BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI - 620 024.

Bachelor of Computer Applications - Course Structure under CBCS.

(For the Candidates admitted from the Academic year 2016-2017 onwards)

Updated on 12.07.2018

Semester	Part	Course	Title	Instru. Hours/ Week	Credit	Exam Hours	Marks		Total
							Int	Extn.	
I	I	Language Course – I (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - I (ELC)		6	3	3	25	75	100
	III	Core Course – I (CC)	Programming in C	6	5	3	25	75	100
		Core Practical - I (CP)	Programming in C (P)	3	2	3	40	60	100
		First Allied Course –I (AC)		4	4	3	25	75	100
		First Allied Course – II (AC)		3	-	-	-	-	-
	IV	Value Education	Value Education	2	2	3	25	75	100
	Total			**30**	**19**				**600**
II	I	Language Course – II (LC) - – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course – II (ELC)		6	3	3	25	75	100
	III	Core Course – II (CC)	Programming in C++	6	6	3	25	75	100
		Core Practical - II (CP)	Programming in C++ (P)	3	2	3	40	60	100
		First Allied Course – II (AC)		3	3	3	25	75	100
		First Allied Course – III (AC)		4	2	3	25	75	100
	IV	Environmental Studies	Environmental Studies	2	2	3	25	75	100
	Total			**30**	**21**				**700**
III	I	Language Course – III (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - III (ELC)		6	3	3	25	75	100
	III	Core Course – III (CC)	Programming in Java	6	5	3	25	75	100
		Core Practical - III (CP)	Programming in Java (P)	3	2	3	40	60	100
		Second Allied Course – I (AC)		4	4	3	25	75	100
		Second Allied Course – II (AC and AP) (Theory-60 marks (UE:45 IA:15) (Practical-40 marks (UE:30 IA:10)		3	-	-	-	-	-
	III	Non Major Elective I - for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Working Principles of Internet	2	2	3	25	75	100
	Total			**30**	**19**				**600**

IV	I	Language Course –IV (LC) - Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course–IV (ELC)		6	3	3	25	75	100
	III	Core Course – IV (CC)	Database Systems	5	5	3	25	75	100
		Core Practical - IV (CP)	Database Systems (P)	3	2	3	40	60	100
		Second Allied Course – II (AC and AP) (Theory -60 marks (UE:45 IA:15) (Practical-40 marks (UE:30 IA:10)		3	3	(2+2) 4***	40	60	100
		Second Allied Course–III (AC)		3	2	3	25	75	100
	IV	Non Major Elective II - for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Fundamentals of Information Technology	2	2	3	25	75	100
		Skill Based Elective - I	Skill Based Elective - I	2	2	3	25	75	100
	Total			**30**	**22**				**800**
V	III	Core Course V [CC]	Data Structures and Algorithms	5	5	3	25	75	100
		Core Course VI [CC]	Operating Systems	5	5	3	25	75	100
		Core Course VII [CC]	Digital Computer Fundamentals	5	5	3	25	75	100
		Core Practical V [CP]	Computer Graphics and Animation (P)	4	3	3	40	60	100
		Major Based Elective - I	Computer Graphics / Software Engineering / Software Testing	5	5	3	25	75	100
	IV	Skill Based Elective II	Skill Based Elective - II	2	2	3	25	75	100
		Skill Based Elective III	Skill Based Elective – III	2	2	3	25	75	100
		Soft Skills Development	Soft Skills Development	2	2	3	25	75	100
	Total			**30**	**29**				**800**
VI	III	Core Course VIII [CC]	Computer Networks	6	6	3	25	75	100
		Core Course IX [CC]	Programming in PHP	6	6	3	25	75	100
		Core Practical VI [CP]	Programming in PHP (P)	5	4	3	40	60	100
		Major Based Elective - II	Cloud Computing / Business Process Outsourcing /Mobile Computing	6	6	3	25	75	100
		Major Based Elective - III	Mini Project (Students to do it in their respective Colleges) / Linux Lab/ Dot Net Lab	6	6	3	40	60	100
	V	Extension Activities	Extension Activities	-	1	-	-	-	-
		Gender Studies	Gender Studies	1	1	3	25	75	100
	Total			**30**	**30**				**600**
Grand Total				**180**	**140**	**-**	**-**	**-**	**4100**

List of Allied Courses

Allied Course I
Mathematics

Allied Course II
Accounting and OB

Language Part – I	-	4
English Part –II	-	4
Core Paper	-	9
Core Practical	-	6
Allied Paper	-	4
Allied Practical	-	2
Non-Major Elective	-	2
Skill Based Elective	-	3
Major Based Elective	-	3
Environmental Studies	-	1
Value Education	-	1
Soft Skill Development	-	1
Gender Studies	-	1
Extension Activities -	-	1 (Credit only)

* for those who studied Tamil upto 10th +2 (Regular Stream)
+ Syllabus for other Languages should be on par with Tamil at degree level
# those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV
** Extension Activities shall be out side instruction hours
*** Examination hours : (Theory – 2 Hours and Practical – 2 Hours)

Non Major Elective I & II – for those who studied Tamil under Part I

a) Basic Tamil I & II for other language students
b) Special Tamil I & II for those who studied Tamil upto 10th or +2 but opt for other languages in degree programme

Note:

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60

3. Separate passing minimum is prescribed for Internal and External marks

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]
The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]
The passing minimum for University Examinations shall be 40% out of 60 marks [i.e. 24 marks]

