FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A" Grade by NAAC (3rd Cycle)
74th Rank in India Ranking 2020(NIRF) by MHRD
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: COMPUTER SCIENCE

NAME OF THE PROGRAMME : M.SC

PROGRAMME CODE : PSCS

ACADEMIC YEAR : 2021 - 2022

Fatima College (Autonomous), Madurai
The minutes of the Board of Studies meeting

Name of the Department : Computer Science
Programme : M.Sc

To be implemented from the academic year 2021-2022 onwards.
Convened on 15.4.2021 at 11a.m online.

Members Present:

1. Dr. G. Germine Mary — Chairperson
Associate Prof. & Head
Dept. of Computer Science
Fatima college
Germine Mary

2. Dr. M. Thangaraj — University Nominee — online
Professor & Head
Dept. of Computer Science
MKU, Madurai

3. Dr. Sr. Shantha Mary Joshitta — Subject Expert — online
Asst. Prof & Head
Dept. of Computer Science
JA College, Periyakulam

4. Dr. S. Vimala — Subject Expert — online
Associate Prof.
Dept. of Computer Science
MTN University, Kodaikanal

5. Mr. P. Graceson Tony — Industrialist — online
Founder & CEO

Fatima College (Autonomous), Madurai
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Founder & CEO

Seven Atara Marketere
Koodal Nagar, Madurai

6. Ms. K. Sudharani
Associate Prof. & Head
Dept. of Computer Science
MSN college, Sivagangai

Alumna
— online

7. Dr. N. Malathy
Asst. Professor in zoology
Fatima College

Dean of Academic Affairs

Members of the Board : The faculty of the Department of Computer Science, Fatima college.

8. Dr. S. Vidya
Associate Prof.

Vidya

9. Dr. K. Rosemary Euphrasia
Associate Prof.

K. Rosemary

10. Dr. A. Vimala
Associate Prof.

Vimala

11. Dr. P. Meenakshi Sundari
Asst. Prof.

P. Meenakshi

12. Ms. N. Muthulakshmi
Asst. Prof.

N. Muthulakshmi

13. Dr. S. Arul Jothi
Asst. Prof.

S. Arul Jothi

14. Dr. T. Vasantha
Asst. Professor

T. Vasantha

AGENDA:

1. Presentation of the action taken report of the previous board.
2. To pass the syllabus for the new course to be introduced
   * Self learning extra credit courses to be offered for advanced learners of PG.
   * Value added certificate course.
3. Rubrics to be followed for Project evaluation.

1. Action Taken Report

Industrial expert of the board suggested to encourage the students to enroll on relevant developer forum and to form a full stack team. As per the suggestion motivated all PG students to enroll in developer forums like StackoverFlow and Oracle Java Forum.

Industrial expert also insisted to initiate strategic joints with research labs and companies. Keeping this in mind a MoU was signed with Seven Atara Marketers and Redhat Linux, and the process was initiated.

2. Syllabus passed for the new courses introduced
   * Self-learning extra credit course offered for the advanced learners of PG.

a) Evolutionary Computing
b) Developing Web Services.

* Value added certificate course offered to PG students.

a) Scripting using Angular JS.

Course code	Course Title	Skill acquired
	Scripting using Angular JS	Web page Development

Course outcome :- Understanding the basic concept of Java Script, angular JS and model view controller.
- knowledge on the Filters and models.
- Able to create custom directives and implement JS in forms.

3. Rubrics to be followed for Project evaluation

Internal

Metric	Marks
Analysis & Design Review	10
Coding & Testing Review	10
Model Presentation	20
Total	40

External

Metric	Marks
Documentation	20
Project Presentation	20
Viva-Voce	20
Total	60

Evaluation Rubrics for Internship

Internal

Metric	Marks
Report review	20
Conference participation	5
Paper Presentation	10
Online Course Completion	5
Model presentation	5
Total	40

External

Metric	Marks
Presentation	30
Viva-Voce	30
Total	60

SUGGESTIONS BY THE BOARD MEMBERS

1. For PG project, emphasis should be given to presentation and domain specification. So modifications were made in the rubrics as suggested by the members in the internal evaluation

2. Boards suggested to move towards full-fledged CBCS (i.e.) cross majoring for the electives.

The board passed all the presented syllabus and the rubrics for project evaluation.

