DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

CIRCULAR NO.SU/ Faculty of Science & Technology./B.VOC./ 38 /2022.

It is hereby informed to all concerned that, on the recommendation of Ad-hoc Board in Vocational Studies and Dean, Faculty of Science & Technology the Hon'ble Vice-Chancellor has **accepted the curriculum of following B.Voc. Courses under Choice Based Credit and Grading System in** his emergency powers under Section-12 [7] of the Maharashtra Public Universities Act, 2016 on behalf of the Academic Council as appended herewith:

Sr.No.	Course Name	Semester
1.	B.Voc in Medical Laboratory Technology	III & IV
2.	B.Voc in Software Development	III & IV

This is effective from the **Academic Year 2020-21 and 2021-22** and onwards. This curriculum is also available on the University website www.bamu.ac.in.

All concerned are requested to note the contents of the circular and bring notice to the students, teachers and staff for their information and necessary action.

University campus,
Aurangabad-431 004.
Ref. No.SU/B.voc./Curri./2021-22/14079-89

Date: 31.10.2022

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Deputy Registrar,
Academic [Syllabus]
Section.

Copy forwarded with compliments to :-

1] **The Principal All Affiliated Concerned Colleges, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.**
2] **The Director,** University Network & Information Centre, UNIC, with **a request to upload the curriculum along with this Circular on University Website.**

Copy to :-

1] The Director, Board of Examinations & Evaluation, Dr.BAMU, A'bad
2] The Concerned Section, Examination Branch,
3] The Section Officer, [Eligibility Unit],
4] The Programmer [Computer Unit-1] Examinations, section, Dr. BAMU, A'bad
5] The Programmer [Computer Unit-2] Examinations, section, Dr. BAMU, A'bad
6] The In-charge, [E- Suvidha Kendra],
7] The B.Voc Section, Dr. BAMU, A'bad
8] The Public Relation Officer,
9] The Record Keeper,

SSR/31102021/-

MARATHWADA UNIVERSITY
AURANGABAD

SYLLABUS OF
BACHELOR OF VOCATIONAL

IN

B.Voc in Software Development

Sem-III & IV

Choice Based Credit System

Effective form the Academic Year

2020- 21 Onwards

कृष्णाई शिक्षण प्रसारक मंडळ, लातूर संचलित,

जनविकास महाविद्यालय, बनसारोळा

ता. केज, जि. बीड - ४३१५१८ (महाराष्ट्र)
दूरध्वनी (०२४४५) २३७२४९, फॅक्स : ०२४४५ - २३७२४९
संलग्न : डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद
Email : principaljanvikas@rediffmail.com

सौ. आर.ए. तट	डॉ.बी.एम. गोरे	डॉ. बाबासाहेब गोरे
अध्यक्ष	सचिव	प्राचार्य

जा.क्र. : जमब/अभ्यासक्रम/२०२२-२३/८८५ दि.०५/०९/२०२२ 07/10/2022

प्रति,

मा. उपकुलसचिव,
शैक्षणिक विभाग (बी.व्होक.),
डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ,
औरंगाबाद.

डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ शैक्षणिक विभाग 2031 7/10/2022 औरंगाबाद

विषय:- बी.व्होक. द्वितीय वर्ष (तिसरे व चौथे सत्र) पदवी कोर्सचा अभ्यासक्रम प्रमाणित करुन मिळणे बाबत.

संदर्भ:- १) UGC आदेश क्र. F.No.4-1/2020(NSQF) September, 2020.
२) शैक्ष/संलग्न/वायपीएस/२०२०-२१/३१४७२-८० दि.२४.०५.२०२१.

महोदय,

वरील संदर्भिय पत्रान्वये आमच्या महाविद्यालयात संदर्भ क्र. १ नुसार विद्यापीठ अनुदान आयोगाने बी.व्होक. च्या **(1) Media & Entertainment (2) Medical Laboratory Technology (3) E-Commerce & Digital Marketing (4) Software Development** या चार कोर्सला मान्यता दिली. त्यानुसार शैक्षणिक वर्ष २०२०-२१ मध्ये सदरील पदवी कोर्सच्या प्रथम वर्ष अभ्यासक्रमास मान्यता मिळाली असून शै.वर्ष २०२१-२२ करीता **द्वितीय वर्ष (तिसरे व चौथे सत्र)** पध्दतीचा अभ्यासक्रम विद्यापीठाच्या विहीत फॉरमॅट मध्ये तयार करुन मान्यतेसाठी सादर करत आहोत.

तरी सदरील द्वितीय व तृतीय वर्षाचा अभ्यासक्रम प्रमाणित करुन पुढील कार्यवाही व्हावी ही नम्र विनंती.

आपला विश्वासू

प्राचार्य
जनविकास महाविद्यालय
बनसारोळा, ता. केज, जि. बीड

सोबत :

१) अभ्यासक्रम आराखडा द्वितीय व तृतीय वर्ष (४ कोर्स)
२) अभ्यासक्रम आराखडा सॉफ्ट कॉपी (सी.डी.)

Dr.BabasahebAmbedkarMarathwada University,

Aurangabad (MS)

Syllabusof

B.Voc.