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NON MAJOR ELECTIVE I

WORKING PRINCIPLES OF INTERNET

Objective : To understand the working Principles of Internet

Unit I

What is Internet ? The Internet's underlying Architecture

Unit II

Connecting to the Internet – Communicating on the Internet

Unit III

How the World Wide Web works. Common Internet tools

Unit IV

Multimedia on the Internet – Intranet and shopping on the Internet

Unit V

Safeguarding the Internet

Text Book :

1. How the Internet Works, Preston Gralla, Pearson Education, Eighth Edition, 2006

Reference Book :

1. Internet for Everyone, Alexis Leon, S. Chand (G/L) & Company Ltd; Second Edition 2012.

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MAJOR BASED ELECTIVE I (B)

SOFTWARE ENGINEERING

Objective: To provide knowledge of the various phases of Software Engineering Process

Unit I

Introduction : Introduction to Software Engineering - Software Process - Software Process Models - Software Model - Requirements Engineering Principles : Requirements Engineering - Importance of Requirements - Types of Requirements - Steps involved in Requirements Engineering

Unit II

Requirments Analysis Modeling : Analysis Modeling Approaches - Structured Analysis - Object Oriented Analysis - Design and Architectural Engineering : Design Process and Concepts - Basic Issues in Software Design - Characteristics of Good Design - Software Design and Software Engineering - Function Oriented System vs Object Oriented System - Modularity, Cohesion, Coupling, Layering - Real Time Software Design - Design Models - Design Documentation

Unit III

Object Oriented Concepts : Fundamental Parts of Object Oriented Approach - Data Hiding and Class Hierarchy Creation - Relationships - Role of UML in OO Design - Design Patterns - Frameworks - Object Oriented Analysis - Object Oriented Design - User Interface Design : Concepts of User Interface - Elements of User Interface - Designing the User Interface - User Interface Evaluation - Golden Rules of User Interface Design - User Interface Models - Usability

Unit IV

Software Coding - Introduction to Software Measurement and Metrics - Software Configuration - Project Management Introduction - Introduction to Software Testing - Software Maintenance

Unit V

Web Engineering : Introduction to Web - General Web Characteristics - Web Application Categories - Working of Web Application - Advantages and Drawbacks of Web Applications - Web Engineering - Emerging Trends in Software Engineering - Web 2.0 - Rapid Delivery - Open Source Software Development - Security Engineering - Service Oriented Software Engineering - Web Service - Software as a Service - Service Oriented Architecture - Cloud Computing - Aspect Oriented Software Development - Test Driven Development - Social Computing

Textbook:

1. Software Engineering, Chandramouli Subramanian, Saikat Dutt, Chandramouli Seetharaman, B.G. Geetha, Pearson Publications, 2015

Reference Books:

1. Software Engineering, Jibitesh Mishra, Pearson Education, 2011

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MAJOR BASED ELECTIVE II (B)

BUSINESS PROCESS OUTSOURCING

Objective : To provide the Knowledge about the working environment of Business Process Outsourcing Industry

UNIT I

Search For Competitiveness - Need For Outsourcing - BPOs: Beyond Call Centres

UNIT II

Transition Management - BPO Business Models - BPO Governance

UNIT III

Legal Issues in BPO Contracts - BPO—Regulatory Issues - Service Supplier Selection

UNIT IV

Service Level Agreement - BPO Legal Contract - BPO to KPO: Up In The Value Chain

UNIT V

HR Challenges in BPO Industry - Performance Evaluation In BPO – BPO — Prerequisites And Precautions - Service Quality Issues in BPO

Text Book

1. Business Process Outsourcing: A Supply Chain of Expertises, Vinod V. Sople, Prentice Hall of India, 2011.

Reference Book:

1. Business Process Outsourcing, Sarika Kulkarni, Jaico Publishing House, Delhi 2005

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BHARATHIDASAN UNIVERSITY,  **TIRUCHIRAPPALLI – 620 024.**

B.Sc. Computer Science Course Structure under CBCS.

(For the Candidates admitted from the Academic year 2016-2017 onwards)

Semester	Part	Course	Title	Instru. Hours/ Week	Credit	Exam Hours	Marks		Total
							Int	Extn.	
I	I	Language Course – I (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - I (ELC)		6	3	3	25	75	100
	III	Core Course – I (CC)	Programming in C	6	5	3	25	75	100
		Core Practical - I (CP)	Programming in C Lab	3	2	3	40	60	100
		First Allied Course –I (AC)		4	4	3	25	75	100
		First Allied Course – II (AC)		3	-	-	-	-	-
	IV	Value Education	Value Education	2	2	3	25	75	100
	Total			**30**	**19**				**600**
II	I	Language Course – II (LC) - – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course – II (ELC)		6	3	3	25	75	100
	III	Core Course – II (CC)	Programming in C++	6	6	3	25	75	100
		Core Practical - II (CP)	Programming in C++ Lab	3	2	3	40	60	100
		First Allied Course – II (AC)		3	3	3	25	75	100
		First Allied Course – III (AC)		4	2	3	25	75	100
	IV	Environmental Studies	Environmental Studies	2	2	3	25	75	100
	Total			**30**	**21**				**700**
III	I	Language Course – III (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - III (ELC)		6	3	3	25	75	100
	III	Core Course – III (CC)	Programming in Java	6	5	3	25	75	100
		Core Practical - III (CP)	Programming in Java Lab	3	2	3	40	60	100
		Second Allied Course – I (AC)		4	4	3	25	75	100
		Second Allied Practical (AP)		3	-	-	-	-	-
	III	Non Major Elective I - for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Working Principles of Internet	2	2	3	25	75	100
	Total			**30**	**19**				**600**