	Name	Signature
1.	Dr. G. Germine Mary, Chairperson	Germine Mary
2.	Dr. M. Thangaraj	– online
3.	Dr. Sr. Shantha Mary Joshitta	– online
4.	Dr. S. Vimala	– online
5.	Mr. P. Graceson Tony	– online
6.	Ms. K. Sudharani	– online
7.	Dr. N. Malathy	Malathy
8.	Dr. S. Vidya	~~Vidya~~
9.	Dr. K. Rosemary Euphrasia	K. Rosemary
10.	Dr. A. Vimala	Vimala
11.	Dr. P. Meenakshi Sundari	P. Meenakshi
12.	Ms. N. Muthulakshmi	N. Muthu
13.	Dr. S. Arul Jothi	S. Arul Jothi
14.	Dr. T. Vasantha	T. Vasantha

15/04/2021

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF COMPUTER SCIENCE

For those who joined in June 2019 onwards

MAJOR CORE – 60 CREDITS

PROGRAMME CODE:PSCS

S.No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19PG1B1	Advanced Programming in Java	5	4	40	60	100
2.		19PG1B2	Distributed Operating Systems	4	4	40	60	100
3.		19PG1B3	Object Oriented Software Engineering	4	4	40	60	100
4.		19PG1B4	Theory of Computation	4	4	40	60	100
5.		19PG1B5	Lab I – Advanced Programming In Java	5	3	40	60	100
6.		19PG1B6	Lab II – Operating System	5	3	40	60	100
7.	II	19PG2B7	Extreme Programming – Asp.Net	4	4	40	60	100
8.		19PG2B8	Mobile Application Development Using Android Studio	4	4	40	60	100
9.		19PG2B9	Design and Analysis of Algorithms	4	4	40	60	100
10.		19PG2B10	Lab III – Extreme Programming – Asp.Net	5	3	40	60	100
11.		19PG2B11	Lab IV – Mobile Application Development using Android Studio	5	3	40	60	100
12.	III	19PG3B12	Digital Image Processing	5	5	40	60	100
13.		19PG3B13	Data Mining and Data Warehousing	5	5	40	60	100
14.		19PG3B14	Lab V – Digital Image Processing	5	3	40	60	100
15.		19PG3B15	Lab VI – Data Mining And Data Warehousing	5	3	40	60	100
16.	IV	19PG4B16	Principles Of Internet Of Things (Self Study)	-	4	40	60	100
			TOTAL	**69**	**60**			

MAJOR ELECTIVE / EXTRA DEPARTMENTAL COURSE / INTERNSHIP/ PROJECT -30 CREDITS

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19B1EDC	WEB DEVELOPMENT	3	3	40	60	100
2.	II	19B2EDC	WEB DEVELOPMENT	3	3	40	60	100
3.		19PG2BE1	COMPUTATIONAL INTELLIGENCE	5	5	40	60	100
4.		19PG2BE2	NEURAL NETWORKS	5	5	40	60	100
5.		19PG2BE3	SOFTWARE TESTING	5	5	40	60	100
6.		19PG2BE4	EMBEDDED SYSTEMS	5	5	40	60	100
7.	III	19PG3BE5	PYTHON PROGRAMMING	5	5	40	60	100
8.		19PG3BE6	CRYPTOGRAPHY AND NETWORK SECURITY	5	5	40	60	100
9.		19PG3BE7	DISTRIBUTED DATABASE MANAGEMENT SYSTEM	5	5	40	60	100
10.		19PG3BE8	COMPILER DESIGN	5	5	40	60	100
11.		19PG3BE9	CLOUD COMPUTING	5	5	40	60	100
12.		19PG3BE10	ADVANCED COMPUTER GRAPHICS & ANIMATION	5	5	40	60	100
13.		19PG3BE11	BIG DATA ANALYTICS	5	5	40	60	100
14.		19PG3BE12	DEEP LEARNING	5	5	40	60	100
15.		19PG3BSI	SUMMER INTERNSHIP/ TRAINING/ ONLINE CERTIFICATION	-	3	40	60	100
16.	IV	19PG4BPR	PROJECT	-	6	40	60	100
			TOTAL	**21**	**30**			