Software Development

(SecondYear)(3yearsDegreeCourse)

IntroducedfromAcademic Year2021-22

7/10/22

Dean
Faculty of Science & Technology
Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad

Dr.BabasahebAmbedkarMarathwada University, Aurangabad

Program Structure For

B.Voc. In Software Development

B.Voc. S.Y. (Semester III+ Semester IV)

B.Voc. S.Y. : Semester III

Subject Code		Title of the subject	Contact Hours Per Week		Evaluation Scheme (Marks)		Total Credit
			Lecture	Practical	CIA	SEE	
General Education Components	BVOC.301	Software Project Management	4	0	20	80	4
	BVOC.302	Internet of Things	4	0	20	80	4
	BVOC.303	Computer Network	4	0	20	80	4
Skill Component	BVOC.304	Object Oriented Programming	4	0	20	80	4
	BVOC.305	DBMS	4	0	20	80	4
	BVOC.306	Web Designing Fundamentals	4	0	20	80	4
Lab	BVOC.307	LAB 1: C++ Programming	0	4	25	25	2
	BVOC.308	LAB 2: DBMS	0	4	25	25	2
	BVOC.309	LAB 3: Web Designing Fundamentals	0	4	25	25	2
					195	555	30

7/10/22

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University, Aurangabad

B.Voc. S.Y. : Semester IV

Subject Code		Title of the subject	Contact Hours Per Week		Evaluation Scheme (Marks)		Total Credit
			Lecture	Practical	CIA	SEE	
General Education Components	BVOC.401	Digital Marketing	4	0	20	80	4
	BVOC.402	Cloud Computing	4	0	20	80	4
	BVOC.403	Cyber Security	4	0	20	80	4
Skill Component	BVOC.404	Java Programming	4	0	20	80	4
	BVOC.405	RDBMS	4	0	20	80	4
	BVOC.406	Introduction to Data Structure	4	0	20	80	4
Lab	BVOC.407	LAB 1: Java Programming	0	4	25	25	2
	BVOC.408	LAB 2: RDBMS	0	4	25	25	2
	BVOC.409	LAB 3: Data structure	0	4	25	25	2
					195	**555**	**30**

7/10/22

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Faculty of Science & Technology
Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

B VOC.301 Software Project Management

Credit : 04 **Marks** : 100 (60 Hours)

Objective:

1. To acquire knowledge on software process management
2. To acquire managerial skills for software project development.
3. To understand software economics

Outcome :

1. Analyse software process maturity, its framework and the reference models .
2. Understand the Capability Maturity Model and learn about conventional software management.
3. Understand how to manage software projects and project planning.
4. Analyse project tracking and control.
5. Understand the role of project closure analysis.

UNITI : IntroductiontoSoftwareEngineering **(15 Hours)**

1) IntroductiontoSoftware.
2) Natureofsoftware –DefiningSoftware,SoftwareApplication Domain,LegacySoftware
3) TheEvolvingRole ofSoftware
4) TheSoftwareMyths
5) SoftwareProcess

UNIT II : SoftwareProcessStructure **(15 Hours)**

1) AGenericProcessModel
2) DefiningaFrameworkActivity
3) IdentifyingaTask Set
4) ProcessPatterns
5) ProcessAssessmentandImprovement

UNIT III : ProcessModels **(15 Hours)**

1) WaterfallModel
2) SpecializedProcessmodel-Componentbaseddevelopment, The formal method model , Aspect-Oriented SoftwareDevelopment
3) EvolutionaryProcessModel
4) PrototypeModel

UNIT IV :Process Management, Models &ProcessMetrics (15 Hours)

1) TheDefinedProcess
2) TheManagedProcess
3) TheOptimizingProcess
4) Process Reference Models Capability Maturity Model(CMM), CMMI, PCMM, PSP, TSP.
5) Processmetrics
6) Softwareprocessmanagement
7) SoftwareMeasurements–Sizeorientedmetrics
8) FunctionOriented
9) FPMetrics
10) Metricsforsoftwarequality-Measuringquality
11) Defectremovalefficiency

Referencebook:-

1. SoftwareEngineering – APractitioner'sapproach,SixthEdition,RogerS.Pressman,McGraw-HillHigherEducation;(1 August2007),ISBN-10:0077227808
2. Software Engineering –A Practitioner's approach, Fifth Edition,Roger S. Pressman,McGraw-HillHigherEducation; (1 August2005)
3. SoftwareEngineering7th/8th Edition,IANSommervillePearsonEdition
4. Watts S. Humphrey, An Introduction to the Team Software Process, 1st Edition, Addison-WesleyInternationalPublications,2000

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

B VOC.302 Internet of Things

Credit : 04 **Marks** : 100 (60 Hours)

Objective:

1. To acquire knowledge on Internet.
2. To acquire managerial skills for Internet.
3. To understand Internet.

Outcome :

1. Analyse Internetmaturity, its framework and the reference models .
2. Understand the Capability Maturity Model and learn about conventional Internet.
3. Understand how to manage Internet.

Unit – I **(15 Hours)**

M2M to IoT: The Vision- Introduction, From M2M to IoT,M2M towards IoT: the global context, A use case example,Differing characteristics.A Market Perspective – Introduction, Definition, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies, M2M to IoT. An architectural overview: Building an architecture, Main design principles and needed capabilities, An IoT architecture outline.

Unit- II **(15 Hours)**

M2M and IoT Technology Fundamentals: Devices and gateways, Local and wide area networking, Data Management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management.