IV	I	Language Course –IV (LC) - Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course–IV (ELC)		6	3	3	25	75	100
	III	Core Course – IV (CC)	Database Systems	5	5	3	25	75	100
		Core Practical - IV (CP)	Database Systems Lab	3	2	3	40	60	100
		Second Allied Practical (AP)		3	3	3	40	60	100
		Second Allied Course–II (AC)		3	2	3	25	75	100
	IV	Non Major Elective II - for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree Programme	Fundamentals of Information Technology	2	2	3	25	75	100
		Skill Based Elective - I	Skill Based Elective - I	2	2	3	25	75	100
	Total			**30**	**22**				**800**
V	III	Core Course V [CC]	Data Structures and Algorithms	5	5	3	25	75	100
		Core Course VI [CC]	Computer Networks	5	5	3	25	75	100
		Core Course VII [CC]	Digital Electronics and Microprocessor	5	5	3	25	75	100
		Core Practical V [CP]	Digital Electronics and Microprocessor Lab	4	3	3	40	60	100
		Major Based Elective - I	Software Engineering / System Analysis and Design / Management Information System	5	5	3	25	75	100
	IV	Skill Based Elective - II	Skill Based Elective - II	2	2	3	25	75	100
		Skill Based Elective – III	Skill Based Elective – III	2	2	3	25	75	100
		Soft Skills Development	Soft Skills Development	2	2	3	25	75	100
	Total			**30**	**29**				**800**
VI	III	Core Course VIII [CC]	Operating Systems	6	6	3	25	75	100
		Core Course IX [CC]	Programming in PHP	6	6	3	25	75	100
		Core Practical VI [CP]	Programming in PHP Lab	5	4	3	40	60	100
		Major Based Elective - II	Computer Graphics / Cloud Computing / Business Process Outsourcing	6	6	3	25	75	100
		Major Based Elective - III	Mini Project (Students to do it in their respective Colleges) / Dot Net Lab / Linux Lab	6	6	3	40	60	100
	V	Extension Activities	Extension Activities	-	1	-	-	-	-
		Gender Studies	Gender Studies	1	1	3	25	75	100
	Total			**30**	**30**				**600**
Grand Total				**180**	**140**	**-**	**-**	**-**	**4100**

List of Allied Courses

Allied Course I
Mathematics

Allied Course II
Applied Physics

Language Part – I - 4
English Part –II - 4
Core Paper - 9
Core Practical - 6
Allied Paper - 4
Allied Practical - 2
Non-Major Elective - 2
Skill Based Elective - 3
Major Based Elective - 3
Environmental Studies - 1
Value Education - 1
Soft Skill Development - 1
Gender Studies - 1
Extension Activities - 1 (Credit only)

* for those who studied Tamil upto 10th +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

** Extension Activities shall be out side instruction hours

Non Major Elective I & II – for those who studied Tamil under Part I

a) Basic Tamil I & II for other language students
b) Special Tamil I & II for those who studied Tamil upto 10th or +2 but opt for other languages in degree programme

Note:

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60

3. Separate passing minimum is prescribed for Internal and External marks

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]
The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]
The passing minimum for University Examinations shall be 40% out of 60 marks [i.e. 24 marks]

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NON MAJOR ELECTIVE I

WORKING PRINCIPLES OF INTERNET

Objective :

To understand the working Principles of Internet

Unit I

What is Internet ? The Internet's underlying Architecture

Unit II

Connecting to the Internet – Communicating on the Internet

Unit III

How the World Wide Web works. Common Internet tools

Unit IV

Multimedia on the Internet – Intranet and shopping on the Internet

Unit V

Safeguarding the Internet

Text Book:

1. How the Internet Works, Preston Gralla, Pearson Education, Eighth Edition, 2006.

Reference Book :

1. Internet for Everyone, Alexis Leon, S. Chand (G/L) & Company Ltd; Second Edition 2012.

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MAJOR BASED ELECTIVE I (A)

SOFTWARE ENGINEERING

Objective:

To provide knowledge of the various phases of Software Engineering Process

Unit I

Introduction : Introduction to Software Engineering - Software Process - Software Process Models - Software Model - Requirements Engineering Principles : Requirements Engineering - Importance of Requirements - Types of Requirements - Steps involved in Requirements Engineering

Unit II

RequirmentsAnalysis Modeling : Analysis Modeling Approaches - Structured Analysis - Object Oriented Analysis - Design and Architectural Engineering : Design Process and Concepts - Basic Issues in Software Design - Characteristics of Good Design - Software Design and Software Engineering - Function Oriented System vs Object Oriented System - Modularity, Cohesion, Coupling, Layering - Real Time Software Design - Design Models - Design Documentation

Unit III

Object Oriented Concepts : Fundamental Parts of Object Oriented Approach - Data Hiding and Class Hierarchy Creation - Relationships - Role of UML in OO Design - Design Patterns - Frameworks - Object Oriented Analysis - Object Oriented Design - User Interface Design : Concepts of User Interface - Elements of User Interface - Designing the User Interface - User Interface Evaluation - Golden Rules of User Interface Design - User Interface Models - Usability

Unit IV

Software Coding - Introduction to Software Measurement and Metrics - Software Configuration - Project Management Introduction - Introduction to Software Testing - Software Maintenance

Unit V

Web Engineering : Introduction to Web - General Web Characteristics - Web Application Categories - Working of Web Application - Advantages and Drawbacks of Web Applications - Web Engineering - Emerging Trends in Software Engineering - Web 2.0 - Rapid Delivery - Open Source Software Development - Security Engineering - Service Oriented Software Engineering - Web Service - Software as a Service - Service Oriented Architecture - Cloud Computing - Aspect Oriented Software Development - Test Driven Development - Social Computing

Textbook:

1. Software Engineering, Chandramouli Subramanian, SaikatDutt, Chandramouli Seetharaman, B.G.Geetha, Pearson Publications, 2015

Reference Books:

1. Software Engineering, Jibitesh Mishra, Pearson Education, 2011

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MAJOR BASED ELECTIVE I (C)

MANAGEMENT INFORMATION SYSTEM

Objective:

To understand the concepts Management Information Systems and their Applications.

