SCHEME AND SYLLABI FOR

SEVENTH SEMESTER

OF

BACHELOR OF

TECHNOLOGY IN

COMPUTER SCIENCE AND

ENGINEERING

FROM 2009 ADMISSION ONWARDS

CALICUT UNIVERSITY (P.O), THENHIPALAM
<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Semester VI</th>
<th>Hours / Week</th>
<th>Marks</th>
<th>Semester-end duration-hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CS09 601</td>
<td>Embedded Systems</td>
<td></td>
<td>3 L 1 T</td>
<td>30</td>
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<tr>
<td>CS09 602</td>
<td>Compiler Design</td>
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<td>4 L 1 T</td>
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<tr>
<td>CS09 603</td>
<td>Computer Networks</td>
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<td>Database Management Systems</td>
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<td>Elective I</td>
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<td>3 L 1 T</td>
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<td>CS09 607(P)</td>
<td>Systems Lab</td>
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<td>30</td>
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<td>CS09 608(P)</td>
<td>Mini Project</td>
<td>3 L 1 T</td>
<td>30</td>
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<td><strong>70</strong></td>
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<tr>
<th>Code</th>
<th>Subject</th>
<th>Semester VII</th>
<th>Hours / Week</th>
<th>Marks</th>
<th>Semester-end duration-hours</th>
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<td>CS09 701</td>
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<td>CS09 702</td>
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<td>CS09 708(P)</td>
<td>Network Programming Lab</td>
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<td>50</td>
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<td>2</td>
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<td><strong>70</strong></td>
<td><strong>3</strong></td>
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Total Marks
Teaching scheme
2 hours lecture and 1 hour tutorial per week

Credits: 3

Objectives

• This introductory course is intended to introduce the basics of wireless and mobile networks in the context of the recent trends in this area and their proliferation in day to day life. Local Area Network (LAN), Wide area Network (WAN) and Inter networking are dealt with.

Pre-requisites: Knowledge of Data communication, Computer networks, and Operating systems

Module I (12 hours)
Introduction: PCS Architecture, Cellular Telephony - popular cellular telephony networks, Cordless telephony, Third generation Wireless systems
Mobility Management: Handoff, Roaming Management, Handoff Management - Detection and Assignment, Radio Link Transfer, Types of Handoff

Module II (12 hours)

Module III (8 hours)
GSM Overview, GSM Network signaling, GSM Mobility Management, GSM Short Message Service, Mobile Number portability

Module IV (7 hours)
General Packet Radio Service: Functional Groups, Architecture, GPRS Network nodes and Interfaces, Introductory ideas about WAP

Text Books

Reference Books
2. Schiller J., Mobile Communications, Addison Wesley
### Internal Continuous Assessment *(Maximum Marks-30)*

- **60%** - Tests (minimum 2)
- **30%** - Assignments (minimum 2) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.
- **10%** - Regularity in the class

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### University Examination Pattern

**PART A:** *Short answer questions (one/two sentences)*  
5 x 2 marks = 10 marks  
All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

**PART B:** *Analytical/Problem solving questions*  
4 x 5 marks = 20 marks  
Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

**PART C:** *Descriptive/Analytical/Problem solving questions*  
4 x 10 marks = 40 marks  
Two questions from each module with choice to answer one question.

*Maximum Total Marks: 70*
Teaching scheme
4 hours lecture and 1 hour tutorial per week

Credits: 5

Objectives

- To provide a sound basis of algorithm design and analysis techniques.
- To introduce the various computing models and their capabilities with respect to computing.

Module I (16 hours)

Module II (16 hours)

Module III (15 hours)
Complexity: Complexity classes - P, NP, Co-NP, NP Hard and NP Complete problems - Cook’s theorem(Proof not expected) - NP- Completeness reductions for clique - Vertex Cover - Subset Sum - Hamiltonian Cycle - TSP - integer programming - approximation algorithms - Vertex Cover - TSP-Set covering and subset sum - Bin packing - Graph coloring.

Module IV (18 hours)

Text Books

Reference Books
1. Basse S., Computer Algorithms: Introduction to Design And Analysis, Addison Wesley
**Internal Continuous Assessment (Maximum Marks-30)**

60% - Tests (minimum 2)
30% - Assignments (minimum 2) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.
10% - Regularity in the class

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**University Examination Pattern**

**PART A:** Short answer questions (one/two sentences) \hspace{1cm} 5 x 2 marks=10 marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

**PART B:** Analytical/Problem solving questions \hspace{1cm} 4 x 5 marks=20 marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

**PART C:** Descriptive/Analytical/Problem solving questions \hspace{1cm} 4 x 10 marks=40 marks

Two questions from each module with choice to answer one question.

*Maximum Total Marks: 70*
Objectives

- To introduce the algorithms and protocols implemented to have human interaction with internet with an emphasis on application layer and multimedia networking.
- To introduces the techniques and methods of E-Commerce.