Unit – III **(15 Hours)**

IoT Architecture: State of the Art, Introduction, State of the art, Architecture Reference Model – Introduction, Reference model and architecture,IoT reference model. Reference Architecture: Introduction, Functional view, Information view, Deployment and Operational View, Other relevant architectural view. Real- Word Design Constraints – Introduction, Technical design constraints- hardware is popular again, Data representation and visualization, Interaction and remote control.

Unit – IV **(15 Hours)**

Industrial Automation : Service – Oriented architecture- based device integration, SOCRADES: realizing the enterprise integrated Web of Things, IMC-AESOP : from the Web of Things to the Cloud of Things, Commercial Building Automation: Introduction, Case study : phase one – commercial building automation today, Case study : phase two - Commercial building

Referencebook:-

1. DataCommunicationandNetworkingbyBehrouzForouzan,TATAMcGrawHill.
2. Software Engineering –A Practitioner's approach, Fifth Edition, Roger S. Pressman,McGraw-HillHigherEducation; (1 August2005)

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

B VOC.3.03 Computer Network

Credit : 04 **Marks** : 100 (60 Hours)

Courseobjective:-

- Introductionfundamentalconceptsofcomputernetworking.
- Introducestudentswithvariousconceptsusedinnetwork
- Introducevarioustechnologiesandstandards
- Allowthestudenttogainexpertiseinareasofnetworking

Course outcome:-

- Aftercompletingthiscoursethestudentgettheknowledgeandabilityto:
- Understandbasiccomputernetworktechnology.
- Studentscanidentifythedifferenttypesofnetworktopologiesandprotocols.
- StudentscanIdentify thedifferenttypesofnetworkstandards

UNIT I :- Introduction to Computer Networks **(15 Hours)**

- Definition&ApplicationsofComputerNetwork
- BasicConceptsSignals,Types–AnalogandDigitalSignals
- Networktopologies-star,bus,mesh,ring
- DataTransmissionMedia
- NetworkTypesLAN,MAN,WAN
- ConnectionOriented&Connectionlessservices
-

Unit II : Network Models &Services **(15 Hours)**

- ProtocolHierarchies
- Designissuesforlayers
- ConnectionOriented&Connectionlessservices
- ServicePrimitives-listen,connect,receive,send,disconnect
- NetworkModels–OSI/ISOReferenceModel&TCP/IPModel

UNIT III: - Network Architecture, Hardware & Multiplexing and Switching(15 Hours)

- Protocolstackdesignissuesofthelayers-addressing,errorcontrol,flowcontrol,multiplexingand demultiplexing
- Routing
- NetworkDevices-NICCards,Hub,Switch,Bridges,Gateways,RepeatersRouter.
- Concept ofmodulationandtheir application
- Multiplexing–TimedivisionandFrequencydivision
- Switching-CircuitSwitching,PacketSwitching,MessageSwitching
- TransmissionModes-ParallelTransmission,SerialTransmission–AsynchrounousandSynchrouous

UNIT IV: - . Network Standards and Network protocols&Internet (15 Hours)

- NetworkStandards–Ethernet,FastEthernet,GigabyteEthernet,10Base5,10Base2,10BaseT, 10Base-F
- NetworkProtocols-IPprotocol,SMTP,PPP,FTP,HTTP,SNMP
- IP-addresses,slidingwindowprotocols,Pipelining.
- InternetversesIntranet
- InternetServiceProviders
- E-mail–ArchitectureandServicesWWW-ClientsideandServerside
- ISDNArchitecture,PBX,FDDI.

Reference Books:

1) AndrewS.Tannenbaum,"ComputerNetworks",(ThirdEdition),Prentice-HallofIndiaPvt.Ltd, New Delhi

2) DataCommunicationandNetworkingbyBehrouzForouzan,TATAMcGrawHill.

3) GerdE.Keiser",LocalAreaNetworks",TataMcGrawHillEdition,NewDelhi.

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

B VOC.3.04 Object Oriented Programming

Credit : 04 **Marks** : 100 (60 Hours)

Courseobjective:-

- TounderstandhowC++improvesCwithobject-orientedfeatures.
- TolearnthesyntaxandsemanticsoftheC++programminglanguage.
- Applytheconceptsofobject-orientedprogramming
- TolearnhowtodefineclassesusinginheritancetopromotecodereuseinC++.
- IllustratetheprocessofdatafilemanipulationsusingC++
- Learnsyntax,featuresofStandardTemplateLibraryandhowtoutilizeit.

Course outcome :-

- Ability to explain the difference between object oriented programming and procedural programming concepts.
- Ability to program using object oriented features such as inheritance and polymorphism, , operator overloading, dynamic memory allocation, file I/O, exception handling, etc
- Ability to apply object oriented techniques to solve computing problems.

Unit–I **(15 Hours)**

IntroductiontobasicconceptsofOOPsObjectOrientedProgrammingParadigm,Basicconceptso fOOP's,BenefitsandApplicationsofOOP,StructureofC++program.AsimpleC++Program.

