1. Effective Semester: Fall 2016

2. College: Science and Engineering
3. Department/School/Program: Computer Science

<table>
<thead>
<tr>
<th>4. Prefix/Subject</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>S</td>
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<tr>
<td>4</td>
<td>3</td>
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<tr>
<td>7</td>
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</table>

5. Course Title:

Proposed Long: Introduction to Digital Multimedia

Abbreviated (18 characters only including spaces):

INTRODUCTION TO DIGITAL MEDIA

6. Course Description (complete sentences in 50 words or less): The course covers concepts, problems and techniques in digital multimedia. Topics include digital representation and data compression of text, speech, audio, natural and synthetic images, and video, as well as multimedia applications, transmission, and standards. In addition, the course introduces perceptual aspects of multimedia signals and sources. Prerequisite: Grade of C or higher in CS 3358.

7. Prerequisites (Including Minimum Grade Required): Grade of C or higher in CS 3358.

8. Co-Requisites (Including Concurrent Enrollment Allowed):

9. Restrictions:
10. Course Data

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Lecture Contact Hours</th>
<th>Lab Contact Hours</th>
<th>Credit Hours</th>
<th>Repeatable for Credit?</th>
<th>Maximum Credit Hours Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Lecture</td>
<td>x</td>
<td>3</td>
<td>0</td>
<td>Yes</td>
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<tr>
<td>2-Lab</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
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<tr>
<td>3-Practicum/Internship</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
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<tr>
<td>4-Seminar</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
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<tr>
<td>5-Independent</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
<td>3</td>
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<tr>
<td>6-Private Lesson</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
<td>3</td>
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<tr>
<td>8-Thesis</td>
<td>x</td>
<td>0</td>
<td>0</td>
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<td>3</td>
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<td>9-Dissertation</td>
<td>x</td>
<td>0</td>
<td>0</td>
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<tr>
<td>0-Individualized</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
<td>3</td>
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<tr>
<td>C-Clinical</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>Yes</td>
<td>3</td>
</tr>
</tbody>
</table>

11. Justification for the course action:

Degree: Computer Science  Major: Computer Science

Minor:  Certificate:

This new course replaces CS 4378P, a topics course. Because the topics course has been taught more than 3 times, a regular course number needs to be assigned. The content for this course is similar to the content of the topics course it is replacing but is updated to address modern technology.
12. Course Goals and Objectives:
- Must be specific and unique to each course.
- Must be stated in measurable terms.
- Must have distinct differences between a graduate level course and an undergraduate course (in case of stacked courses).
- Please refer to Bloom's Taxonomy of Measurable Verbs.

- Study the physical and perceptual properties of digital media components
- Acquire basic knowledge on processing these components
- Obtain knowledge related to information theory
- Understand methods for representation and compression of media
- Explore methods for efficient storage, retrieval, and transmission of media

13. Description of Instructional Methodologies:
- Examples include lecture, discussions, group projects, role playing, simulations, modeling, field-based activities, writing, cooperative learning, inquiry, experimentation, product design, creative activities, case studies, seminars, internship activities, coaching, etc.

The instruction methodologies used in this course include: lectures, discussions, assignments, individual and group projects, and case studies.

14. Assessment of Student Learning:
- Examples include tests, projects, presentations, performances, creative works, papers, etc.
- Above examples of assessment must include percentages of total grade assigned.
- Must have distinct differences between a graduate level course and an undergraduate course (in case of stacked courses).

Assessment of Student Learning will be performed using objective tests, instructor evaluation of projects, presentations, and assignments.
15. Course Outline:
- Provide a weekly outline as appropriate for an example semester in which the course will be taught
- Must distinguish the course clearly from similar offerings in the same or other programs.
- Must indicate specific topics.

<table>
<thead>
<tr>
<th>Week 1: Introduction</th>
<th>Week 9: Multi Media Signals and Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2: Multi Media Components and Sources</td>
<td>Week 10: Quantization / Predictive Coding</td>
</tr>
<tr>
<td>Week 3: Information theory</td>
<td>Week 11: Storage, Retrieval and Presentation of Media: Optical Storage: CD, DVD</td>
</tr>
<tr>
<td>Week 4: Lossless Compression</td>
<td>Week 12: Audio Compression: ADPCM, LPC, MP3</td>
</tr>
<tr>
<td>Week 5: Speech: Representation, Synthesis and Recognition</td>
<td>Week 13: Image Compression: JPEG</td>
</tr>
<tr>
<td>Week 6: The Psychoacoustic Model</td>
<td>Week 14: Video Compression: Motion Estimation, H26-1/3/4, MPEG, HDTV</td>
</tr>
<tr>
<td>Week 8: Digital Video: Video Display Devices, Video Color Models, Video Formats.</td>
<td>Week 16 (Finals Week): Review and Final Exam</td>
</tr>
</tbody>
</table>

16. Suggested Textbook(s) and Other Learning Resources:
- Must list the required and recommended (if any) resources (e.g., relevant textbooks, course packets, websites), with complete bibliographical data (author, title, date and other publication data) in a standard academic format (e.g., CBE, APA, MLA, Chicago, etc.)

Required:

Recommended:

17. Bibliography:
- Must include literature other than required textbooks and other learning resources.
- Must demonstrate familiarity with current research. Ordinarily, the bibliography should include scholarship published during the last five years.
- Must conform to a standard academic format (e.g., CBE, APA, MLA, Chicago, etc.) Each bibliography will use only one format.


18. Approvals:

Department Chair/Program Director/School Director

Chair of College Curriculum Committee

Dean of College

Dean of The Graduate College (if applicable)

Chair of University Curriculum Committee (if applicable)

1/28/2015
3/3/2015
3/4/15