SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(An Autonomous Institution)
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution &
Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

SCHOOL OF ARTS AND SCIENCE

Department of Computational Studies

Bachelor of Computer Science

Minutes of 3rd meeting of Board of Studies

Venue

Department of Computational Studies
First Floor , SAS Block

Date & Time
09-08-2021 & 2.00pm to 4.00pm

School of Arts and Science
Department of Computational Studies
Minutes of Board of Studies Meeting for B.Sc. CS

The Third meeting of Board of Studies for the course B.Sc. Computer Science in the Department of Computational Studies was held on 09.08.2021 at 02:00 P.M in the Department of Computational Studies, School of Arts and Science, Sri Manakula Vinayagar Engineering College and also through online with the Head of the Department in the Chair.

The following members were present for the Third Meeting of Board of Studies.

S. No.	Name of the Member with Designation and official Address	Responsibility in the BoS
1	**Mr. M. SHANMUGAM, M.Sc.,M.Phil.,M.E,SET, (Ph.D).** Associate Professor and Head, Department of Computational Studies, School of Arts and Science, SMVEC Email : shanmugam.muthalu@gmail.com,Mobile : 9444370963	Chairman
2	**Dr. R. RAMKUMAR , MCA, M.Phil., M.Tech., Ph.D.** Associate Professor and Head, School of Computer Science, VET Institute of Arts and Science, Thindal , Erode. Email:ramkumar2006@gmail.com,Mobile: 9600966086	University Nominee
3	**Dr. V. J. CHAKRAVARTHY, MCA, M.Phil., Ph.D,** Professor, PG Department of Computer Science, The New College (Autonomous), Chennai. Email:chakkuckm1808@gmail.com,Mobile: 9884161687	Subject Expert (Academic Council Nominee)
4	**Dr. S. MANJU PRIYA, M.Sc.,M.Phil.,Ph.D., SET,** Professor, Department of Computer Science, Karpaga Academy of Higher Education, Coimbatore. Email:smanjupr@gmail.com,Mobile: 9600553725	Subject Expert (Academic Council Nominee)
5	**Mr. C. VIMAL RAJ, B.Tech.,** Systems Architect, TCS, Chennai, Email:vimal06vishwa@gmail.com, Mobile: 9952578333	Industry Expert
6	**Mr. S. VISU , MCA., M.Phil.,** Assistant Professor, Department of Computational Studies, School of Arts and Science , SMVEC, Email: visucs@smvec.ac.in, Mobile: 9791966297	Internal member
7	**Mr. R. RAMAKRISHNAN, MCA.,M.Phil., M.Tech., (Ph.D)** Associate Professor, Dept. of MCA, SMVEC, E-mail:ramakrishnanmca@smvec.ac.in Mobile:9843797091	Internal member
8	**Dr. K. KISHORE ANTHUVAN SAHAYARAJ , M.Tech., Ph.D.,** Associate Professor, Department of Artificial Intelligence and Data Science ,SMVEC, kishore@gmail.com ,Cell: 9976777827	Internal member

Agenda of the Meeting

Item No.: BOS/2021/SAS/UG/CP/3.1 Welcome Address, Introduction about the Institution, Department and BoS Members.
Item No.: BOS/2021/SAS/UG/CP/3.2 Confirmation of minutes of the Second meeting of the Board of Studies. The Head of the Department appraised the Board regarding the Minutes of the Second Meeting of BoS.
Item No.: BOS/2021/SAS/UG/CP/3.3 To discuss and approve the improvisations in the Curriculum Structure of the Bachelor of Computer Science Programme for R-2020.
Item No.: BOS/2021/SAS/UG/CP/3.4 To discuss and approve the improvisations in the Syllabi of B.Sc Computer Science for R-2020.
Item No.: BOS/2021/SAS/UG/CP/3.5 To consider any other item with the permission of the Chair.

Minutes of the Meeting

Item No.: BOS/2021/SAS/UG/CP/3.1

Mr. M. Shanmugam, Chairman, welcomed all the external and internal members. The meeting thereafter deliberated on agenda items that had been approved by the Chairman.

Item No.: BOS/2021/SAS/UG/CP/3.2

Chairman, BoS, appraised the minutes of 2nd meeting of BoS and its implementation and then it was confirmed with the approval of BoS expertise.

Item No.: BOS/2021/SAS/UG/CP/3.3

The Curriculum was discussed and recommended to Academic Council with the following improvisations.

Sl.No.	Regulation	Semester	Couse Title with Course Code	Unit No.	Particulars
1	R 2020	II	angularJS - A20CPC202	The Complete Course	• The **angular JS(EEC)** course was newly introduced instead of **Java Programming** • Because the continuation of Web Programming can be provided to the students.
2	R 2020	III	Java Programming – A20CPC303	The Complete Course	• The **Java programming(EEC)** course was transferred from II Semester to III Semester instead of **Python Programming(EEC)** • Because the relevant theory course **Java Programming (DSC–A20CPT305)** is available in III semester.