Unit – II (15 Hours)

Tokens, Expressions and Control Structures Tokens, Keywords , Identifiers, and Constants , Data-types , Reference variable, Operators in C++, , Manipulators , Type Cast operator, Operator precedence , Control Structures. Function, function prototyping, call by reference, return by reference, Inline function, Default Argument, function overloading

Unit – III

(15 Hours)

Class and object Specifying a class and object, Defining Member Functions, Nesting of member function, Memory allocation for objects, Static data member, static Member function, Friend function, Returning objects, Constructors and Destructors Constructors, parameterized constructors, Constructors with default arguments, Dynamic initialization of objects, Copy Constructor, Destructors

Unit – IV (15 Hours)

Inheritance, Operator Overloading and polymorphism Defining Derived classes, Types of inheritance, Virtual base class, Abstract class, Defining Operator overloading , Overloading Unary and binary operators , Pointer to object, This pointer , Pointer to Derived classes , Virtual function , Pure virtual function, Console and File I/O operations C++ stream classes , formatted and unformatted console I/O operations, C++ classes for file stream operations, for file I/O, Opening and closing file, sequential and random access, Error handling during a file operation, command line arguments, class Templates, function templates, introduction to STL.

ReferenceBooks:-

2) TheC++CompleteReference-TMHPublication

3) Object-OrientedProgrammingwithC++-E-Balgurusamy

4) LetusC++-Yashwantkanetkar

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

B VOC.3.05 DBMS

Credit : 04 **Marks** : 100 (60 Hours)

Objective: Tohavebasicunderstandingofdatabasemanagementsystemcomponents

Outcome:students will be able to think of ER modelling and creation of own databaseschema

UNIT 1 - DBMSConcepts (15 Hours)

1.1 WhatisDatabase?
1.2 DatabaseManagementSystem(DBMS)
1.3 ArchitectureofDBMS–Threelevel
1.4 StructureofDBMS
1.5 Entity,Attributes,typeofrelationships,
1.6 DBMSusers
1.7 DBMSFacilities
1.8 AdvantagesandDisadvantagesofDBMS
1.9 DataModels
1.10 Database Languages(DDL, DML,DCL,DQL,TCL)

UNIT II - DatabaseSystemarchitectures (15 Hours)

1.11 Centralized&ClientServerArchitectures
  a. CentralizedSystems
  b. Client-ServerSystems
1.12 ServerSystemArchitectures
  a. TransactionServer
  b. DataServer
1.13 ParallelSystems
  a. Speedup&Scaleup
  b. ParallelDatabaseArchitectures
    i. Shared Memory
    ii. SharedDisk
    iii. SharedNothing
    iv. Hierarchical
1.14 DistributedSystems
  a. AnExampleofDistributedDatabase
  b.

UNIT III - Database Design & the ER Model (15 Hours)

1.1 OverviewoftheDesign Process
   a. DesignPhases
1.2 TheEntity-RelationshipModel
   a. EntitySets
   b. RelationshipSets
   c. Attributes
1.3 Constraints
   a. MappingCardinalities
   b. Keys
      i. EntitySets
      ii. RelationshipSets
      iii. ParticipationConstraints
1.4 EntityRelationshipDiagrams

UNIT IV :IntroductiontoSQLBackground (15 Hours)

4.1 BasicDatatypes in SQL
4.2 TypesofSQLCommands(DDL,DML,DCL,DQL,TCL)
4.3 BasicStructureofSQLQueries
4.4 TableCreation,Datainsertion,DataUpdating,DataSelection
4.5 ChangingTableStructure,
4.6 WHEREClause,DISTINCTClause,UsingColumnAliases
4.7 WorkingwithViews
   a. CreatingViewonTables
   b. CreatingViewonViews
   c. UpdatingViews
   d. AlteringViews
4.8 SQLFunctions
   a. Single Row Functions (Character Functions, Case Manipulation, CharacterManipulationNumberFunctions,DateFunctions,ConversionFunctions)
   b. MultipleRowFunctions

ReferenceBooks

1. An IntroductiontoDatabaseSystems ByBipinCDesai(GalgotiaPubclication)
2. DatabaseSystemConceptsByAbrahamSilberschatz,HenryFKorth,S.Sudarshan(McGRAW Hill Publication)
3. SQL,PL/SQLtheProgrammingLanguageofOraclebyIvanBayross

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

B VOC.3.06 Web Designing Fundamentals

Credit : 04 **Marks** : 100 (60 Hours)

Course Objectives:

1.High lighting the theories and principles underlying fundamental website design.
2. By the end of the course the student will be familiarized with the design of the Web page and create an interactive and dynamic web page using CMS

Outcome:

1. Understand the concept of design
2. Knowledge of Photoshop

Unit 1:Wordpress **(15 Hours)**

Overview, What Is Content Management System (Cms)?,
Features, Advantages, Disadvantages, Wordpress – Installation, System Requirements For Wordpress, Download Wordpress, Create Store Database, Set Up Wizard

Unit 2:Wordpress – Dashboard **(15 Hours)**

Dashboard Menu, Screen Options, Welcome, Quick Draft,Wordpress News, Activity , Settings, General Settings , Writing Settings, Reading Settings, Discussion Settings, Media Settings, Permalink Settings, Plugin Settings

Unit 3: Categories **(15 Hours)**

Add Category, Edit Category, Delete Category, Arrange Categories
Posts - Add Posts, Edit Posts, Delete Posts, Preview Posts, Publish Posts, Media-Media Library, Add Media, Insert Media, Edit Media