Unit I

Definition of MIS – Systems approach – meaning and objectives of MIS – MIS and use of computer – limitations of MIS

Unit II

Computer Software for information systems – introduction – system software – Application software – Software Trends.

Unit III

Information system in Business – introduction – Functional areas of Business – marketing information system – Human Resource Information system

Unit IV

Application of Information Technology in Business – Introduction of E-Commerce, Mobile Commerce, E- Governance, E- enterprises, From PC to the Web.

Unit V

Information security, Ethics and Society – Challenges of Securing computer systems – Types of Security Breaches, Cyper Laws and IT Act 2000 – Ethical and social Dimensions of Information Technology

Text Books:

1. Management Information System, A.K. Gupta, S. Chand and Company,2010
2. Management Information System, Dr. S.P. Rajagopalan – Margham Publications, 2012

Reference Books:

1. Management Information System, P. Mohan, Himalaya Publishing House, 2006
2. Management Information System, Managerial Perspectives, D.P. Goyal, Macmilan, 2010

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MAJOR BASED ELECTIVE II (C)

BUSINESS PROCESS OUTSOURCING

Objective :

To provide the Knowledge about the working environment of Business Process Outsourcing Industry

UNIT I

Search For Competitiveness - Need For Outsourcing - BPOs: Beyond Call Centres

UNIT II

Transition Management - BPO Business Models - BPO Governance

UNIT III

Legal Issues in BPO Contracts - BPO—Regulatory Issues - Service Supplier Selection

UNIT IV

Service Level Agreement - BPO Legal Contract - BPO to KPO: Up In The Value Chain

UNIT V

HR Challenges in BPO Industry - Performance Evaluation In BPO - BPO— Prerequisites And Precautions - Service Quality Issues in BPO

Text Book

1. Business Process Outsourcing: A Supply Chain of Expertises, Vinod V. Sople, Prentice Hall of India, 2011.

Reference Book:

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BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI - 620 024.
B.Sc. Information Technology Course Structure under CBCS.

(For the candidates admitted from the academic year 2016-2017 onwards)

Semester	Part	Course	Title	Instru Hour/ Week	Credit	Exam Hours	Marks		Total
							Int	Extn.	
I	I	Language Course – I (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - I (ELC)		6	3	3	25	75	100
	III	Core Course – I (CC)	Introduction to Information Technology	6	5	3	25	75	100
		Core Practical - I (CP)	Basic Computer usage Lab	3	2	3	40	60	100
		First Allied Course –I (AC)		4	4	3	25	75	100
		First Allied Course – II (AC)		3	-	-	-	-	
	IV	Value Education	Value Education	2	2	3	25	75	100
	Total			**30**	**19**				**600**
II	I	Language Course – II (LC) - – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course – II (ELC)		6	3	3	25	75	100
	III	Core Course – II (CC)	Programming in C	6	6	3	25	75	100
		Core Practical - II (CP)	Programming in C Lab	3	2	3	40	60	100
		First Allied Course – II (AC)		3	3	3	25	75	100
		First Allied Course – III (AC)		4	2	3	25	75	100
	IV	Environmental Studies		2	2	3	25	75	100
	Total			**30**	**21**				**700**
III	I	Language Course – III (LC) – Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course - III (ELC)		6	3	3	25	75	100
	III	Core Course – III (CC)	Programming in C++	6	5	3	25	75	100
		Core Practical - III (CP)	Programming In C++ Lab	3	2	3	40	60	100
		Second Allied Course – I (AC)		4	4	3	25	75	100
		Second Allied Course– II - Practical (AC)		3	-	-	-	-	-
		Non Major Elective I - for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Fundamentals of Information Technology	2	2	3	25	75	100
	Total			**30**	**19**				**600**