3	R 2020	V	PYTHON - A20CPC505	The Complete Course	• The **PYTHON (EEC)** course was newly introduced instead of **ARDUINO**. • Because the relevant course Python Programming is available in V semester.
4	R 2020	I	French I – A20FRT101 / Hindi I – A20HNT101	The Complete Course	• We have newly introduced Modern Indian Language courses **French I & Hindi I** from the AY 2021-22 for the I semester. (Page 9)
5	R 2020	II	French II – A20FRT202 / Hindi II – A20HNT202	The Complete Course	• We have newly introduced Modern Indian Language courses **French II & Hindi II** from the AY 2021-22 for the II semester. (Page 10)
6	R 2020	III,IV,V & VI	-	The Complete Courses (Page 16)	• We have grouped all the discipline specific elective courses into four categories. That is 1) Networks 2) Data Science 3) Animation & Multimedia 4) Security. • At this juncture, the following courses were introduced newly: ✓ Data Mining and Warehousing-A20CPE301 ✓ Introduction to data Science using Hadoop-A20CPE302 ✓ MANET – A20CPE405 ✓ Python for Data Science – A20CPE406 ✓ Image Processing – A20CPE407 ✓ Wireless Sensor Network – A20CPE509 ✓ Animations and Game Development – A20CPE511 ✓ Cyber Security and Digital Forensics – A20CPE512 ✓ Virtual Reality and Augmented Reality – A20CPE615 ✓ Security in Wireless Sensor Network – A20CPE616

The above corrections have been made in the curriculum and the details are given in Annexure- I (Page 7-17)

Item No.: BOS/2021/SAS/UG/CP/3.4

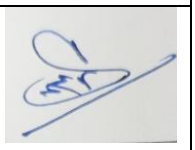
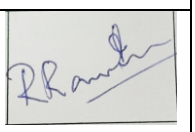
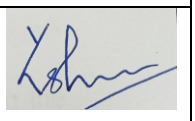
Sl.No.	Regulation	Semester	Couse Title with Course Code	Unit No.	Particulars
1	R 2020	III	Java Programming – A20CPT305	Unit 5	• The experts suggested to include the JDBC Connectivity and Database creation. (Page 19)
2	R 2020	III	Microprocessors and Assembly Language Programming – A20CPT306	Unit 5	• The experts suggested to include 8086 Functional Units and I/O Interfacing concepts. (Page 21)
3	R 2020	III	Java Programming Lab – A20CPL305	Exercises 8,9&10	• The exercise orders have been changed for the last three exercises. • Because experts suggested to study database connectivity after exception handling and packages. (Page 23)
4	R 2020	III	Microprocessor Lab – A20CPT306	Exercises 1,2,4&5	• The lists of exercises have been reduced from 16 to 11. • Because experts suggested to have 10 to 12 exercises for UG level. So we have combined the basic arithmetic operations. (Page 24)
5	R 2020	IV	Operating System – A20CPT407	Unit 5	• We have added Components of Linux System and Architecture according to the experts' wishes. (Page 25)
6	R 2020	IV	Database Management System – A20CPT408	Unit 4	• As per the experts' suggestions PL/SQL has been included along with function , Cursor and Trigger. (Page 27)
7	R 2020	IV	DMBS Lab – A20CPL408	Exercise 8	• The 8th exercise was changed with the concept of Cursor instead of Procedures as per experts' suggestions. (Page 29)

The above corrections have been made in the Syllabus and the details are given in Annexure- II . (Page 19-30)

Item No.: BOS/2021/SAS/UG/CP/3.5

Sl.No.	Regulation	Semester	Couse Title with Course Code	Unit No.	Particulars
1	R 2020	V	Python and Network Programming Lab – A20CPL509	The Complete Course	• The Expert members appreciated for the way of combining the course of Python programming with network lab. (Page 31)

The above syllabus titled on "Python and Network Programming Lab" is given Annexure lll. (Page 31)

. No.	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1	**Mr. M. SHANMUGAM, M.Sc.,M.Phil.,M.E.,SET, (Ph.D).** Associate Professor and Head, Department of Computational Studies, School of Arts and Science, SMVEC Email : shanmugam.muthalu@gmail.com Mobile : 9444370963	Chairman	
2	**Dr. R. RAMKUMAR , MCA, M.Phil, M.Tech, Ph.D.** Associate Professor and Head, School of Computer Science, VET Institute of Arts and Science, Thindal , Erode. Email:ramkumar2006@gmail.com, Mobile: 9600966086	University Nominee	
3	**Dr. V. J. CHAKRAVARTHY, MCA, M.Phil, Ph.D,** Professor, PG Department of Computer Science, The New College (Autonomous), Chennai. Email:chakkuckm1808@gmail.com Mobile: 9884161687	Subject Expert (Academic Council Nominee)	
4	**Dr. S. MANJU PRIYA, M.Sc.,M.Phil.,Ph.D., SET,** Professor, Department of Computer Science, Karpaga Academy of Higher Education, Coimbatore. Email:smanjupr@gmail.com Mobile: 9600553725	Subject Expert (Academic Council Nominee)	
5	**Mr. C. VIMAL RAJ, B.Tech.,** Systems Architect, TCS, Chennai. Email:vimal06vishwa@gmail.com Mobile: 9952578333	Industry Expert	
6	**Mr. S. VISU , MCA., M.Phil.,** Assistant Professor, Department of Computational Studies, School of Arts and Science , SMVEC. Email: visucs@smvec.ac.in Mobile: 9791966297	Internal member	
7	**Mr. R. RAMAKRISHNAN, MCA.,M.Phil., M.Tech., (Ph.D)** Associate Professor, Department of MCA, SMVEC, E-mail:ramakrishnanmca@smvec.ac.in Mobile:9843797091	Internal member	
8	**Dr. K. KISHORE ANTHUVAN SAHAYARAJ , M.Tech., Ph.D.,** Associate Professor, Department of Artificial Intelligence and Data Science, SMVEC , Email : kishore@gmail.com , Cell: 9976777827	Internal member	

The meeting was concluded at 4:00 PM with vote of thanks by **Mr. M. Shanmugam**, Head of the Department, Department of Computational Studies.