Unit 4: Pages &Tags **(15 Hours)**

Text Insertion, Publish, Page Attribute, Featured Images, Publish Pages, Edit Pages, Delete Pages, Edit Tags, Delete Tags, Links, Add Links, Edit Links, Delete Links, Comments - Add Comments Edit Comments Moderate Comments Plugins, Install Plugins Customize Plugins, User Roles, Add Users, User Photo Edit Users Delete Users, Personal Profile

Software: Adobe Photoshop

Reference Book:

1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
2. Web Technologies, Black Book, Dreamtech Press
3. HTML 5, Black Book, Dreamtech Press
4. Web Design, Joel Sklar, Cengage Learning
5. Internet and World Wide Web How to program, P. J. Deitel& H. M. Deitel, Pearson

Reference Links:

1. http://www.w3schools.com

Career Options: Web Design, Web Content Manager, Web Designer, Web Developer

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

LAB 1: C++ Programming

Credit : 02 **Marks** : 50**(30 Hours)**

Practical List:

1. Writeaprogramfordefining aclassandobject
2. Writeaprogramtoimplementtheconceptofreferencevariable
3. Writeaprogramtoimplementtheconceptofscoperesolutionoperator
4. Writeaprogramtoimplementtheconceptofinlinefunction
5. Writeaprogramtoimplementtheconceptofdefaultargument
6. Writeaprogramtoimplementtheconceptofstaticdatamembers
7. Writeaprogramtoimplementtheconceptoffunctionoverloading
8. Writeaprogramtoimplementtheconceptofcallbyreference
9. Writeaprogramtoimplementtheconceptofreturnbyreference
10. Writeaprogramtoimplementtheconceptofparameterizedconstructor
11. Writeaprogramtoimplementtheconceptofoverloadingunaryoperator
12. Writeaprogramtoimplementtheconceptofoverloadingbinaryoperator
13. Writeaprogramtoimplementtheconceptofsingleinheritance
14. WriteaprogramtoimplementtheconceptofMultilevelinheritance
15. WriteaprogramtoimplementtheconceptofMultipleinheritance

B. Voc. in Software Development
B. Voc. S. Y. (Semester III)
LAB 2: DBMS

Credit : 02 **Marks** : 50**(30 Hours)**

Practical List:

1).StudyofDataDefinitionLanguage(DDL)

a) CREATETABLE/VIEW /SEQUENCE
b) ALTERTABLE/VIEW /SEQUENCE
c) DROPTABLE/VIEW/SEQUENCE
d) DESCRIBETable/View

1) Studyof DataManipulation Language(DML)

a) SELECT
b) INSERT
c) UPDATE
d) DELETE
e) Study of Data Control Language (DCL)
f) GRANT
g) REVOKE
h) Study of Transaction Control Language (TCL)
i) What is Transaction?
j) Starting a Transaction
k) COMMIT
l) ROLLBACK
m) SAVEPOINT
n) Study of SQL clauses
o) WHERE Clause
p) Column Alias
q) Distinct clause
r) Study of Arithmetic operators
s) Study of Relational operators (=, <, >, <=, <=, != or <>, :=, || Concatenation)
t) Study of Logical Operators
u) AND
v) OR
w) NOT)
x) Study of Comparison Operators
y) BETWEEN
z) IN
aa) LIKE
bb) Study of Views in SQL
cc) Study of SQL Functions
dd) Single Row Functions
ee) Character Functions,
ff)Case Manipulation ,
gg) Character Manipulation
hh) Number Functions,
ii) Date Functions,
jj) Conversion Functions
kk) Multiple Row Functions

B. Voc. in Software Development

B. Voc. S. Y. (Semester III)

LAB 3: Web Designing Fundamentals

Credit : 02 **Marks** : 50**(30 Hours)**

Practical List:

Learning Objectives:
High lighting the theories and principles underlying website design.
Utility:
Understand the concept of design and implementation of HTML CSS to design a particular design of their creativity.
Prerequisites:
Knowledge of Photoshop
Practical List:
1. Wordpress – Installation
2. Dashboard
3. Categories
4. Create a Pages
5. Create a Tags
6. Create Wordpress Website

B. Voc. in Software Development

B. Voc. S. Y. (Semester IV)

B VOC.4.01Digital Marketing

Credit : 04 **Marks** : 100 (60 Hours)

CourseObjective

- AcquaintancewithDigital Marketing.
- DevelopanunderstandingofTechnicalaspectsof Digital Marketing.
- Acquaintanceand awarenesswithDigital Marketing.

CourseOutcome:

1. TostudythebasicconceptsofDigital Marketing.
2. LearnandpracticedatamodelingusingtheDigital Marketing.
3. ApplynormalizationDigital Marketing.