IV	I	Language Course –IV (LC) - Tamil*/Other Languages ** #		6	3	3	25	75	100
	II	English Language Course–IV (ELC)		6	3	3	25	75	100
	III	Core Course – IV (CC)	Programming in Java	5	5	3	25	75	100
		Core Practical - IV (CP)	Programming in Java Lab	3	2	3	40	60	100
		Second Allied Course– II - Practical (AC)		3	3	3	40	60	100
		Second Allied Course–III (AC)		3	2	3	25	75	100
	IV	Non Major Elective II - for those who studied Tamil under Part I a) Basic Tamil for other language students b) Special Tamil for those who studied Tamil upto +2 but opt for other languages in degree programme	Information Security : Principles and Practices	2	2	3	25	75	100
		Skill Based Elective - I	Skill Based Elective - I	2	2	3	25	75	100
	Total			**30**	**22**				**800**
V	III	Core Course V [CC]	Data Structures and Algorithms	5	5	3	25	75	100
		Core Course VI [CC]	Computer Networks	5	5	3	25	75	100
		Core Course VII[CC]	Operating Systems	5	5	3	25	75	100
		Core Practical V [CC]	Computer Graphics and Animation Lab	4	3	3	40	60	100
		Major Based Elective - I	Software Engineering / E-Commerce /Business Process Outsourcing	5	5	3	25	75	100
	IV	Skill Based Elective - II	Skill Based Elective - II	2	2	3	25	75	100
		Skill Based Elective – III	Skill Based Elective – III	2	2	3	25	75	100
		Soft Skills Development	Soft Skills Development	2	2	3	25	75	100
	Total			**30**	**29**				**800**
VI	III	Core Course VIII [CC]	Mobile Computing	6	6	3	25	75	100
		Core Course IX [CC]	Database Systems	6	6	3	25	75	100
		Core Practical VI [CP]	Database Systems Lab	5	4	3	40	60	100
		Major Based Elective - II	Web Design / Programming in PHP / Cloud Computing	6	6	3	25	75	100
		Major Based Elective - III	Mini Project (Students to do it in their respective Colleges) / Dot Net Lab / Programming in PHP Lab	6	6	3	40	60	100
	V	Extension Activities	Extension Activities	-	1	-	-	-	-
		Gender Studies	Gender Studies	1	1	3	25	75	100
	Total			**30**	**30**				**600**
Grand Total				**180**	**140**	**-**	**-**	**-**	**4100**

List of Allied Courses

Allied Course I	Allied Course II
Mathematics	**Physics**

Language Part – I	-	4
English Part –II	-	4
Core Paper	-	9
Core Practical	-	6
Allied Paper	-	4
Allied Practical	-	2
Non-Major Elective	-	2
Skill Based Elective	-	3
Major Based Elective	-	3
Environmental Studies	-	1
Value Education	-	1
Soft Skill Development	-	1
Gender Studies	-	1
Extension Activities	-	1 (Credit only)

* for those who studied Tamil upto 10th +2 (Regular Stream)

+ Syllabus for other Languages should be on par with Tamil at degree level

those who studied Tamil upto 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV

** Extension Activities shall be out side instruction hours

Non Major Elective I & II – for those who studied Tamil under Part I

a) Basic Tamil I & II for other language students
b) Special Tamil I & II for those who studied Tamil upto 10th or +2 but opt for other languages in degree programme

Note:

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60

3. Separate passing minimum is prescribed for Internal and External marks

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]
The passing minimum for University Examinations shall be 40% out of 75 marks [i.e. 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]
The passing minimum for University Examinations shall be 40% out of 60 marks [i.e. 24 marks]

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NON MAJOR ELECTIVE II

INFORMATION SECURITY : PRINCIPLES AND PRACTICES

Objective :

To understand the Principles and Practices followed in Information Security

Unit I

Why Information Security ?. : Introduction – Growing IT Security Importance and New Career Opportunities – Becoming and Information Security Specialist – Conceptualizing Information Security – Information Security Principles of Success : Introduction – Twelve Principles.

Unit II

Security Management : Introduction – Security Policies Set the stage for Success – Four Types of Policies – Development Management of Security Policies – Policy Support Documents – Suggested Standards Taxonomy – Security Architecture and Models : Introduction – Defining the Trust Computing Base – Protection Mechanisms in a Trusted Computing Base – System Security Assurance Concepts – Trusted Computer Security Evaluation Critieria.

Unit III

Information Technology Security Evaluation Criteria – Federal Criteria for Information Technology Security – The Common Criteria – Confidentiality and Integrity Models – Law,Investigations and Ethics : Introduction – Types of Computer Crimes – How Computer Criminals Commit Crimes – The Computer and the Law – IntellectualProperty Law – Privacy and the Law – Computer Forensics – The Information Security Professionals Code of Ethics – Other Ethics Standards.

Unit IV

Physical Security Control : Introduction – Understanding the Physical Security Domain – Physical Security Threats – Providing Physical Security – Operations Security : Introduction – Operations Security Principles – Operations Security Process Controls – Operations Security Controls in Action.

Unit V

Access Control Systems and Methodology : Introduction – Terms and Concepts – Principles of Authentication – Biometrics – Single Sign-On – Remote User Access and Authentication – Cryptography : Introduction – Applying Cryptography to Information Systems – Basic Terms and Concepts – Strength of Cryptosystems – Putting the Pieces to Work – Examining Digital Cryptography.

Text Book :

1. Information Security : Principles and Practices by Mark Merkow and Jim Breithaupt, Pearson Education, 2007.

Reference Book :

1. Computer Security : Art and Science by Matt Bishop, Pearson Education, 2006.

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MAJOR BASED ELECTIVE I (A)

SOFTWARE ENGINEERING

Objective :

To provide knowledge of the various phases of Software Engineering Process

Unit I

Introduction : Introduction to Software Engineering - Software Process - Software Process Models - Software Model - Requirements Engineering Principles : Requirements Engineering - Importance of Requirements - Types of Requirements - Steps involved in Requirements Engineering

Unit II

RequirmentsAnalysis Modeling : Analysis Modeling Approaches - Structured Analysis - Object Oriented Analysis - Design and Architectural Engineering : Design Process and Concepts - Basic Issues in Software Design - Characteristics of Good Design - Software Design and Software Engineering - Function Oriented System vs Object Oriented System - Modularity, Cohesion, Coupling, Layering - Real Time Software Design - Design Models - Design Documentation

Unit III

Object Oriented Concepts : Fundamental Parts of Object Oriented Approach - Data Hiding and Class Hierarchy Creation - Relationships - Role of UML in OO Design - Design Patterns - Frameworks - Object Oriented Analysis - Object Oriented Design - User Interface Design : Concepts of User Interface - Elements of User Interface - Designing the User Interface - User Interface Evaluation - Golden Rules of User Interface Design - User Interface Models - Usability