Mr. M. Shanmugam,

HOD / Dept. of Computational Studies,
Chairman-BoS (B.Sc.CS)

Dean SAS
[Dr. S. Muthulakshmi]

SCHOOL OF ARTS AND SCIENCE

Department of Computational Studies
Bachelor of Computer Science

Minutes of 3rd meeting of Board of Studies

ANNEXURE - I

Annexure I

Employability Enhancement Course for Semester-I to Semester-VI are listed below:

Semester-I => Web Programming
Semester-II => angularJS
Semester-III => Java Programming
Semester-IV => Mobile Application Development
Semester-V => PYTHON
Semester-VI => Data Science

	FRENCH - I	L	T	P	C	Hrs
A20FRT101	(Common to B.A., B.Sc., B.Com., B.B.A. & B.C.A)	**3**	**0**	**0**	**3**	**45**

OBJECTIVES

- To enable the students read, understand, and write simplesentences.
- To grasp relevant grammar forcommunication
- To learn about the land, people and culture ofFrance.

UNITÉ - 1

Je m'appelle Elise. Et Vous ?

Vous Dansez ? D'accord

Monica, Yukiko et compagnie

UNITÉ - 2

Les Voisins de Sophie

Tu vas au Luxembourg ?

UNITÉ – 3

Nous Venons pour l'inscription

A Vélo, en tain, en avoin

Pardon, monsieru,le BHV s'il vous plait ?

UNITÉ - 4

Au marche

On déjeune ici ?

UNITÉ - 5

On va chez ma copine ?

Chez Susana

TextBook

PrescribedTextbook : *FESTIVAL 1* - Méthode de Français
Authors : Sylvie POISSON-QUINTON
Michèle MAHEO-LE COADIC
Anne VERGNE-SIRIEYS
Edition : CLE International, Nouvelle Édition révisée : 2009.

Reference Book : Festival 1

	FRENCH – II	L	T	P	C	Hrs
A20FRT202	(Common to B.A., B.Sc., B.Com., B.B.A. & B.C.A)	**3**	**0**	**0**	**3**	**45**

OBJECTIVES

- To enable the students read, understand, and write simplesentences.
- To grasp relevant grammar forcommunication
- To learn about the land, people and culture ofFrance.

UNITÉ - 1

Qu'est -ce qu'on leur offre ?
On solde !
Découvrir Paris en bus avec l'open Tour

UNITÉ - 2
Si vous gagne vous ferez quoi
Parasol ou parapluie ?

UNITÉ - 3
Quand il est midi á Paris
Vous allez Vivre
L'avenir du Français

UNITÉ - 4
Souvenirs d'enfance
j'ai fait mes études á Lyon 2

UNITÉ – 5
Retour des Antilles
Au voleur ! Au voleur

TextBooks

PrescribedTextbook : *FESTIVAL 1* - Méthode de Français
Authors : Sylvie POISSON-QUINTON
Michèle MAHEO-LE COADIC
Anne VERGNE-SIRIEYS
Edition : CLE International, Nouvelle Édition révisée : 2009.

Reference Book Festival 1

Curriculum – B.Sc Computer Science

SEMESTER – I										
S. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT101/ A20HNT101/ A20FRT101	Tamil – I/ Hindi – I / French – I	MIL	3	0	0	3	25	75	100
2	A20GET101	General English – I	ENG	3	0	0	3	25	75	100
3	A20CPT101	Problem Solving using C	DSC	4	0	0	4	25	75	100
4	A20CPT102	Digital Logic and Computer Organization	DSC	4	0	0	4	25	75	100
5	A20CPD101	Computational Mathematics	IDC	3	1	0	4	25	75	100
Ability Enhancement Compulsory Course										
6	A20AET101	Environmental Studies	AECC	2	0	0	2	100	0	100
Practical										
7	A20CPL101	Programming in C Lab	DSC	0	0	4	2	50	50	100
8	A20CPL102	Digital Lab	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
9	A20CPS101	Communication Skills Lab	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
10	A20CPC101	Web Programming	EEC	0	0	4	0	100	0	100
							26	**525**	**475**	**1000**

SEMESTER – II										
S. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20TAT202/ A20HNT202/ A20FRT202	Tamil –II/ Hindi – II / French – II	MIL	3	0	0	3	25	75	100
2	A20GET202	General English-II	ENG	3	0	0	3	25	75	100
3	A20CPT203	Programming in C++	DSC	4	0	0	4	25	75	100
4	A20CPT204	Data Structures and Algorithms	DSC	4	0	0	4	25	75	100
5	A20CPD202	Discrete Mathematics	IDC	3	1	0	4	25	75	100
Ability Enhancement Compulsory Course										
6	A20AET202	Public Administration	AECC	2	0	0	2	100	0	100
Practical										
7	A20CPL203	Programming in C++ Lab	DSC	0	0	4	2	50	50	100
8	A20CPL204	Data Structures Lab	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
9	A20CPS202	Quantitative Aptitude and Logical Reasoning	SEC	0	0	4	2	100	0	100
Extension Activities										
10	A20EAL201	National Service Scheme	EA	0	0	2	1	100	0	100
Employment Enhancement Course										
11	A20CPC202	angularJS	EEC	0	0	4	0	100	0	100
							27	**625**	**475**	**1100**

SEMESTER – III										
S. No	Course Code	Course Title		Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CPT305	Java Programming	DSC	4	0	0	4	25	75	100
2	A20CPT306	Microprocessors andAssembly Language Programming	DSC	4	0	0	4	25	75	100
3	A20CPE3XX	Discipline Specific Elective – I	DSE	3	0	0	3	25	75	100
4	A20CPD303	Numerical Methods	IDC	3	1	0	4	25	75	100
5	A20XXO3XX	Open Elective – I	OE	2	0	0	2	25	75	100
Practical										
6	A20CPL305	Java Programming Lab	DSC	0	0	4	2	50	50	100
7	A20CPL306	Microprocessors Lab	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
8	A20CPS303	Office Automation Tools	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
9	A20CPC303	Java Programming	EEC	0	0	4	0	100	0	100
							23	**425**	**475**	**900**