UNIT I: - Introduction &Create your Website **(15 Hours)**

- Digital Marketing Vs Traditional Marketing
- How Digital Marketing in Education sector is different from other sectors
- Digital Marketing Case Studies from Education Sector
- Website creation through Google Sites
- Website plan with Wordpress

UNIT II: SEO &Google Ads **(15 Hours)**

- What is SEO and why it is important
- What are Search Engines and its components
- White Hat & Black Hat SEO
- Types of SEO
- Keyword Research, Site speed, Meta tags, Mobile optimization, Broken links, Link pages, Duplicate content, Crawling, Anchor text, URL structure, Curate content, Unique headline
- Domain Authority, Link building, Social media, Blogging, Guest articles, Social Bookmarking
- What is SEM & its objectives
- What is Pay per Click marketing? Why PPC?
- Difference between SEO and PPC
- How to use paid search
- What is Google Ads? How does Google Ads work?
- How does Google ads Auction work?
- How does Google determine which ad is shown where?
- Creation of Google Ads account
- Keywords, its types and tools
- Basic Metrics
- Audience targeting

- Google campaign types, goals & their benefits
- Creation of Google campaigns
- Ad Formats & requirements
- Ad Extensions
- Ad Text Best Practices
- Bidding and Budget

UNIT III: Facebook &Instagram Ads **(15 Hours)**

- For what kind of customers Facebook marketing is effective?
- Reasons Why you should use Facebook Ads right Now
- Organic Marketing
- Inorganic Marketing
- About Facebook Pages
- Finding your Audience
- How to target Facebook Ads? Location, Demographics, Interest, Behavior
- How to Create a Facebook Audience from Files, website traffic, engagement
- Campaign Objectives
- Types of Facebook Ads
- How to Create a Facebook Audience

UNIT IV: Youtube channel & marketing **(15 Hours)**

- Tips for making a good educational channel
- YouTube Monetization Policy
- What is YouTube SEO?
- Keyword research tools
- Identify Search intent
- Satisfy your search intent with a high retention video
- On-page video optimization
- In-video optimization
- Publish and promote your video
- Youtube Analytics

References:

1) Create your Website- P.M.Bakshi&R.K.Suri- Bharat LawhouseNew Delhi
2) CreateFacebook &Instagram, ProfessionalBook Publishers–NewDelhi.
3) Online Linked YouTube channel.

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B VOC.4.02 Cloud Computing

Credit : 04 **Marks** : 100 (60 Hours)

CourseObjective :

- ToStudybasicsofcloudcomputing,andcomprehendtheterminology,toolsandtechnologiesassociated withtoday"stopcloud platforms.
- Toprovidetheprogrammerperspectiveofworkingof CloudComputing.
- ImplementSimpleCloudprogramstosolvesimpleproblems.

CourseOutcome:

- Awareness of existing demanding trends for Clouds and Virtualizations in the IT industry in order to get placement as well as in research
- Knowledge about Computer Hardware and Networking.

UNIT– I : Enterprise computing: a retrospective **(15 Hours)**

1) Introduction
2) Mainframearchitecture
3) Client-serverarchitecture
4) 3-tierarchitectures withTPmonitors

UNIT– II :The internet as a platform and Software as a service (15 Hours)

1) Internettechnologyandweb-enabled applications
2) Webapplicationservers
3) Internetofservices
4) Emergenceofsoftwareasaservice
5) SuccessfulSaaSarchitectures
6) Dev2.0platforms
7) Cloud computing

UNIT– III :Cloud computing platforms (15 Hours)

1) Infrastructureasaservice:AmazonEC2
2) Platformasaservice:GoogleAppEngine
3) MicrosoftAzure
4) Webservices:SOAPandREST
5) SOAP versusREST
6) AJAX:asynchronous,,rich"interfaces
7) Mashups:userinterfaceservices

UNIT – IV :Data in the cloud&MapReduce and extensions **(15 Hours)**

1) Relationaldatabases
2) Cloudfilesystems:GFSandHDFS
3) BigTable,HBaseandDynamo
4) Clouddatastores:DatastoreandSimpleDB
5) Parallelcomputing
6) TheMapReducemodel
7) ParallelefficiencyofMapReduce
8) RelationaloperationsusingMapReduce
9) Enterprisebatchprocessingusing MapReduce

References-

EnterpriseCloudComputing:Technology,Architecture,ApplicationByGautamShroff

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B VOC.4.03Cyber Security

Credit : 04 **Marks** : 100 (60 Hours)

CourseObjective

- Develop an understanding of information assurance as practiced in computeroperatingsystems,distributedsystems,networksandrepresentative applications.
- Gain familiarity with protective network and distributed system attacks, defensesagainstthem.
- Develop a basic understanding of cryptography, how it has evolved, and some keyencryptiontechniques used today.
- Developan understandingof securitypolicies (such asauthentication, integrityandconfidentiality), as well as protocols to implement such policies in the form ofmessageexchanges.
- AcquaintancewithcyberLawand ITAct2000.
- DevelopanunderstandingofTechnicalaspectsof Digitalsignature.
- Developabasicunderstandingofdomain NameDisputesandTrademark Law.
- Acquaintanceand awarenesswithcybercrime.
- Understandthebroadset oftechnical,social&politicalaspectsofCyberSecurity.
- Recognizedtherolesecuritymanagementplays in cybersecuritydefense

Course Outcome:

- Explain the concepts of confidentiality, availability and integrity (CIA) in context ofInformationAssurance.
- Understandtheobjectivesof ITActandCyber Law.
- UnderstandsEncryptionanddecryptionmethods.
- UnderstandDigitalsignatureandit"stechnicalaspects.
- Understand the concept of Domain Name Disputes ,Cyber squatting and ReverseHijacking.
- Willunderstandcybercrimes suchashackingandotheroffences.

Silent Features:

- Developstheknowledge ofcyber LawandCyber Act.
- Developstheskillofencryptionanddecryption.
- Understandsthecybercrimesandoffences.