Unit IV

Software Coding - Introduction to Software Measurement and Metrics - Software Configuration - Project Management Introduction - Introduction to Software Testing - Software Maintenance

Unit V

Web Engineering : Introduction to Web - General Web Characteristics - Web Application Categories - Working of Web Application - Advantages and Drawbacks of Web Applications - Web Engineering - Emerging Trends in Software Engineering - Web 2.0 - Rapid Delivery - Open Source Software Development - Security Engineering - Service Oriented Software Engineering - Web Service - Software as a Service - Service Oriented Architecture - Cloud Computing - Aspect Oriented Software Development - Test Driven Development - Social Computing

Textbook:

1. Software Engineering, Chandramouli Subramanian, SaikatDutt, Chandramouli Seetharaman, B.G.Geetha, Pearson Publications, 2015.

Reference Books:

1. Software Engineering,Jibitesh Mishra, Pearson Education, 2011.

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MAJOR BASED ELECTIVE I (B)

E-COMMERCE

Objective :

To understand the basics of E-Commerce and it Security

Unit I

E-commerce-Electronic Commerce – E-Commerce types – E-Commerce and world at thelarge-E-Commerce Case studies : Intel , Amazon.

Unit II

Electronic Mail – The X.400 Message handling system –Internet Addresses – Multipurpose Internet Mail Extension – X.500 Directory Services – E-mail user agent.

Unit III

EDI- Costs and benefits – Components of EDI Systems – EDI implementation issues – EDIFACT – EDIFACT Message Structure.

Unit IV

Cyber Security – Cyber Attacks – Hacking- SSL - Authentication and assurance of data integrity – Cryptographic based solutions – Digital Signatures – VPN.

Unit V

Electronic Payment Systems – payment gateway – internet banking – the SET Protocol – E-cash – E-Cheque –Elements of electronic payments

Textbook

1. E-Commerce The Cutting Edge Of Business,Kamalesh K Bajaj,Debjani Nag,McGraw Hill,2011.

Reference Book

1. E-Commerce: Issues, Perspectives and Challenges in the Indian Context, Gupta and Gupta, Knowledge World Publishers,2010.

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MAJOR BASED ELECTIVE I (C)

BUSINESS PROCESS OUTSOURCING

Objective :

To provide the Knowledge about the working environment of Business Process Outsourcing Industry

UNIT I

Search For Competitiveness - Need For Outsourcing - BPOs: Beyond Call Centres

UNIT II

Transition Management - BPO Business Models - BPO Governance

UNIT III

Legal Issues in BPO Contracts - BPO—Regulatory Issues - Service Supplier Selection

UNIT IV

Service Level Agreement - BPO Legal Contract - BPO to KPO: Up In The Value Chain

UNIT V

HR Challenges in BPO Industry - Performance Evaluation In BPO - BPO— Prerequisites And Precautions - Service Quality Issues in BPO

Text Book

1. Business Process Outsourcing: A Supply Chain OfExpertises, Vinod V. Sople, Prentice Hall of India, 2011.

Reference Book:

1. Business Process Outsourcing, Sarika Kulkarni, Jaico Publishing House, Delhi2005.

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BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024.
M.Sc. Computer Science Course Structure under CBCS

(For the candidates admitted from the academic year 2016-2017 onwards)

Updated on 12.06.2017

Sem	Course	Course Title	Ins. Hrs / Week	Credit	Exam Hrs	Marks		Total
						Int.	Ext.	
I	Core Course – I (CC)	Mathematical Foundation for Computer Science	6	4	3	25	75	100
	Core Course – II (CC)	Web Technologies	6	4	3	25	75	100
	Core Course – III (CC)	Design and Analysis of Algorithms	6	4	3	25	75	100
	Core Course – IV (CC)	Distributed Operating Systems	6	4	3	25	75	100
	Core Practical – I (CP)	Web Technologies Lab	6	4	3	40	60	100
	TOTAL		**30**	**20**				**500**
II	Core Course – V (CC)	OOAD & UML	6	5	3	25	75	100
	Core Course – VI (CC)	Distributed Technologies	6	5	3	25	75	100
	Core Practical – II (CP)	Distributed Technologies Lab	6	4	3	40	60	100
	Elective Course – I (EC)	Any one from the list	6	5	3	25	75	100
	Elective Course – II (EC)	Any one from the list	6	5	3	25	75	100
	TOTAL		**30**	**24**				**500**
III	Core Course – VII (CC)	Data Mining and Ware Housing	6	5	3	25	75	100
	Core Course – VIII (CC)	Compiler Design	6	5	3	25	75	100
	Core Practical – III (CP)	Data Mining Lab	6	4	3	40	60	100
	Elective Course – III (EC)	Any one from the list	6	5	3	25	75	100
	Elective Course – IV (EC)	Any one from the list	6	5	3	25	75	100
	TOTAL		**30**	**24**				**500**
IV	Core Course – IX (CC)	Cloud Computing	6	5	3	25	75	100
	Core Course – X (CC)	Wireless Sensor Networks	6	5	3	25	75	100
	Core Practical - IV (CP)	Open Source Lab	6	4	3	40	60	100
	Elective Course – V (EC)	Any one from the list	6	4	3	25	75	100
	Project	Project	6	4	-	-	-	100
	TOTAL		**30**	**22**				**500**
GRAND TOTAL			**120**	**90**				**2000**

List of Elective Courses (For 2016 – 2017)

Elective I		**Elective II**	
1	Mobile Communication	1	Embedded Systems
2	Web Services	2	Artificial Intelligence
3	Human Computer Interaction	3	Pattern Recognition
Elective III		**Elective IV**	
1	Parallel Processing	1	Network Security
2	Advanced Computer Architecture	2	Computer Simulation and Modeling
3	Pervasive Computing	3	Soft Computing
Elective V			
1	Big Data Analytics		
2	MANET		
3	Digital Image Processing		

NETWORK SECURITY

SEMESTER III

ELECTIVE IV

Objective:

To impart knowledge related to the various concepts, methods of Network Security using cryptography basics, program security, database security, and security in networks.