SEMESTER – IV										
S. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	A20CPT407	Operating Systems	DSC	4	0	0	4	25	75	100
2	A20CPT408	Database Management Systems	DSC	4	0	0	4	25	75	100
3	A20CPT409	Distributed Computing	DSC	4	0	0	4	25	75	100
4	A20CPE4XX	Discipline Specific Elective- II	DSE	3	0	0	3	25	75	100
5	A20XXO4XX	Open Elective – II	OE	2	0	0	2	25	75	100
Practical										
6	A20CPL407	Operating Systems Lab	DSC	0	0	4	2	50	50	100
7	A20CPL408	DBMS Lab	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
8	A20CPS404	Android App Development	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
9	A20CPC404	Mobile Application Development	EEC	0	0	4	0	100	0	100
							23	425	475	**900**

SEMESTER – V										
S. No	**Course Code**	**Course Title**	**Category**	**Periods**			**Credits**	**Max. Marks**		
				L	**T**	**P**		**CAM**	**ESM**	**Total**
Theory										
1	A20CPT512	Python Programming	DSC	3	1	0	4	25	75	100
2	A20CPT513	Network Technologies	DSC	3	1	0	4	25	75	100
3	A20CPT514	Artificial Intelligence	DSC	3	1	0	4	25	75	100
4	A20CPE5XX	Discipline Specific Elective-III	DSE	3	0	0	3	25	75	100
Practical										
5	A20CPL509	Python and Network Programming Lab	DSC	0	0	4	2	50	50	100
6	A20CPP501	Mini Project (C#/JAVA/PYTHON)	DSC	0	0	4	2	50	50	100
Skill Enhancement Course										
7	A20CPS505	Entrepreneurial Skills	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
8	A20CPC505	PYTHON	EEC	0	0	4	0	100	0	100
							21	**400**	**400**	**800**

SEMESTER – VI										
S. No	**Course Code**	**Course Title**	**Category**	**Periods**			**Credits**	**Max. Marks**		
				L	**T**	**P**		**CAM**	**ESM**	**Total**
Theory										
1	A20CPT615	.Net Technology	DSC	3	1	0	4	25	75	100
2	A20CPT616	Software Engineering	DSC	3	1	0	4	25	75	100
3	A20CPT617	Cloud Computing	DSC	3	1	0	4	25	75	100
4	A20CPE6XX	Discipline Specific Elective-IV	DSE	3	0	0	3	25	75	100
Practical										
5	A20CPP602	Project Work & Viva-voce	DSC	0	0	10	5	40	60	100
Skill Enhancement Course										
6	A20CPS606	Research Methodology	SEC	0	0	4	2	100	0	100
Employment Enhancement Course										
7	A20CPC606	Data Science	EEC	0	0	4	0	100	0	100
							22	**340**	**360**	**700**

DISCIPLINE SPECIFIC ELECTIVE COURSES

DISCIPLINE SPECIFIC ELECTIVES										
S. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Discipline Specific Electives (DSE - I) - offered in Third Semester										
1	A20CPE301	Data Mining and Warehousing	DSE	3	0	0	3	25	75	100
2	A20CPE302	Introduction to Data Science using Hadoop	DSE	3	0	0	3	25	75	100
3	A20CPE303	Computer Graphics and Multimedia	DSE	3	0	0	3	25	75	100
4	A20CPE304	Information Security	DSE	3	0	0	3	25	75	100
Discipline Specific Electives (DSE - II) - offered in Fourth Semester										
1	A20CPE405	MANET	DSE	3	0	0	3	25	75	100
2	A20CPE406	Python for Data Science	DSE	3	0	0	3	25	75	100
3	A20CPE407	Image Processing	DSE	3	0	0	3	25	75	100
4	A20CPE408	Ethical Hacking	DSE	3	0	0	3	25	75	100
Discipline Specific Electives (DSE - III) - offered in Fifth Semester										
1	A20CPE509	Wireless Sensor Network	DSE	3	0	0	3	25	75	100
2	A20CPE510	Data Science using R	DSE	3	0	0	3	25	75	100
3	A20CPE511	Animations and Game Development	DSE	3	0	0	3	25	75	100
4	A20CPE512	Cyber Security and Digital Forensics	DSE	3	0	0	3	25	75	100
Discipline Specific Electives (DSE - IV) - offered in Sixth Semester										
1	A20CPE613	Client Server Technology	DSE	3	0	0	3	25	75	100
2	A20CPE614	Data Visualization using MATLAB	DSE	3	0	0	3	25	75	100
3	A20CPE615	Virtual Reality and Augmented Reality	DSE	3	0	0	3	25	75	100
4	A20CPE616	Security in Wireless Sensor Networks	DSE	3	0	0	3	25	75	100

OPEN ELECTIVE COURSES

COMPLETE LIST OF OPEN ELECTIVES OFFERED BY ALL THE DEPARTMENTS

Open Elective – I (Offered in Semester III)				
S. No	**Course Code**	**Course Title**	**Offering Department**	**Permitted Departments**
1	A20CPO310	Data Structures	Computational Studies	Chemistry, Commerce and Management,English, Mathematics, Media Studies, Physics, Bio Technology , Nutrition and Dietetics
2	A20CPO311	Programming in C	Computational Studies	Commerce and Management, Mathematics, Media Studies, Bio Technology , Nutrition and Dietetics
3	A20CPO312	Programming in Python	Computational Studies	Commerce and Management, Mathematics, Media Studies, Bio Technology , Nutrition and Dietetics

Open Elective – II (Offered in Semester IV)				
S. No	**Course Code**	**Course Title**	**Offering Department**	**Permitted Departments**
1	A20CPO410	Database Management Systems	Computational Studies	Commerce and Management, MediaStudies, Mathematics, Bio Technology , Nutrition and Dietetics
2	A20CPO411	Introduction to Data Science using Python	Computational Studies	Chemistry, Commerce and Management,English, Media Studies, Mathematics, Physics, Bio Technology , Nutrition and Dietetics
3	A20CPO412	Web Development	Computational Studies	Commerce and Management, MediaStudies, Mathematics, Bio Technology , Nutrition and Dietetics

