University :Menoufiya University

College : Faculty of Electronic Engineering

Department :Electronics and electrical communication engineering

Course Specification

1- Course basic information :		
Course Code:EC 422	**Course Title:**Information theory and coding	**Academic year:2012/2013** **Level (٤) – Semester : ١**
Department requirement **Faculty requirement** **University requirement**	**Teaching hours: Lecture** ٣ **Tutorial** ٢ **Lab** ٠	

2- Aim of the course	• Understanding the basic principles of information theory. • Understanding the basic principles of security theory. • Understanding the basics of source coding. • Having acquired a good knowledge of line and channel coding.
3- Intended Learning Outcomes:	
A- Knowledge and Understanding:	a1) Concepts and theories of mathematics and sciences, appropriate to the Information theory and coding. a2) Basics of information and communication technology (ICT) a4) Principles of design including elements design, process and/or a system related to specific the Information theory and coding a8) Current engineering technologies as related to the Information theory and coding. a18) Coding and decoding techniques
B- Intellectual Skills	b1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems. b4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources. b5) Assess and evaluate the characteristics and performance of components, systems and processes. b11) Analyze results of numerical models and assess their limitations. b14) Plan, conduct and write a report on a project or assignment. b15) Analyze the performance of coding, and decoding systems.
C- Professional Skills	c1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. c7) Apply numerical modeling methods to engineering problems.

	c12) Use appropriate mathematical methods or IT tools. c17) Use appropriate tools to measure system performance.
D- General Skills	d1) Collaborate effectively within multidisciplinary team. d3) Communicate effectively. d5) Lead and motivate individuals. d7) Search for information and engage in life-long self learning discipline. d9) Refer to relevant literatures.
4- Course Contents	Introduction-Source coding-Channel coding-Line coding-Data Scrambler.
5- Teaching and Learning Methods	- **Lectures** - **Tutorials** - **case studies** - **Research assignments**
6- Teaching and Learning Methods for disable students	**NA**
7- Student Assessment	
a- Assessment Methods	**- Weekly sheet exercises at class room** **- Quizzes** **- case study for more demonstration.** **- Mid term, and final exams**
b- Assessment Schedule	**- Exercise sheet: Weekly** **- Quizz-1: Week no** **- Mid-Term exam: Week no 8** **- Quizz-2: Week no** **- Final – term examination: Week no**
c- Weighting of Assessment	**- Class tutorial and quizzes : …… %** **- Mid-term examination: 5 %** **- Case study: 15 %** **- Final – term examination: 70 %** **- Other types of assessment: 5 %** **Total 100 %**
8- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department
b- Text books	1. HosseinBidgoli, "HANDBOOK OF INFORMATION SECURITY Key Concepts, Infrastructure, Standards, and Protocols," Volume 1, by John Wiley & Sons, 2006 2. HosseinBidgoli, "HANDBOOK OF INFORMATION SECURITY Key Concepts,

	Infrastructure, Standards, and Protocols, "Volume 3, by John Wiley & Sons, 2006
c- Recommended books	1. Mark Stamp, "Information Security Principles and Practice", by John Wiley & Sons,2006 2. Timothy P. Layton, "Information Security: Design, Implementation, Measurement, and Compliance", By Auerbach PublicationsPublisher, 2006 3. Steve Purser, "A Practical Guide to Managing Information Security", Artech House Technology, 2004 4. Harold F. Tipton, Micki Krause "Information Security Management Handbook", Fifth Edition, AUERBACHPublisher, 2003
d- Periodicals, Web sites ……etc	• Web sites for information security systems, and network security. • IEEE Transactions.

Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge& Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Introduction	1-3	A1	B1	C1	D1
Source coding	4-6	A1,a2	B1,b4, b15	C1,c7	D1,d3
Channel coding	7-9	A1,a2,a4	B4,b5, b15	C7,c12	D3,d5
Line coding	10-11	A2,a4,a8	B5,b11, b15	C12,c17	D5,d7
Data Scrambler	12-14	A4,a8,a18	B5,b11,b14	C12,c17	D5,d7

Course coordinator: **Head of Department:**

Date: / /