Unit I

Overview-Symmetric Ciphers: Classical Encryption Techniques

Unit II

Symmetric Ciphers: Block ciphers and the Data Encryption Standards Public-key Encryption and Hash Functions: Public-Key Cryptography and RSA

Unit III

Network Security Practices: Authentication applications-Electronic Mail Security

Unit IV

Network Security Practices: IP Security-Web Security

Unit V

System Security: Intruders-Malicious Software-Firewalls

Text Book:

1. William Stallings, Cryptography and Network Security-Principles and Practices, Prentice-Hall, Third edition, 2003 ISBN: 8178089025

References:

1. Johannes A. Buchaman, Introduction to cryptography, Springer-Verlag 2000.

2. AtulKahate, Cryptography and Network Security, Tata McGraw Hill. 2007

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024.
M.Sc. Information Technology Course Structure under CBCS

(For the candidates admitted from the academic year 2016-2017 onwards)

Updated on 12.06.2017

Sem.	Course	Course Title	Ins. Hrs / Week	Credit	Exam Hrs	Marks		Total
						Int.	Ext.	
I	Core Course – I (CC)	Distributed Technologies	6	4	3	25	75	100
	Core Course – II (CC)	Web Services	6	4	3	25	75	100
	Core Course – III (CC)	OOAD and UML	6	4	3	25	75	100
	Core Course – IV (CC)	Organizational Behaviour	6	4	3	25	75	100
	Core Practical – I (CP)	Distributed Technologies Lab	6	4	3	40	60	100
	TOTAL		**30**	**20**				**500**
II	Core Course – V (CC)	Mobile Computing	6	5	3	25	75	100
	Core Course – VI (CC)	Multimedia Technology	6	5	3	25	75	100
	Core Practical – II (CP)	Mobile Computing Lab	6	4	3	40	60	100
	Elective Course – I (EC)	Any one from the list	6	5	3	25	75	100
	Elective Course – II (EC)	Any one from the list	6	5	3	25	75	100
	TOTAL		**30**	**24**				**500**
I	Core Course – VII (CC)	J2EE Technologies	6	5	3	25	75	100
	Core Course – VIII (CC)	Network Security	6	5	3	25	75	100
	Core Practical – III (CP)	J2EE Technologies Lab	6	4	3	40	60	100
	Elective Course III (EC)	Any one from the list	6	5	3	25	75	100
	Elective Course – IV (EC)	Any one from the list	6	5	3	25	75	100
	TOTAL		**30**	**24**				**500**
IV	Core Course – IX (CC)	Internet of Things	5	5	3	25	75	100
	Core Course – X (CC)	Distributed Operating Systems	5	5	3	25	75	100
	Core Practical - IV (CP)	Open Source Technologies Lab	8	4	3	40	60	100
	Elective Course – V (EC)	Any one from the list	5	4	3	25	75	100
	Project Work		7	4	-	-	-	100
	TOTAL		**30**	**22**				**500**
GRAND TOTAL			**120**	**90**				**2000**

List of Elective Courses (For 2016 – 2017)

Elective I		Elective II	
1	Cloud Computing	1	Management Information Systems
2	Grid Computing	2	E-Commerce
3	Parallel Computing	3	Marketing Management
Elective III		**Elective IV**	
1	Big Data Analytics	1	Software Engineering
2	Digital Image Processing	2	Software Testing
3	Pattern Recognition	3	Software Metrics
Elective V			
1	Pervasive Computing		
2	Human Computer Interaction		
3	Soft Computing		

INTERNET OF THINGS

SEMESTER IV

CORE COURSE IX

Objectives:

To understand the underlying concepts in Internet of Things (IoT) and to provide in depth knowledge on state of the art in the IoT, challenges and future directions.

UNIT I INTRODUCTION TO IoT

Requirements of IoT: The definition of the Internet of Things, main assumptions and perspectives- Platform for IoT devices. Economics and Technology of the IoT –Issues in IoT and solutions-Architecture of IoT. Anatomy of IoT: Traditional Internet Protocol Vs Chirps –Applying network intelligence at propagator nodes-Transport and functional architectures.

UNIT II IoT DEVICES

IoT Devices-Temporary and Ad-hoc devices-Addressing issues-End devices in dedicated networks- Converting states to chirps-RFID integration in the IoT-End devices with higher demands- Small data-Building a web of things-Autonomy and coordination-Structuring a tree-Housekeeping message-Role of integrator functionDegrees of functionality-Aggregating end points-Packaging options.

UNIT III DATA AND HUMAN INTERACTION

Data and Human Interaction: Functions of IoT-Analysis and control-Neighborhood and affinities- Public private and other kinds of data-Publishing agent- Searching for and managing agents- High and low level loops- Human interface and control points Collaborative scheduling tools-Packaging and provisioning- Distributed integrator functions- Filtering the streams-IP Alternative-Protocol based on category classification-Skeletal architecture of chirp packets- Pattern driven-Propagator node networks and operation-Power of local agents and integrator functions-High level interchange.