SCHOOL OF ARTS AND SCIENCE

Department of Computational Studies
Bachelor of Computer Science

Minutes of 3rd meeting of Board of Studies

ANNEXURE - II

Annexure II

A20CPT305	JAVA PROGRAMMING	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives

- To gain and explore the knowledge of java programming.
- To know the principles of Inheritances, Packages and Interfaces.
- To get familiarized to generic programming, Multithreading concepts.
- To gain and explore the advanced concepts in Java.
- To explore database connectivity

Course Outcomes

After completion of the course, the students will be able to

CO1 – Write a maintainable java program for a given algorithm and implement the same.
CO2 – Demonstrate the use of inheritance, interface and package in relevant applications.
CO3 – Create java applications using exception handling, thread and generic programming.
CO4 – Build java distributed applications using Collections and IO streams.
CO5 – Exemplify simple graphical user interfaces using GUI components and database programs.

UNIT I INTRODUCTION TO JAVA PROGRAMMING (12Hrs)

The History and Evolution of Java – Byte code – Java buzzwords – Data types – Variables – Arrays – operators- Control statements – Type conversion and casting- Basic Concepts of OOPs – Concepts of classes and objects - Constructors – static keyword – Final with data – Access control – This key word – Garbage collection – Nested classes and inner classes – String class

UNIT II INHERITANCE, PACKAGES AND INTERFACES (12 Hrs)

Inheritance: Basic concepts – Forms of inheritance – Super key word – method overriding – Abstract classes – Dynamic method dispatch – The Object class. Packages: Defining – Creating and Accessing – importing packages. Interfaces: Defining – Implementing – Applying – Variables and extending interfaces

UNIT III EXCEPTION HANDLING AND MULTITHREADING (12Hrs)

Concepts of Exception handling – Types of exceptions – Creating own exception – Concepts of Multithreading – creating multiple threads – Synchronization – Inter thread communication. Enumeration: Auto boxing – Generics.

UNIT IV COLLECTIONS AND I/OSTREAM (12Hrs)

Collections: List – Vector – Stack – Queue – De queue – Set – Sorted Set. Input / Output Basics – Streams – Byte streams and Character streams – Reading and Writing Console – Reading and Writing Files.

UNIT V EVENT DRIVEN PROGRAMMING AND JDBC (12Hrs)

Events – Delegation event model – Event handling – Adapter classes. AWT: Concepts of components – Font class – Color class and Graphics - Introduction to Swing - Layout management - Swing Components - Java Database Connectivity – JDBC Connections – JDBC Create Databases - Develop real time applications.

Text Books

1. Herbert Schildt, “Java: The Complete Reference”, TMH Publishing Company Ltd,11th Edition, 2018.
2. Sagayaraj, Denis, Karthik, Gajalakshmi, “JAVA Programming for core and advanced learners”, Universities Press Private Limited, 2018.
3. Herbert Schildt, “The Complete Reference JAVA 2”, TMH, Seventh Edition, 2006.

Reference Books

1. H.M.Dietel and P.J.Dietel, “Java How to Program”, 11th Edition, PearsonEducation/PHI, 2017.
2. Nageshvarrao, “Core Java and Integrated Approach”, 1st Edition, Dreamtech, 2016.
3. Cay S. Horstmann, Gary cornell, “Core Java Volume –I Fundamentals”, Prentice Hall,9th Edition, 2013.
4. P.J. Dietel and H.M Dietel, “Java for Programmers”, Pearson Education, 9th Edition, 2011.
5. Cay.S.Horstmann and Gary Cornell, “Core Java 2”, Pearson Education, 8th Edition,2008.

Web References

1. http://www.ibm.com/developerworks/java/
2. http://docs.oracle.com/javase/tutorial/rmi/.
3. https://www.edureka.co/blog
4. https://www.geeksforgeeks.org

A20CPT306	MICROPROCESSORS AND ASSEMBLY LANGUAGE PROGRAMMING	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives

- To understand and learn the architecture and assembly language program of 8085.
- To understand and learn the architecture and assembly language program of 8086.
- To explore the interfacing the peripherals and other chips to 8085.
- To explore the architecture of 8086.
- To understand the interfacing the peripherals and other chips to 8086.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Explain the basic architecture of 8085 microprocessors.
CO2 – Articulate the knowledge of Communication based Interfacing with 8085.
CO3 – Summarize the interfacing of various program based peripherals to 8085.
CO4 – Illustrate the architecture of the 8086 microprocessors.
CO5 – Summarize the interfacing of various peripherals with 8086.

UNIT I INTEL 8085 MICROPROCESSORS (12Hrs)

Introduction – Need for Microprocessor – Evolution – 8085 Architecture – Pin diagram - Timing Diagram – Addressing Modes – Instruction Formats – Instruction Set.

UNIT II COMMUNICATION BASED INTERFACING TO 8085 (12Hrs)

Parallel Communication Interface (8255) – Serial Communication interface (8251) – D/A and A/D Interface.

UNIT III PROGRAM BASED INTERFACING TO 8085 (12Hrs)

Programmable Timer Controller (8254) – Keyboard/display controller (8279) – Programmable Interrupt Controller (8259) – DMA controller (8237).

UNIT IV INTEL 8086 MICROPROCESSORS (12Hrs)

Introduction to 8086 Microprocessor – 8086 Architecture – Pin diagram – Addressing Modes – Instruction Format – Instruction Set – Interrupts – Assembler Directives – Assembly Language Programming.

