**100070015 Multimedia Technology**

**Lecture Hours: 32**

**Laboratory Hours: 0**

**Credits: 2**

**Prerequisite(s): Computer Science Introduction, Operating Systems, Computer Networks**

**Course Description:**

This course is an elective course for upper-level undergraduates major in Computer Science and Technology. It aims to equip the students with fundamental multimedia technology which is required in multimedia research and application development. The course covers the theoretical and practical aspects of multimedia technologies, including multimedia data compression, multimedia computer systems and software development environment, multimedia content management, multimedia communications, new technologies and applications in multimedia, etc.

**Course Outcomes**:

After completing this course, a student should be able to:

1. Build the framework of multimedia technologies including the fundamental concepts and principles.
2. Know about the hardware, software, systems of multimedia, including the related technical standards.
3. Analyze the development of multimedia technologies, and get insight into the future development.
4. Design and develop multimedia applications using multimedia tools and development platforms.

**Course Content:**

**Lectures and Lecture Hours:**

1. Introduction 2

- Concepts of multimedia

- Development of multimedia technology

- Contents of multimedia research

- Applications and prospects about multimedia technology

1. Multimedia data compression 4

- Overview of data compression

- General data compression techniques

- Digital image coding

- Media data conversion

1. Standards for multimedia data coding 4

- JPEG

- MPEG

- H.26X

- Audio coding and its standards

1. Multimedia computer systems 4

- Multimedia storage technology

- CD-ROM and the related standards

- Equipments related to multimedia

- Multimedia personal computer system

1. Multimedia software development environment 2

- Multimedia application development

- Multimedia data acquisition

- Multimedia authoring tools

- Multimedia programming

1. Multimedia content management 6

- Multimedia data management environment

- Multimedia database management system

- Content-based retrieval

- Multimedia content security and copyright protection

1. Hypertext and Web system 2

- Concepts of hypertext

- Hypertext system architectures

- Hypertext literature models

- Hypertext markup language

1. Multimedia Communications 2

- Multimedia and communication

- Typical multimedia communication systems

- Multimedia communication networks

- Quality of service in multimedia communications

1. Multimedia technologies based on Internet 2

- Multimedia applications based on Internet

- Multicasting

- Stream media

- QoS guarantee over Internet

1. New multimedia technologies and applications 4

- MPEG-21 and e-business

- Intelligent human-computer interaction

- Virtual reality and augmented reality

**Laboratories and Laboratory Hours:**

1.

2. None

3.

**Grading:**

Inclass Quizzes 10%

Project 30%

Final 60%

Instructor Evaluation 5%

**Text & Reference Book**:

**Textbook:**

H. Ma. Principles and applications of multimedia technology, Second edition, 2008, ISBN 9787302176756. (in Chinese)

**Reference books:**

P. Havaldar, G. Medioni, Multimedia systems : algorithms, standards, and industry practices, China student edition, 2015, ISBN 9787111499299.