



SCHOOL OF SCIENCE

VALUE ADDED COURSE

- 1. CYBER SECURITY AND PRIVACY**
- 2. ETHICAL HACKING**
- 3. INTRODUCTION TO INDUSTRY 4.0 AND IIOT**
- 4. ARTIFICIAL INTELLIGENCE:SEARCH METHODS FOR PROBLEM SOLVING**
- 5. PYTHON FOR DATA SCIENCE**
- 6. GOOGLE CLOUD COMPUTING FOUNDATIONS**
- 7. BIO ANALYTIC TECHNIQUES & BIO INFORMATICS**



CYBER SECURITY AND PRIVACY

CYBER SECURITY AND PRIVACY

Unit-1: Introduction - Introduction to cyber security, Confidentiality, integrity, and availability. Foundations - Fundamental concepts, CIA, CIA triangle, data breach at target.

Unit-2: Security management, Governance, risk, and compliance (GRC)- GRC framework, security standards. Contingency planning - Incidence response, Disaster Recovery, BCP.

Unit- 3: Cyber security policy - ESSP, ISSP, SYSSP. Risk Management - Cyber Risk Identification, Assessment, and Control. : Cyber security: Industry perspective - Defense Technologies, Attack, Exploits.

Unit-4: Cyber security technologies - Access control, Encryption, Standards. Foundations of privacy - Information privacy, Measurement, Theories. Privacy regulation - Privacy, Anonymity, Regulation, Data Breach.

Unit- 5: Privacy regulation in Europe, Privacy: The Indian Way - Data Protection, GDPR, DPDP, Aadhar. Information privacy: Economics and strategy, Economic value of privacy, privacy valuation, WTA and WTC, Business strategy and privacy, espionage, Privacy vs safety.

BOOKS AND REFERENCES

- Michael E. Whitman, Herbert J. Mattord, (2018). Principles of Information Security, 6th edition, Cenage Learning, N. Delhi.
- Darktrace, "Technology" <https://www.darktrace.com/en/technology/#machine-learning>, accessed November 2018.
- Van Kessel, P. Is cyber security about more than protection? EY Global Information Security Survey 2018-2019.
- Johnston, A.C. and Warkentin, M. Fear appeals and information security behaviors: An empirical study. MIS Quarterly, 2010.
- Arce I. et al. Avoiding the top 10 software security design flaws. IEEE Computer Society Center for Secure Design (CSD), 2014.
- Smith, H. J., Dinev, T., & Xu, H. Information privacy research: an interdisciplinary review. MIS Quarterly, 2011.
- Subramanian R. Security, privacy and politics in India: a historical review. Journal of Information Systems Security (JISec), 2010.
- Acquisti, A., John, L. K., & Loewenstein, G. What is privacy worth? The Journal of Legal Studies, 2013