UNIT V INTERFACING 8086 MICROPROCESSORS (12Hrs)

8086 Functional Units – I/O Interfacing - D/A and A/D Interface – Stepper Motor interfacing - Serial communication standards, serial data transfer schemes, 8251 USART architecture and interfacing -

Text Books

1. Ramesh S. Gaonkar, “Microprocessor - Architecture, Programming and Applications with 8085”, Penram International Publications, Sixth Edition, 2013.
2. Krishna Kant, “Microprocessors and Microcontrollers – Architectures, Programming and system Design 8085, 8086, 8051, 8096”, PHI, 2014.
3. Yu-Cheng Liu, Glenn A.Gibson, “Microcomputer Systems: The 8086 / 8088 Family Architecture, Programming and Design”, Prentice Hall of India, Second Edition, 2015.

Reference Books

1. Doughlas V.Hall, “Microprocessors and Interfacing, Programming and Hardware”, TMH2012.
2. A.K. Mukhopadhyay, "Textbook on Microprocessor-based Laboratory Experiments and Projects", I.K.International Pulications, ISBN: 9789380578040, 3rd Edition, 2010.
3. A.P.Godse, D.A.Godse, “Microprocessors and Microcontrollers system”, Technical Publications, Pune, 2nd Edition, 2015.

Web References

1. https://swayam.gov.in/nd1_noc20_ee42/microprocessors-and-microcontrollers/
2. https://www.classcentral.com/course/swayam
3. https://freevideolectures.com/course/3018/microprocessors
4. https://www.arduino.cc/

A20CPL305	JAVA PROGRAMMING LAB	L	T	P	C	Hrs
		0	0	4	2	30

Course Objectives

- To acquire programming skill in core java.
- To learn how to design java program and applications.
- To acquire object oriented skills in java.
- To develop the skill of designing applications.
- To explore database connectivity.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Apply and practice logical formulations to solve simple problems leading to specific applications.
CO2 – Demonstrate the use of inheritance, interface and package in relevant applications.
CO3 – Create java applications using exception handling multithread.
CO4 – Build java distributed applications using Collections and IO streams**.**
CO5 – Develop simple database programs.

List of Exercises

1. Develop simple programs using java technologies and testing tools.
2. Develop a java program that implements class and object.
3. Write a java program to demonstrate inheritance.
4. Develop a simple program to illustrate the use of Multithreads.
5. Implement simple applications using Collections.
6. Create java applications using Exception Handling for error handling.
7. Develop a java program that implements the Packages.
8. Develop a simple application and use JDBC to connect to a back-end database.
9. Create a student application with Add, Edit, Delete, Show functions using JDBC.
10. Create a Bill Application to store sales details using JDBC.

Reference Books

1. Sagayaraj, Denis, Karthik, Gajalakshmi, “JAVA Programming for core and advanced learners”, Universities Press Private Limited, 2018.
2. Paul Deitel Harvey Deitel**, “**JAVA How to program (Early Objects)”,19th Edition, 2011
3. Cay.S.Horstmann and Gary Cornell, “Core Java 2”, Vol 2, Advanced Features, Pearson Education, Seventh Edition, 2010.
4. HerbertSchildt, “The Complete Reference JAVA 2”, TMH, Seventh Edition, 2006.
5. E. Balaguruswamy, “Programming with Java”, TMH, 2nd Edition, 2005.

Web References

1. http://www.ibm.com/developerworks/java/
2. http://docs.oracle.com/javase/tutorial/rmi/.
3. IBM’s tutorials on Swings, AWT controls andJDBC.
4. https://www.edureka.co/blog
5. https://www.geeksforgeeks.org

A20CPL306	MICROPROCESSORS LAB	L	T	P	C	Hrs
		0	0	4	2	30

Course Objectives

- To write assembly language programs using 8085 trainer kit.
- To be familiar with the interfacing 8085 with various devices.
- To be familiar with MASM-8086.
- To write basic assembly language programs using 8051 trainer kit.
- To be familiar with the interfacing 8086 with various devices.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Demonstrate simple programs with 8085.
CO2 – Implement the interfacing with 8085.
CO3 – Implement assembly language program using 8086 MASM.
CO4 – Execute the interfacing with 8086.

List of Exercises

1. 8 bit Addition & Subtraction using 8085.
2. 8 bit Multiplication & Division using 8085.
3. Searching operation using 8085.
4. 16 bit Addition & Subtraction using 8085.
5. 16 bit Multiplication & Division using 8085.
6. Code conversions using 8085.
7. DAC and ADC interfacing using 8085.
8. 16 bit addition and subtraction using 8086.
9. 16 bit multiplication and division using 8086.
10. Interfacing stepper motor with 8086.
11. Interfacing ADC and DAC with 8086.

Reference Books

1. Krishna Kant, “Microprocessors and Microcontrollers – Architectures, Programming and System Design 8085, 8086, 8051, 8096”, PHI, 2014.
2. Ramesh S.Gaonkar, “Microprocessor Architecture, Programming and Applications with the 8085”, Penram International publishing, 2013.
3. A.K. Ray, K.M. Bhurchandi, “Advanced Microprocessor and Peripherals”, Tata McGraw-hill, Second edition, 2010.

Web References

1. https://nptel.ac.in/courses/108/103/108103157/
2. https://www.geeksforgeeks.org/microprocessor-tutorials/
3. https://swayam.gov.in/nd1_noc20_ee42/microprocessors-and-microcontrollers/
4. https://www.classcentral.com/course/swayam
5. https://freevideolectures.com/course/3018/microprocessors

A20CPT407	OPERATING SYSTEMS	L	T	P	C	Hrs
		4	0	0	4	60

Course Objectives

- To grasp a fundamental understanding of Operating Systems and processes.
- To learn the concepts of CPU scheduling and deadlock.
- To understand synchronization and memory management concepts in Operating System.
- Understand the concepts of file systems and secondary storage structure.
- To learn the features of commercial Operating Systems.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Define the concepts of operating systems operations, processes and threads.
CO2 – Apply the concepts of CPU scheduling and deadlock techniques.
CO3 – Simulate the principles of memory management.
CO4 – Identify appropriate file system and disk organizations for a variety of computing scenario.
CO5 – Examine the features of I/O based Linux Operating System.