OFF-CLASS PROGRAMMES

ADD-ON COURSES

COURSE CODE	COURSES	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
19PAD2SS	**SOFT SKILLS**	40	3	I	40	60	100
19PADCM	**CONTENT MANAGEMENT SYSTEM** (Offered by Dept. Of Computer Science)	40	4	II	40	60	100
21PADAJ	**Scripting using Angular JS**(Offered by Dept. Of Computer Science)	40	4	II	40	60	100
19PAD4CV	**COMPREHENSIVE VIVA** (Question bank to be prepared for all the papers by the respective course teachers)	-	2	IV	-	-	100
19PAD4RC	**READING CULTURE**	15/ Semester	1	I-IV	-	-	-

EXTRA CREDIT COURSES

Course Code	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
19PGBSL1	**SELF LEARNING COURSE for ADVANCED LEARNERS** BIOINFORMATICS	-	5	I & II	40	60	100
21PGBSL2	**SELF LEARNING COURSE for ADVANCED LEARNERS** DEVELOPING WEB SERVICES	-	5	III & IV	40	60	100
21PGBSL3	**SELF LEARNING COURSES for ADVANCED LEARNERS** EVOLUTIONARY COMPUTING	-	5	III & IV	40	60	100
	MOOC COURSES (Department Specific Courses) * Students can opt other than the listed course from UGC-SWAYAM portal as well as from NPTEL	-	Respective Credits allotted by UGC	-	-	-	100

M.Sc. Computer Science

SELF-STUDY COURSES

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	CREDITS
PSCS	21PGBSL2	DEVELOPING WEB SERVICES	TUTORIAL	5

COURSE DESCRIPTION

To understand the concept of design and implementation in developing web services

COURSE OBJECTIVES

- To understand the Evolution and Emergence of Web Services
- To understand architecture and technologies behind the web services.
- To design and develop web services.
- To implement web services developer packages.
- To understand the security concepts in web services.

UNITS

UNIT I INTRODUCTION

Introduction to Web Services : Basic Operational Model of Web Services - Core Web Services Standards- Industry Standards Supporting Web Services - Known Challenges in Web Services - Web Services Software and Tools Building the Web Services Architecture : Web Services Architecture and Its Core Building Blocks -Tools of the Trade - Web Services Communication Models - Implementing Web Services - Developing Web Services-Enabled Applications

UNIT – II : SOAP

Developing Web Services Using SOAP: XML-Based Protocols and SOAP - Anatomy of a SOAP Message-SOAP Encoding-SOAP Message Exchange Model-SOAP Communication-SOAP Messaging - SOAP Bindings for Transport Protocols-SOAP Security-Building SOAP Web Services

UNIT III :WSDL

Description and Discovery of Web Services: Web Services Description Language (WSDL) : WSDL in the World of Web Services - Anatomy of a WSDL Definition Document - WSDL Bindings - WSDL Tools - Future of WSDL - Limitations of WSDL

Universal Description, Discovery, and Integration (UDDI): UDDI Registries - Programming with UDDI - Inquiry API -Publishing API - Implementations of UDDI - Registering as a Systinet UDDI Registry User - Publishing Information to a UDDI Registry - Searching Information in a UDDI Registry - Deleting Information from a UDDI Registry - Limitations of UDDI