Module I (10 hours)

Module II (10 hours)

Module III (9 hours)

Module IV (10 hours)

Text Books


Reference Books

2. Douglas E. Comer, *Computer Networks and Internets with Internet Applications*, Pearson Education
## Internal Continuous Assessment (Maximum Marks-30)

- **60%** - Tests (minimum 2)
- **30%** - Assignments (minimum 2) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.
- **10%** - Regularity in the class

## University Examination Pattern

**PART A:**  
*Short answer questions (one/two sentences)*  
5 x 2 marks = 10 marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

**PART B:**  
*Analytical/Problem solving questions*  
4 x 5 marks = 20 marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

**PART C:**  
*Descriptive/Analytical/Problem solving questions*  
4 x 10 marks = 40 marks

Two questions from each module with choice to answer one question.

*Maximum Total Marks: 70*
Teaching scheme
3 hours lecture and 1 hour tutorial per week

Credits: 4

Objectives
- To introduce the principles and practices of cryptography and network security
- To discuss algorithms and schemes to handle the security issues
- To introduce web security

Module I (14 hours)

Module II (13 hours)
Public key cryptosystems – The RSA Algorithm - Diffie Hellman key exchange - comparison of RSA & DES - Elliptic Curve Cryptography – Number Theory Concepts

Module III (13 hours)

Module IV (12 hours)

Text Books

Reference Books
2. Wenbo Mao, Modern cryptography - Theory and Practice, Pearson Education Asia
3. Niven & Zuckerman H.S., An Introduction to The Theory of Numbers, John Wiley
### Internal Continuous Assessment (Maximum Marks-30)

- **60% -** Tests (minimum 2)
- **30% -** Assignments (minimum 2) such as homework, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.
- **10% -** Regularity in the class

### University Examination Pattern

**PART A:** Short answer questions (one/two sentences)  
5 x 2 marks = 10 marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

**PART B:** Analytical/Problem solving questions  
4 x 5 marks = 20 marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

**PART C:** Descriptive/Analytical/Problem solving questions  
4 x 10 marks = 40 marks

Two questions from each module with choice to answer one question.

*Maximum Total Marks: 70*
Teaching scheme
3 hours practical per week

Credits: 2

Objectives

- To familiarize the design of all phases of compilers up to a stage of intermediate code generation.
- To enable the students to design and implement modern compilers for any environment.

Lab 1,2: Generation of lexical analyzer using tools such as LEX.
Lab 3,4: Generation of parser using tools such as YACC.
Lab 5,6: Creation of Symbol tables.
Lab 7,8: Creation of type checker.
Lab 9,10: Generation of intermediate code.

Reference Books

Internal Continuous Assessment *(Maximum Marks-50)*
60%-Laboratory practical and record
30%- Test/s
10%- Regularity in the class

Semester End Examination *(Maximum Marks-50)*
70% - Procedure, conducting experiment, results, tabulation, and inference
20% - Viva voce
10% - Fair record
CS09 708 (P) : Network Programming Lab

Teaching scheme
3 hours practical per week

Credits: 2

Objectives

- To teach the working of various networking protocols

Lab 1: Implementation of PC to PC file transfer using serial port and MODEM.

Lab 2,3: Software Simulation of IEEE 802.3, 802.4 and 802.5 protocols.

Lab 4,5: Software Simulation of Medium Access Control protocols –
1) GoBackN,
2) Selective Repeat and
3) Sliding Window.

Lab 6: Implementation of a subset of Simple Mail Transfer Protocol using UDP.

Lab 7,8: Implementation of a subset of File Transfer Protocol using TCP/IP

Lab 9: Implementation of "finger" utility using Remote Procedure Call (RPC)

Lab 10: Generation and processing of HTML forms using CGI.

Reference Books
1. S Richard S.W., Unix Network Programming, Prentice Hall India
2. Comer D.E., Internetworking with TCP/IP, Vol. 1,2 & 3, Prentice Hall India
3. Campione et. al M., The Java Tutorial Continued, Addison Wesley

Internal Continuous Assessment (Maximum Marks-50)
60% - Laboratory practical and record
30% - Test/s
10% - Regularity in the class
Objectives

- To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in computer science engineering or allied areas like:

OS platforms: Relevant to the current state of the art with support for networked environment, distributed computing and development of multi-platform applications, Internet technologies: Architectural concepts, XML, Scripting languages, Middleware (Component) technologies, Front end / GUI: Code development or development based on tools, RDBMS/Back End: Relevant to current state with database connectivity to different platforms, Languages: Qt, Glade or any similar 4GLs, Scripting languages and C & C-Linux (under GNU gcc) etc, Universal network applications development platforms such as JAVA, OS internals: Device drivers, RPC, Threads, Socket programming etc., Networking: Mechanisms, protocols, security etc., Embedded systems: RTOS, Embedded hardware with software for an application, Code optimization, security etc.

Project evaluation committee consisting of the guide and three/four faculty members specialised in biomedical/electronics/ computer science/instrumentation engg. (Please write areas of specialisations relevant to the concerned branch concerned) will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey is to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

<table>
<thead>
<tr>
<th>Internal Continuous Assessment</th>
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<tbody>
<tr>
<td>20% - Technical relevance of the project</td>
<td>:</td>
</tr>
<tr>
<td>40% - Literature survey and data collection</td>
<td>:</td>
</tr>
<tr>
<td>20% - Progress of the project and presentation</td>
<td>:</td>
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<tr>
<td>10% - Report</td>
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<tr>
<td>10% - Regularity in the class</td>
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