UNIT I INTRODUCTION AND PROCESS MANAGEMENT (12Hrs)

Operating system structure – Operating system operations – Process management – Memory management – Storage management – Protection and Security – System structures: Operating system services – System calls – Types of system calls – System programs. Process scheduling – Operations on processes – Inter-process communication.

UNIT II CPU SCHEDULING AND DEADLOCK (12Hrs)

Overview of threads – Multithreading models – Threading issues – Basic concepts of process scheduling – Scheduling criteria – Scheduling algorithms – Multiple processor scheduling, Dead Lock: Characterization – Prevention Detection – Avoidance and Recovery.

UNIT III CONCURRENT PROCESSES AND MEMORY MANAGEMENT (12Hrs)

Process synchronization: The Critical Section Problem – Peterson's solution – Synchronization Hardware – Semaphores – Classic problems of Synchronization – Monitors. Memory Management: Swapping – Contiguous memory allocation – Paging – Structure of the Page Table – Segmentation, Demand Paging – Page Replacement – Allocation of Frames – Thrashing.

UNIT IV FILE SYSTEMS AND SECONDARY STORAGE STRUCTURE (12Hrs)

File Concept – Access Methods – Directory structure – File system mounting – File sharing – Protection – File system structure – File system implementation – Directory Implementation – Allocation methods – Free-space management. Disk structure – Disk Scheduling – Disk Management – Swap-Space management.

UNIT V I/O BASED LINUX (12Hrs)

LINUX System: Basic Concepts – Components of Linux System – Architecture – System administration – Requirements for Linux System Administrator – Setting up a LINUX multifunction server – Domain Name System – Setting up local network services.

Text Books

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Concepts”, John Wiley & Sons Ninth Edition, 2017.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Prentice Hall of India, 3rd Edition, 2015.
3. Gary Nutt, “Operating Systems – A Modern Perspective”, Pearson Education, Second Edition, 2013.

Reference Books

1. William Stallings, “Operating System”, Prentice Hall of India, 6th Edition, 2015.
2. Thomas Anderson and Michael Dahlin, “Operating Systems principles and practice”, Wiley, 2nd Edition, 2014.
3. Harvey M. Deitel, “Operating Systems”, Pearson Education, Third Edition, 2013.
4. Silberschatz, Galvin, “Operating System Concepts”, Wiley, Student Edition, 2006.
5. William Stallings, “Operating System: Internals and design Principles”, New Edition (7), Pearson Education India.

Web References

1. https://nptel.ac.in/courses/106108101/
2. http://www.tcyonline.com/tests/operating-system-concepts
3. http://www.galvin.info/history-of-operating-system-concepts-textbook
4. https://www.cse.iitb.ac.in/~mythili/teaching/cs347_autumn2016/index.html
5. https://www.cse.iitk.ac.in/pages/CS330.html

		L	T	P	C	Hrs
A20CPT408	**DATABASE MANAGEMENT SYSTEMS**	**4**	**0**	**0**	**4**	**60**

Course Objectives

- To learn about Database Structure and Data Models.
- To study SQL Commands for storing and retrieving data into the database.
- To study the Relational database system design
- To understand the concept of Transactions
- To understand the concept of Concurrency Control and Recovery System

Course Outcomes

After completion of the course, the students will be able to

CO1 – Design conceptual data model using Entity Relationship Diagram.

CO2 – Design conceptual and logical database models for an application.

CO3 – Normalize relational database design of an application.

CO4 – Explain the need for Indexing, Hashing in database**.**

CO5 – Understand the strategies for Transactions and Management.

UNIT I INTRODUCTION (12Hrs)

Database System Application – Purpose of Database Systems – View of Data – Database Languages – Relational Database – Database Design – System Structure – Database Architecture. Database Design and E-R Model: Overview of the Design Process – The E-R Model – Constraints – E-R Diagrams- E-R Design Issues – Extended E-R features – Reduction to Relational Schemas – Other aspects of Database Design.

UNIT II RELATIONAL MODEL (12Hrs)

Structure of Relational Database – Fundamental Relational Algebra Operations – Extended Relational Algebra Operations – Modification of the Database. Structured Query Language: Introduction – Basic Structure of SQL Queries – Set Operations – Additional Basic Operations – Aggregate Functions – Null Values – Nested Sub queries – Views – Join Expression.

UNIT III RELATIONAL DATABASE DESIGN (12Hrs)

Features of Good Relational Designs – 1NF – 2NF – 3NF and 4NF with Examples. Atomic Domains and first Normal form – Decomposition using Functional Dependencies – Functional Dependency Theory – Algorithm for Decomposition – Decomposition using Multivalued Dependencies.

UNIT IV INDEXING , HASHING & PL/SQL (12Hrs)

Basic Concepts – Ordered Indices – B+ Tree Index Files – B-Tree Files – Multiples – Key Access – Static Hashing – Dynamic Hashing – PL/SQL – Basic programs – Functions Cursor- Trigger

UNIT V TRANSACTION MANAGEMENT (12Hrs)

Transaction Management: Transaction concept – Storage Structure – Transaction Atomicity and Durability – Transaction Isolation and Atomicity – Serializability – Recoverability – Transaction Isolation Levels – Implementation of Isolation Levels.