UNIT IV - Exploring Java Web Services Developer Pack:

Introduction to the Java Web Services Developer Pack (JWSDP) : Java Web Services Developer Pack : Java XML Pack - Java APIs for XML - JavaServer Pages Standard Tag Library - Apache Tomcat Java WSDP Registry Server - ANT Build Tool - Downloading the Web Services Pack

XML Processing and Data Binding with Java APIs: Extensible Markup Language (XML) Basics : XML Syntax - Namespaces - Validation of XML Documents - Java API for XML Processing (JAXP) : JAXP -Uses for JAXP - JAXP API Model - JAXP Implementations - Processing XML with SAX - Processing XML with DOM - XSL Stylesheets: An Overview - Transforming with XSLT -Threading - Java Architecture for XML Binding (JAXB) - Data Binding Generation - Marshalling XML - Unmarshalling Java - Other Callback Methods - Sample Code for XML Binding

UNIT V – Security in Web Services

Challenges of Securing Web Services : Technologies behind Securing Web Services - Rapid-Fire Cryptography , XML Encryption: Implementations of XML Encryption - XML Encryption - Encrypting XML Element - Decrypting the XML Element - Programming Steps for Encryption and Decryption, XML Signature : Types of XML Signatures - XML Signature Syntax -Canonicalization - Implementations of XML Signature - XML Signature: An Example, Security Assertions Markup Language (SAML): SAML Implementations- SAML Architecture- Authentication Assertion - Attribute Assertion -Authorization (Decision) Assertion- SAML Bindings and Protocols - Model of Producers and Consumers of SAML Assertions- Single Sign-On Using SAML

TEXT BOOKS

Developing Java™ Web Services, Ramesh Nagappan Robert Skoczylas Rima Patel Sriganesh, Wiley Publishing Inc., Indianapolis, Indiana. 2003

REFERENCE BOOKS

1. Web Services & SOA Principles and Technology, Second Edition, Michael P. Papazoglou.
2. Building web Services with Java, 2nd Edition, S. Graham and others, Pearson Education.
3. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.

Digital Open Educational Resources (DOER)

1. https://www.tutorialspoint.com/webservices/what_are_web_services.htm
2. https://docs.oracle.com/cd/E40938_01/doc.74/e40142/dev_secure_web_srvcs.htm

EVALUATION PATTERN

INTERNAL	EXTERNAL
Assignment – 20 Marks **Test – 20Marks**	**Objective – 20 Marks** **Essay Type Qns. – 40 Marks**
Total – 40Marks	**Total – 60Marks**

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOME	KNOWLEDGE LEVEL(ACCORDING TO BLOOM'S TAXONOMY)	PSOS ADDRESSED	POS ADDRESSED
CO 1	Analyse the challenges in web services and understand the architectures behind the web services.	K1,K2	PSO1& PSO4	PO2
CO 2	Understanding the SOAP architecture in developing web services.	K1,K2	PSO3	PO1
CO 3	Efficiently use market leading environment tools to create and consume web services	K3,K4	PSO4 &PSO5	PO2
CO 4	Identify and select the appropriate framework components in creation of webservice solution	K1,K2	PSO6	PO3
CO 5	Analyse the challenges of security in web services.	K2,K3	PSO7	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	**3**	**3**	**1**	**2**	**1**	**2**	**2**
CO2	**1**	**2**	**3**	**1**	**1**	**2**	**2**
CO3	**1**	**2**	**1**	**3**	**3**	**2**	**2**
CO4	**2**	**2**	**2**	**2**	**1**	**3**	**1**
CO5	**2**	**2**	**2**	**2**	**1**	**3**	**3**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	1	3	2	2
CO2	3	1	2	2
CO3	1	3	2	2
CO4	1	2	3	1
CO5	1	2	1	3

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

M.Sc. Computer Science

SELF STUDY

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	CREDITS
PSCS	21PGBSL3	**EVOLUTIONARY COMPUTING**	TUTORIAL	5

COURSE DESCRIPTION

Provide evolutionary Computation and global optimization techniques.