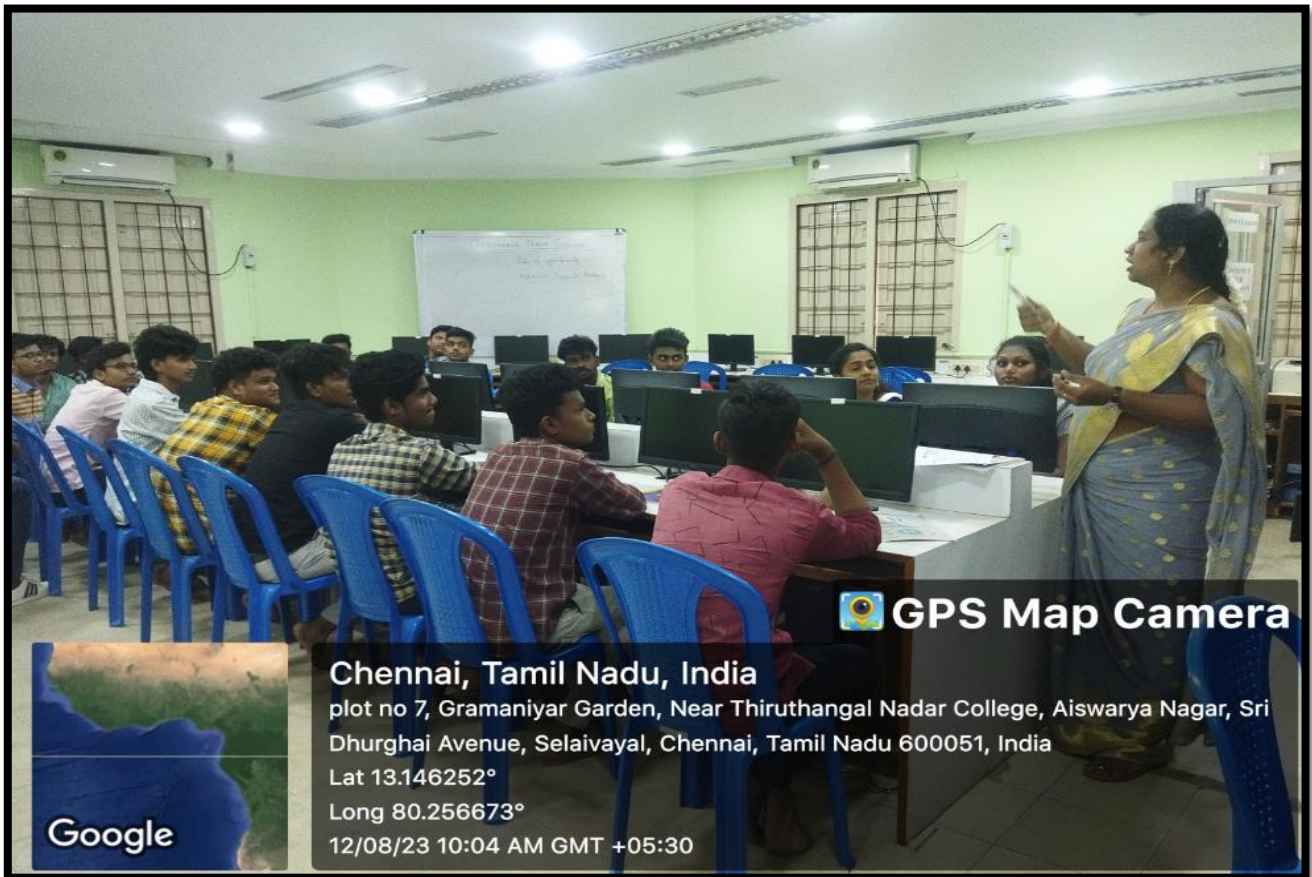
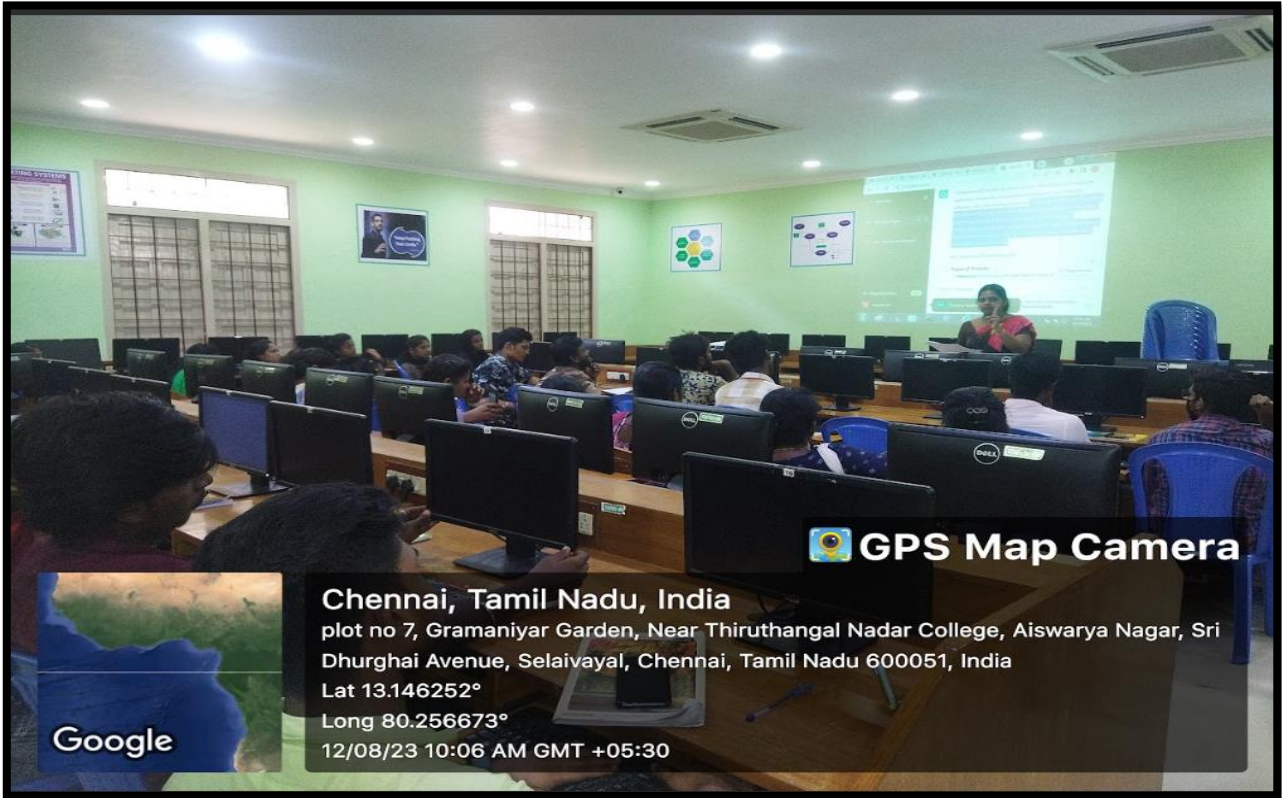
Thiruthangal Nadar College
Knowledge is Power

NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024





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Selavayal, Chennai, Tamil Nadu, India

VALUE ADDED COURSE 2023-2024

ASSESSMENT

Subject : Cyber Security and Privacy

Sub Code :VACSOS2306

Date : 07/02/2024

Marks : 100

Time :1 ½ hours

PART -A (25 X 2 = 50 marks)

- 1) In which of the following, a person is constantly followed/chased by another person or group of several peoples?
 - a. Phishing
 - b. Bulling
 - c. Stalking
 - d. Identity theft
- 2) Which one of the following can be considered as the class of computer threats?
 - a. Dos Attack
 - b. Phishing
 - c. Soliciting
 - d. Both A and C
- 3) Which of the following is considered as the unsolicited commercial email?
 - a. Malware
 - b. Spam
 - c. Trash
 - d. All of the above
- 4) Which of the following usually observe each activity on the internet of the victim, gather all information in the background, and send it to someone else?
 - a. Malware
 - b. Spyware
 - c. Adware
 - d. All of the above



- 5) _____ is a type of software designed to help the user's computer detect viruses and avoid them.
- Malware
 - Adware
 - Antivirus
 - Both B and C
- 6) Which one of the following is a type of antivirus program?
- Quick heal
 - Mcafee
 - Kaspersky
 - All of the above
- 7) It can be a software program or a hardware device that filters all data packets coming through the internet, a network, etc. it is known as the _____:
- Antivirus
 - Firewall
 - Cookies
 - Malware
- 8) Which of the following refers to exploring the appropriate, ethical behaviors related to the online environment and digital media platform?
- Cyber law
 - Cyberethics
 - Cybersecurity
 - Cybersafety
- 9) Which of the following refers to the violation of the principle if a computer is no more accessible?
- Access control
 - Confidentiality
 - Availability
 - All of the above
- 10) In system hacking, which of the following is the most crucial activity?
- Information gathering
 - Covering tracks
 - Cracking passwords
 - None of the above
- 11) Which of the following are the types of scanning?
- Network, vulnerability, and port scanning
 - Port, network, and services



c. Client, Server, and network

d. None of the above

12) To protect the computer system against the hacker and different kind of viruses, one must always keep _____ on in the computer system.

- a. Antivirus
- b. Firewall
- c. Vlc player
- d. Script

13) Which of the following can be considered as the elements of cyber security?

- a. Application Security
- b. Operational Security
- c. Network Security
- d. All of the above

14) Which of the following are famous and common cyber-attacks used by hackers to infiltrate the user's system?

- a. DDos and Derive-by Downloads
- b. Malware & Malvertising
- c. Phishing and Password attacks
- d. All of the above

15) Which one of the following is also referred to as malicious software?