UNIT-I :ObjectandScopeof theITAct &Encryption (15 Hours)

1) Genesis
2) Object
3) Scopeof theAct
4) ymmetricCryptography
5) AsymmetricCryptography
6) RSAAlgorithm
7) PublicKeyEncryption

UNIT-II : Digital Signature&Domain Name Disputes and Trademark Law(15 Hours)

1) Technology behind Digital Signature
2) Creating a Digital Signature
3) Verifying a Digital Signature
4) Digital Signature and the Law
5) Concept of Domain Names
6) New Concepts in Trademark Jurisprudence
7) Cyber squatting, Reverse Hijacking, Meta tags,Framing, Spamming,
8) Jurisdiction in Trademark Dispute

UNIT-III :Cyber Regulations Appellate Tribunal (15 Hours)

1) Cyber Law in India
2) Establishment & Composition Of AppellateTribunal
3) Powers of Adjudicating officer to AwardCompensation
4) Powers of Adjudicating officer to Impose Penalty

UNIT-IV :The Cyber Crimes (15 Hours)

1) Tampering with Computer Source Documents
2) Hacking with Computer System
3) Publishing of Information Which is Obscene in Electronic Form
4) Offences : Breach of Confidentiality & Privacy
5) Offences : Related to Digital Signature Certificate

References:

4) CyberLawin India- FarooqAhmad- PioneerBooks
5) TheIndianCyberLaw- SureshT Vishwanathan - Bharat LawhouseNew Delhi
6) Hand bookofCyber&E-commerceLaws- P.M.Bakshi&R.K.Suri- Bharat LawhouseNew Delhi
7) GuidetoCyber Laws- RodneyD. Ryder
8) TheInformationTechnology Act,2000-11) ProfessionalBook Publishers– NewDelhi.

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B VOC.4.04Java Programming

Credit : 04 **Marks** : 100 (60 Hours)

Objectives:

- To develop programming ability in the java programming language.
- Knowledge of object-oriented paradigm of language.
- The use of java in a variety of technologies and on different platforms.

Course Outcomes:

- After successful completion of this course students should be able to:
- Ability to understand the structure and model of the Java programming language.
- Student will be able to use the java programming language for various programming technologies.
- Ability to develop software, application in the Java programming language.

Unit – I : An Introduction to java **(15 Hours)**

Introduction to Object Oriented Programming, Basic concept of OOPs, A short History of java, Features of Java, Difference between Java and C++, Java virtual machine (JVM), Java program structure, Java statement, Types of Comments,Keywords, Data Types, Variable and Constant, Operators, Output using println(),method,Simple Java Program, Command Line Arguments.

Unit – II: Decision Making , Branching , Looping and Classes, Object and Methods(15 Hours)

Decision making statement, Simple if statement, if...else statement, Nesting of if...else, Switch statement, while statement, do statement, for statement.Introduction, defining a class, adding variable, adding Method, Accessing Class Members, Constructors, Method Overloading, Static Members, Inheritance: Extending a class, Overriding Method

Unit-III: Arrays, Strings, Vectors and Creating and Using Packages(15 Hours)

Introduction, One-dimensional Arrays : Creating one dimensional array, Two- dimensional Arrays: Creating two-dimensional array, String Arrays, String Method

Unit-IV: Introduction, Java API Package **(15 Hours)**

Introduction, Java API Package, using system packages, Naming Conventions,Creating packages, accessing a package, using a Package, adding a class to a package.

References:

1) Introduction, Java API ,ProfessionalBook Publishers.
2) Java and C++, - Bharat LawhouseNew Delhi
3) Simple Java Program ProfessionalBook Publishers–NewDelhi.

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B VOC.4.05 RDBMS

Credit : 04 **Marks** : 100 (60 Hours)

CourseObjectives:

1. TounderstandthefeaturesofRelationaldatabase.
2. TodescribedatamodelsandschemasinDBMS.
3. TouseSQL-thestandardlanguageofrelationaldatabasesfordatabaseoperations.
4. Tounderstandthefunctionaldependenciesanddesignofthedatabases.

CourseOutcome:

4. Tostudythebasicconceptsofrelationaldatabases
5. Learnandpracticedatamodelingusingtheentity-relationshipanddevelopingdatabasedesigns.
6. UnderstandtheuseofStructuredQueryLanguage(SQL)andlearnSQLsyntaxforwritingqueries.
7. Applynormalizationtechniquestonormalizethedatabases.

Unit – I Introduction and Basic Concepts&SQL Statements & Working With Tables (15 Hours)

1. a)Structure of DBMSb) Advantages and Disadvantages of DBMSc) Users of DBMSd)Relational Database: Entities, Attributes and Domainse) Tuples, Relations and theirschemes.