COURSE OBJECTIVES

- To solve various search and optimization problems
- To handle multi-objective optimization problems in their totality
- To Describe the Evolutionary algorithms and solve complex problem using evolutionary algorithms

UNITS

UNIT I – EVOLUTIONARY COMPUTING

Biological foundation of Evolutionary computing, Introduces evolutionary algorithms, a class of stochastic, population-based algorithms inspired by natural evolution theory, capable of solving complex problems for which other techniques fail

UNIT II – GENETIC ALGORITHMS (GA)

Biological foundation of GA, General steps in GA, Genetic Operations: cloning, crossover and mutation, Encoding and Selection techniques, Mathematical foundation and Schemata, Holland Schemata theorem, design and implementation of

GA, issues in implementation of GA, applications of GA, Classifier systems, Genetic programming, new trends in GA. Applications of GA

UNIT III: SWARM INTELLIGENCE (SI)

Biological foundation of SI, SI Techniques: Ant Colony Optimization (ACO) and Particle Swarm optimization (PSO). General steps in ACO, the "Invisible Manager" (Stigmergy), the Pheromone, Ant Colonies and Optimization, Ant Colonies and Clustering, Applications of Ant Colony Optimization. Applications of ACO

UNIT IV: PARTICLE SWARM OPTIMIZATION (PSO)

Social Network Structure: The Neighborhood Principle, PSO Algorithm, Fitness Calculation, Convergence, PSO System Parameters, Particle Swarm Optimization versus Evolutionary Computing and Applications of PSO

UNIT V: FEW ALGORITHMS

Mimetic algorithm, Firefly Algorithm, multi objective algorithms

REFERENCE BOOKS

1. ***An introduction to Genetic Algorithms***, M. Mitchell, Prentice-Hall, 1998.
2. ***Genetic Algorithms in Search, Optimization, and Machine Learning***, D. E. Goldberg,Addison Wesley,1989.
3. ***Computational Intelligence -PC Tools***, P.Simpson and R.Dobbins, R.Eberhart,AP Professional, 1996.
4. ***Evolutionary Computation – A Unified Approach*** , Kenneth A.De.Jong, The MIT Press, 2016

Digital Open Educational Resources (DOER)

1. https://youtu.be/-WKZglCAQwE
2. https://youtu.be/L--IxUH4fac
3. https://youtu.be/qY6AO68cSrc

EVALUATION PATTERN

INTERNAL	EXTERNAL
Assignment – 20 Marks **Test – 20Marks**	**Objective – 20 Marks** **Essay Type Qns. – 40 Marks**
Total – 40Marks	**Total – 60Marks**

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Formulate a problem as an evolutionary computation search/optimization by specifying representations, selection and variation operators.	K1 &K2	PSO1& PSO2	PO1 & PO3
CO 2	Write a program or use a package to implement an evolutionary algorithm.	K3 &K4	PSO3 & PSO4	PO2
CO 3	Conduct evolutionary optimization experiments and properly report and discuss the results	K1&K3	PSO4	PO3
CO 4	Apply various evolutionary computation methods and algorithms for particular classes of problems	K2 &K3	PSO5 & PSO6	PO2 & PO3
CO 5	Develop evolutionary algorithms for real-world applications.	K3 &K4	PSO7	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	3	3	1	1	1	2	2
CO2	1	1	2	2	2	2	2
CO3	2	2	2	3	1	2	2
CO4	2	2	2	1	3	3	1
CO5	2	2	2	3	1	1	2

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	3	1
CO2	2	2	3	2
CO3	2	3	1	2
CO4	2	3	2	2
CO5	2	1	1	2

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**