UNIT IV IoT APPLICATIONS

Moore's Law –Intelligence near the edge- Incorporating legacy devices- Staying in the loop -Social machines-Applications of IoT–Agriculture- Home healthcare-Efficient process control-Factory application- Home automation-Natural sciences- Living applications- Origin of IoT- Open source networking solutions- Shared software and business process vocabularies.

UNIT V CREATING IoT PROJECTS

Creating the IoT projects: Sensor project-Actuator project – Controller-Camera. Using an IoT service platform- Selecting an IoT. Platform- The claysterplatform Interfacing ourdevices using XMPP- Creating control application.

Text Books:

1. "Rethinking the Internet of Things-A scalable approach to connecting everything", by Francis DaCosta,Apress open publication,2013.

2. "Learning Internet of Things" by Peter Waher,PACKT Publishing-Birmingham-mumbai- 2015.

Reference Books:

1. "Internet of Things: A Hands on Approach", by Arhdeep Bahga and Vijay Madisetti (http://www.internet-of-things-book.com/).

2. "Getting started with the internet of things", by Cuno Pfister,O'Rielly Publication.

SOFTWARE ENGINEERING

SEMESTER III

ELEVTIVE IV

Objective: To provide exposure on the principles and practices used in Software Development.

UNIT I

Need for S/w Engineering: Need for S/w engineering – About software and S/w engineering – A systems approach, - Engineering approach – Members of the development team – Change in S/w engineering. - Modeling the process and Life cycle:The meaning of process – S/w process models – Tools and techniques for processional modeling – Practical process modeling.

UNIT II

Planning and Managing the project: Tracking progress – Project personnel – Effort estimation – Risk management – The project plan – Process models and project management.

UNIT III

Capturing the requirements : The requirement process – Types of Requirements –Characteristics of requirements – Expressing requirements – Additional requirements notations – Prototyping requirements – Requirements Documentation – Participants in the requirements process – Requirements validation – Measuring requirements –Choosing a requirements specification Techniques.

UNIT IV

Designing the system : Design Introduction – Decomposition and Modularity –Architectural styles and strategies – Characteristics of good design – Techniques for improving design – Design evaluation and validation –

Documenting the design –Programming standards and procedures – Programming guidelines – Documentation.

UNIT V

Testing Strategies : Testing strategic issues – Test strategies for conventional S/w –Test strategies for object oriented S/w – Validation testing – system testing – S/wtesting. Fundamentals – Black-box and White-box testing – White box testing – Blackbox testing – Mccall's Quality factors – ISO 9126 - QF – S/w Engineering – S/wMaintenance – A S/w engineering process model.

Text Books:

1. Shari Lawrence P. Fleeger, "Software Engineering Theory and Practice", 2nd Edition, Pearson Education, Delhi, 2001. [(for Units 1–4) Chapters 1, 2, 3, 4, 5, 7]

2. Roger S. Pressman, "Software Engineering A Practitioner's Approach", 6th Edition, Tata McGraw Hill Publication, [(for Unit 5) Chapters : 13, 14, 15, 31]

Reference Books:

1. Ian Sommerville, "Software Engineering", 6th Edition, Pearson Education, Delhi,
2005.

2. Douglas Bell, "Software Engineering for Students-A Programming Approach",4th Edition, Pearson Education, Delhi 2007.

E-COMMERCE

SEMESTER II

ELECTIVE II

Objective:

To provide exposure on the principles of E-Commerce and its applications

UNIT I

Electronic Commerce Framework – Electronic Commerce and Media Convergence –The Anatomy of E-Commerce Applications – Electronic Commerce ConsumerApplications – Electronic Commerce Organization Applications. The NetworkInfrastructure for Electronic Commerce: Components of the High way – Network Access Equipment – Global information Distribution Networks.

UNIT II

The Internet as a Network Infrastructure: The Internet Terminology – NSFNET Architecture and components – National Research and Education Network – InternetGovernance – An overview of Internet Applications. The Business of InternetCommercialization :Telco/Cable/On-Line Companies - National Independent ISPs –Regional Level ISPs – Local –level ISPs – Internet Connectivity options.

UNIT III

Electronic Commerce and the World Wide Web: Architectural Framework for Electronic Commerce – World Wide Web as the Architecture – Technology behind theWeb – Security and the Web, Consumer-Oriented Electronic Commerce: Consumer Oriented Applications – mercantile process model – mercantile models from the consumers perspective.

UNIT IV

Electronic Payment Systems: Types of Electronic Payment Systems – Digital Token based Electronic Payment Systems – Credit Card – Based Electronic

Payment Systems – Risk and Electronic Payment Systems – Designing Electronic Payment Systems. InterOrganizational Commerce and EDI: Electronic Data Interchange – EDI Applications inBusiness – EDI: Legal, Security and Privacy issues.

UNIT V

Advertising and the Marketing on the Internet: The New Age of Information Search and Retrieval – Electronic Commerce Catalogs – Information filtering – Consumer – DataInterface – Emerging Tools. On Demand Education and Digital Copyrights: Computer based Education and Training – Technological Components of Education on demand.Software Agents: Characteristics and Properties of Agents – The Technology behind Software Agents – Applets, Browsers and Software Agents.

Text Book:

"Frontiers of Electronic Commerce", Ravikalakota & Andrew Whinston, Adison Wesley,2000.

Reference Book:

"Electronic Commerce", Pete Loshin & Paul A.Murphy, Second edition, Jaico Publishing House, 2000.