2. a)WhatisSQL?b)TypesofSQLCommands(DDL,DML,DQL,DCL,TransactionControl Commands (TCL) c) Data types in SQL d) Creating Tablese) Selecting fromtables, WHERE Clause f) Selecting from tables, DISTINCT Clause, Column aliasingg)ManipulationTable data h) Altering Table structurei)Data Constraints:Unique, NotNull,PrimaryKey,ForeignKey,Check,DefaultConstraint

Unit – II Operators & SQL Functions & Views (15 Hours)

a)Arithmetic Operators, Relational Operatorsb) Comparison Operators BETWEEN , IN,LIKE, IS NULL c) LOGICAL Operators: AND OR NOT d) SQL Functions: Single,Multiple Row Functions e) Single Row Character , Single Row Number, Single RowDate,SingleRowConversion,SingleRowGeneralFunctionsf)MultipleRowFunctionsg)Views

Unit – III Sorting & Grouping Data and Joining Tables &Subqueries in ORACLE
(15 Hours)

a) What is Sorting? b) ORDER BY & ORDER BY DESC Clausesc) GROUP BY & GROUPBY HAVING Clauses d)What isJoin? Join Styles: Theta , ANSI ,Using clause e) Typesof Joins: Equi Joins, Non Equi Join, Outer Join: Left, Right, Full f) Self Join Cross Join,Joiningthreetablesg)Subqueries&itstypes

Unit – IV Introduction to PL/SQL&Database Triggers & Cursors (10 Hours)

1. a)PL/SQLOverviewb)DeclarationsSectionc)ExecutableCommandsSectiond)Exception HandlingSection

2. a)What are Triggers? Triggers Syntaxb) Types of triggers Row Level StatementLevel,Before , After Instead of Triggersc) Enabling and Disabling Triggers Replacing andDroppingTriggersd)WorkingwithCursor%TYPEVariable%ROWTYPEVariable

References-

1. "OracleDatabase10gPL/SQLProgramming"byScottUrman,RonHardman,MichaleMcLaughlin,OraclePress,TMH,ISBN-0-07-059779-0.
2. "Oracle Database10g The Complete Reference"By KevinLoney, BobBrylaOraclePress(TATAMcGrawHillEdition)ISBN-13:978-0-07-059425-8,ISBN-10:0-07-059425-2
3. SQL,PL/SQLtheprogramminglanguageofORACLE4thEditionbyIvanBayrossISBN 81-7656964-

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B VOC.4.06 Introduction to Data Structure

Credit : 04 **Marks** : 100 (60 Hours)

Course Objectives:

1. To solve problems using data structures such as linear lists, stacks, queues, hash tables, binary trees, heaps, binary search trees, and graphs and writing programs for these solutions.

2. Able to write well-structured procedure-oriented programs

Course Outcome:

1. To develop application using data structures.

2. Students develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching etc.

Unit-I **(15 Hours)**

Definition of Data Structure, Elementary data organization, data structure operations, Algorithmic notations, Control structure.

Unit–II **(15 Hours)**

Introduction to Linked list, Representation of linked list in memory, Traversing, Searching in Unsorted linked list, Overflow and Underflow, Inserting at the beginning of a list, deleting node following a given Node.

Unit –III **(15 Hours)**

Stack: Introduction, Memory representation of Stack, Insert element in Stack i.e. PUSH operation, Delete element from Stack i.e. POP operation. Queue: Introduction, Memory Representation, Insert & Delete operation in Queue.

Unit-IV **(15 Hours)**

Tree: Introduction, Definition of a Binary tree & its Memory representation, Traversing a Binary Tree, PREORDER, INORDER, POSTORDER Traversal, Threaded binary tree. Graph: Introduction, Memory Representation of graphs.

References Books:

1. Data Structure by Seymour Lipschtz (TMH Publication)

2. An Introduction to Data Structure with Application by Jean Paul

3. Introduction to Algorithms, CormenChatles E. Leiserson, PHI Edition

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LAB 1: Java Programming

Credit : 02 **Marks** : 50**(30 Hours)**

Practical List:

1. Simple java program.
2. Program to demonstrate command line argument.
3. Program to demonstrate control statements.
4. Program to demonstrate Looping statements
5. Program to demonstrate constructors.
6. Program to demonstrate method overloading
7. Program to demonstrate static members.
8. Program to demonstrate method overriding
9. Program to demonstrate inheritance.
10. Program to demonstrate one dimensional array.
11. Program to demonstrate two dimensional array.
12. Program to demonstrate String methods.
13. Program to demonstrate package.
14. Program to demonstrate Exception handling.
15. Program to demonstrate applet.

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LAB 2: RDBMS

Credit : 02 **Marks** : 50**(30 Hours)**

Practical List:

1) WhatisSQL?TypesofSQLCommands
2) StudyofDatatypesinORACLE3
3) CreatingTables&Retrieving,ManipulatingDatafromtables
4) StudyofAlteringTablesINORACLE
5) StudyofDataConstraintsinORACLE
6) StudyofOperators
7) StudyofSQLFunctions
8) StudyofViewsinORACLE
9) StudyofJoiningTablesinORACLE
10) StudyofSubqueriesinORACLE
11) StudyofinPL/SQLBlocksinORACLE
12) StudyofinTriggersinORACLE
13) StudyofinCursorsinORACLE

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LAB 3: Data structure

Credit : 02 **Marks** : 50 (30 Hours)

Practical List:

1) Write a program to insert the elements in array.
2) Write a program to traverse the elements in array.
3) Write a program to delete the elements in array.
4) Write a program to search the elements using Binary Search.
5) Write a program to search the elements using Linear Search.
6) Write a program to insert the elements in Linked List.
7) Write a program to perform Push and Pop operation in Stack.
8) Write a program to insert, delete and display the elements in Queue.
9) Write a program to sort the elements using Bubble Sort.
10) Write a program to sort the elements using Insertion Sort.
11) Write a program to sort the elements using Selection Sort.
12) Write a program for finding factorials using recursion function.

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