty: 12/1/01

Undergraduate Council\(^2\): __________________________   Date: ______
University Studies\(^2\): __________________________     Date: ______
Graduate Council\(^2\): __________________________      Date: 8/24/01
Senate Council\(^2\): __________________________       Date: ______
Date of Notice to the University Senate: ______

Action other than approval: __________________________

\(^2\)If applicable, as provided by the Rules of the University Senate
Needed Skills
Students should be skilled in structured functional/object-oriented programming, graphical user interface design, image processing and basic concepts in multimedia/graphics/imaging systems. Students should have mathematical maturity expected of first-year graduate students.

Learning Outcomes
Students will learn the core concepts involved in systems that capture, manage, access and deliver multimedia data over computer networks. These core concepts include audio and video digitization and acquisition, coding techniques, archival and delivery systems, multimedia user interfaces, and a functional treatment of state-of-the-art network technologies. Students will develop a skill-set in this course that will enable them, using toolkits and custom-designed programs, to understand how to acquire, store and deliver a variety of digital media via computer network.

Topics
- Introduction
  - History (origins)
  - Component technologies and concepts
- Multimedia: Perception, Representation, Presentation and Transmission
- Media forms
  - Sound/Audio
  - Images and graphics
  - Video and animation
  - Compression
- Optical storage media
- Multimedia operating systems
- Network systems and multimedia requirements
  - LAN's, WAN's, ATM
  - Quality of Service
- User Interfaces
- Synchronization
- Applications

Examinations
Exact details about examinations in this course will be determined by the instructor offering the course. Typically there will be one in-class, midterm examinations during the semester and a two-hour final examination. Specific details will be made available in the syllabus at the start of each semester in which the course is offered.
**Grading**
A student's grade will be determined by a weighted average of homework assignments, programming exercises, projects, hour examinations, and the final examination. The faculty offering the course will make the details available at the start of the course.
A typical weighting is:

- Homework and programs - 50%
- Mid-term examinations - 20%
- Final examinations - 30%

**Possible Textbooks**
- Multimedia: Computing, Communications, and Applications
  - Steinmetz and Nahrstedt, Prentice Hall
- Video and Image Processing in Multimedia Systems
  - Furht, Smoliar, and Zhang, Kluwer.
- Multimedia Interface Design
  - Blattner and Dannenberg, ACM Press
- Designing the User Interface
  - Shneiderman, Addison Wesley

Papers: Selection of readings from the yearly ACM multimedia conference.