Text Books

1. Abraham Silberschatz, Henry F Korth, S Sudharshan, “Database System Concepts”, McGraw-Hill, 7th Edition, 2019.
2. RamezElmasri and ShamkantNavathe, Durvasula V L N Somayajulu, Shyam K Gupta, “Fundamentals of Database Systems”, Pearson Education, 2018.
3. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom, “Database Systems The Complete Book” Prentice Hall, 2nd Edition, 2014.

Reference Books

1. Raghu Ramakrishna, Johannes Gehrke, “Database Management Systems”, McGraw Hill, 3rdEdition,2014.
2. G.K.Gupta,"Database Management Systems”, Tata McGraw Hill, 2011.
3. Date CJ, Kannan A, Swamynathan S, “An Introduction to Database System”, Pearson Education, 8thEdition,2006.
4. Paul Beynon-Davies, “Database Systems”, Palgrave Macmillan, 3rdEdition, 2003.
5. Mukesh Chandra Negi, “Fundamentals of Database Management Systems”, BPB Publications, 2019.

Web References

1. https://docs.oracle.com/cd/E11882_01/server.112/e41084/toc.htm MySQL Online Documentation
2. http://dev.mysql.com/doc/
3. http://www.rjspm.com/PDF/BCA-428%20Oracle.pdf
4. https://nptel.ac.in/courses/106/106/106106095/
5. https://www.tutorialspoint.com/dbms/index.htm

A20CPL408	DBMS LAB	L	T	P	C	Hrs
		0	0	4	2	30

Course Objectives

- To learn and understand DDL & DML
- To learn and understand DCL.
- To implement Basic SQL commands.
- To execute PL/SQL programs.
- To develop GUI applications in any platform.

Course Outcomes

After completion of the course, the students will be able to

CO1 – Implement the DDL and DML commands.
CO2 – Implement the DCL commands.
CO3 – Analyze the PL/SQL programs.
CO4 – Understand the PL/SQL programs.
CO5 – Develop GUI applications in their known platform.

List of Exercises

1. Create Table using Data Definition Language (DDL).
2. Modify Table using Data Manipulation Language (DML).
3. Store and Retrieve data through Data Control Language (DCL).
4. Implement Constraints and Built-in functions in various tables.
5. Perform Joins and Group-by functions.
6. Implement Simple Programs in PL/SQL.
7. Create PL/SQL programs using functions.
8. Create PL/SQL programs using Cursor.
9. Create PL/SQL programs using triggers.
10. Developing GUI applications.

    - Student Information System.
    - Inventory Management.
    - Payroll Processing.

Reference Books

1. Ramez Elmasri, Durvasul VLN Somyazulu, Shamkant B Navathe, Shyam K Gupta, Fundamentals of Database Systems, Pearson Education, 7th Edition, 2016.
2. Raghu Ramakrishna, Johannes Gehrke, Database Management Systems, McGraw Hill,3rd Edition, 2014.
3. Abraham Silberschatz, Henry F Korth, S Sudharshan, Database System Concepts", McGraw-Hill Indian Edition, 7th Edition, 2013.
4. Kuhn,"RMAN Recipes for Oracle Database", Apress, 2nd Edition,2013.
5. Date CJ, Kannan A, Swamynathan S, An Introduction to Database System, Pearson Education, 8th Edition, 2006.

Web References

1. https://docs.oracle.com/cd/E11882_01/server.112/e41084/toc.htm MySQL Online Documentation
2. http://dev.mysql.com/doc/
3. http://www.rjspm.com/PDF/BCA-428%20Oracle.pdf

SCHOOL OF ARTS AND SCIENCE

Department of Computational Studies
Bachelor of Computer Science

Minutes of 3rd meeting of Board of Studies

ANNEXURE - III

Annexure III

		L	T	P	C	Hrs
A20CPL509	**PYTHON AND NETWORK PROGRAMMING LAB**					
	(Common to B.Sc CS , BCA)	**0**	**0**	**4**	**2**	**30**

Course Objectives

- To practice the fundamental programming methodologies in the Python programming language.
- Toapplylogicalskillsforproblemsolvingusingcontrolstructuresandarrays.
- Toimplement,testanddebugprogramsthatusedifferentdatatypes,variables,strings,arrays,pointersandstructures.
- To design basic networking styles and provides recursive solution to problems.
- To understand the miscellaneous aspects of networking.

Course Outcomes

After completion of the course ,the students will be able to

CO1 – Apply and practice logical formulations to solve simple problems leading to specific applications.

CO2 – Develop python programs for simple applications making use of basic constructs, arrays and strings.

CO3 – Develop the networking programs using IP.

CO4 – Design the module for Client and Server.

CO5 – Construct the network specializations.

List of Exercises

1. Finding Area of a Triangle, Rectangle and Square.
2. Checking whether a given number is Prime or not.
3. Implementation of User defined functions.
4. Various operations on List and Tuples.
5. Various operations on string and dictionary.
6. Various types of inheritance using python..
7. Detect Network Changes Automatically.
8. Log Management with Python and Network Monitoring with Cacti.
9. NetFlow and sFlow Based Monitoring.
10. Alerting and Email Notification.
11. Testing DHCP Server and Client.
12. Test Network Speed with Python.

Reference Books

1. Stallings, W., “Data and Computer Communications”, 10th Ed., Prentice Hall Int. Ed., 2013.
2. John V Guttag, “Introduction to Computation and Programming Using Python’’, MIT Press, Revised and expanded Edition, 2013.

Web References

1. https://pythonprogramming.net/introduction-learn-python-3-tutorials/
2. ttps://www2.mvcc.edu/users/faculty/jfiore/CP/labs/LaboratoryManualForComputerProgramming.pdf
3. https://www.codecademy.com/learn/learn-python
4. https://www.geeksforgeeks.org/last-minute-notes-computer-network/
5. https://lecturenotes.in