**Application Form For Opening Graduate Courses**

School (Department/Institute)：

Course Type: New Open  Reopen □ Rename □**（**Please tick in □, the same below）

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Course Name | | Chinese | 网络信息论 | | | | | | | | | | |
| English | Network Information Theory | | | | | | | | | | |
| Course Number | | |  | | | Type of Degree | | | Ph. D | ✓ | Master | |  |
| Total Credit Hours | | | 36 | In Class Credit Hours | 36 | | Credit | 2 | Practice |  | Computer-using Hours | |  |
| Course Type | | | □Public Fundamental □Major Fundamental □Major Compulsory Major Elective | | | | | | | | | | |
| School (Department) | | | School of Information Science and Engineering | | | Term | | Autumn | | | | | |
| Examination | | | A. □Paper（□ Open-book □ Closed-book） B. □Oral  C. □Paper-oral Combination D.  Others research paper review (written and oral presentation) | | | | | | | | | | |
| Chief  Lecturer | Name | | Wei Kang | | | Professional Title | | Associate Professor | | | | | |
| E-mail | | [wkang@seu.edu.cn](mailto:wkang@seu.edu.cn) | | | Website | | http://infosec.seu.edu.cn/space/kangwei/welcome.html | | | | | |
| Teaching Language used in Course | | | Chinese-English | | | Teaching Material Website | |  | | | | | |
| Applicable Range of Discipline | | | first-class discipline | | | | | Name of First-Class Discipline | | Information and Communication Engineering | | | |
| Number of Experiment | | |  | | | Preliminary Courses | |  | | | | | |
| Teaching Books | | | Textbook Title | | | Author | | Publisher | | Year of Publication | | Edition Number | |
| Main Textbook | | | Lecture Notes on Network Information Theory | | | Abbas El Gamal and Young-Han Kim | | Unpublished | |  | |  | |
| Main Reference Books | | | Elements of Information Theory | | | Thomas Cover and Joy Thomas | | Wiley & Sons | | 1991 | |  | |
| Information Theory: Coding Theorems for Discrete Memoryless Systems | | | Imre Csiszar and Janos Korner | | Academia | | 1981 | |  | |

1. **Course Introduction (including teaching goals and requirements) within 300 words:**

This course focuses on the concept, tools and main results in network information theory and it includes both lectures and presentations. It covers the major breakthroughs in the area of network information theory from 1970s till now. Through this course, we hope to broaden the sights of the master and phd students in related areas and helps the students who are interested in this area to reach the cutting edge of the current research.

1. **Teaching Syllabus (including the content of chapters and sections. A sheet can be attached):**
2. Single-user information theory review: basic concepts and theorems
3. Multiple access channels
4. Degraded broadcast channels
5. Interference channels
6. Channels with state
7. Distributed lossless source coding
8. General broadcast channel
9. Source coding with side information
10. Distributed lossy source coding
11. Multiple descriptions
12. Joint source-channel coding
13. Relay channels
14. Interactive communications
15. Information theoretical secrecy
16. Gaussian network channel coding, multiple antennae
17. Distributed Gaussian source coding

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| --- | --- | --- |
| Week | Course Content | Teaching Method |
| 1 | Single-user information theory review: basic concepts and theorems | Lecture |
| 2 | Multiple access channels | Lecture |
| 3 | Degraded broadcast channels | Lecture |
| 4 | Interference channels | Lecture |
| 5 | Channels with state | Lecture |
| 6 | Distributed lossless source coding | Lecture |
| 7 | General broadcast channel | Lecture |
| 8 | Source coding with side information | Lecture |
| 9 | Distributed lossy source coding | Lecture |
| 10 | Multiple descriptions | Lecture |
| 11 | Joint source-channel coding | Lecture |
| 12 | Relay channels | Lecture |
| 13 | Interactive communications | Lecture |
| 14 | Information theoretical secrecy | Lecture |
| 15 | Gaussian network channel coding, multiple antennae | Lecture |
| 16 | Distributed Gaussian source coding | Lecture |
| 17 |  |  |
| 18 |  |  |

1. **Teaching Schedule:**

Note: 1.Above one, two, and three items are used as teaching Syllabus in Chinese and announced on the Chinese website of Graduate School. The four and five items are preserved in Graduate School.

2. Course terms: Spring, Autumn , and Spring-Autumn term.

3. The teaching languages for courses: Chinese, English or Chinese-English.

4. Applicable range of discipline: public, first-class discipline, second-class discipline, and third-class discipline.

5. Practice includes: experiment, investigation, research report, etc.

6. Teaching methods: lecture, seminar, practice, etc.

7. Examination for degree courses must be in paper.

8. Teaching material websites are those which have already been announced.

9. Brief introduction of chief lecturer should include: personal information (date of birth, gender, degree achieved, professional title), research direction, teaching and research achievements. (within 100-500 words)

1. **Brief Introduction of Chief lecturer:**

Wei Kang: Associate Professor. Male. Born at Aug. 1979. He obtained Bachelor in Engineering in Department of Electronic Engineering in Beijing University of Posts and Telecommunications in 2001, Master in Engineering in Department of Electrical and Computer Engineering in McGill University in Canada in 2003 and Ph.D. in Department of Electrical and Computer Engineering in University of Maryland in US in 2008. Since 2009, he is with School of Information Science and Engineering in Southeast University. His research focuses on network information theory

1. **Lecturer Information (include chief lecturer)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lecturer | Discipline  (major) | Email | Address | Postcode |
| Wei Kang | Information Security | [wkang@seu.edu.cn](mailto:wkang@seu.edu.cn) | School of Information Science and Engineering, Southeast University | 210096 |
| Nan Liu | Communications | [nanliu@seu.edu.cn](mailto:nanliu@seu.edu.cn) | School of Information Science and Engineering, Southeast University | 210096 |