- a. Maliciousware
- b. Badware
- c. Illegalware
- d. Malware

16) Hackers usually used the computer virus for _____ purpose.

- a. To log, monitor each and every user's stroke
- b. To gain access the sensitive information like user's Id and Passwords
- c. To corrupt the user's data stored in the computer system
- d. All of the above

17) The term "TCP/IP" stands for _____

- a. Transmission Contribution protocol/ internet protocol
- b. Transmission Control Protocol/ internet protocol
- c. Transaction Control protocol/ internet protocol
- d. Transmission Control Protocol/ internet protocol



18) In the computer networks, the encryption techniques are primarily used for improving the _____

- a. Security
- b. Performance
- c. Reliability
- d. Longevity

19) Which of the following type of text is transformed with the help of a cipher algorithm?

- a. Transformed text
- b. Complex text
- c. Scalar text
- d. Plain text

20) Which type of the following malware does not replicate or clone them self's through infection?

- a. Rootkits
- b. Trojans
- c. Worms
- d. Viruses

21) Which of the following malware's type allows the attacker to access the administrative controls and enables his/or her to do almost anything he wants to do with the infected computers.

- a. RATs
- b. Worms
- c. Rootkits
- d. Botnets

22) In the CIA Triad, which one of the following is not involved?

- a. Availability
- b. Confidentiality
- c. Authenticity
- d. Integrity

23) In an any organization, company or firm the policies of information security come under _____

- a. CIA Triad
- b. Confidentiality
- c. Authenticity
- d. None of the above



24) Why are the factors like Confidentiality, Integrity, Availability, and Authenticity considered as the fundamentals?

- a. They help in understanding the hacking process
- b. These are the main elements for any security breach
- c. They help to understand the security and its components in a better manner
- d. All of the above

25) In order to ensure the security of the data/ information, we need to _____ the data:

- a. Encrypt
- b. Decrypt
- c. Delete
- d. None of the above

PART -B (5 X 10 = 50 marks)

1. Compare Cyber security and Ethical Hacking
2. Write note on Cryptography in Cyber security
3. Explain briefly about the CIA Triad and Why is it important?
4. Explain briefly about DDoS Attack and Why would someone carry out a DDoS attack?
5. Discuss about Phishing Attack in detail.



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VALUE ADDED COURSE 2023-2024

ASSESSMENT MARK SHEET

Subject : CYBER SECURITY AND PRIVACY

Date : 07/02/2024

Sub Code : VACSOS2306

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	21BCA74	INDUJA M	COMPUTER APPLICATION	67
2	21BCA83	YAMINI J	COMPUTER APPLICATION	76
3	21BCA26	BHU VANESHWARI R	COMPUTER APPLICATION	63
4	21BCA58	MUTHUKUMARJA	COMPUTER APPLICATION	70
5	21BCA73	VAIDESHS	COMPUTER APPLICATION	61
6	22MSCCS08	James Marteen J	MISC COMPUTER SCIENCE	59
7	22MSCCS13	Mohammed Tajudeen Z	MISC COMPUTER SCIENCE	42
8	22BCA75	MELANGO	BCA	62
9	22BCA41	AKASH R	COMPUTER APPLICATION	59
10	22BCAE07	m.pooja	BCA	64
11	22BCAE21	HARIHARAN P	BCA	80
12	22BCA14	Harikarasudhan. C	COMPUTER APPLICATION	72
13	22BCA24	Harshini Raviga J	COMPUTER APPLICATION	74
14	22BCA72	GR.Roshan	COMPUTER APPLICATION	62
15	22BCA84	M.Nagulan	COMPUTER APPLICATION	72
16	22BCA83	Hemalatha P	COMPUTER APPLICATION	52
17	22BCA53	Benny Marbell S	COMPUTER APPLICATION	62
18	22BCA82	Sajitha M	COMPUTER APPLICATION	56
19	22BCA48	A.Zanofar Fathima	COMPUTER APPLICATION	62
20	22BCA45	G Vishnu Priya	COMPUTER APPLICATION	64
21	22BCA102	C.Gowtham	COMPUTER APPLICATION	70
22	22BCA55	S.Jayachandran	COMPUTER APPLICATION	56
23	22BCA57	T.Chandra	COMPUTER APPLICATION	56
24	22BCA86	P.S.ANUSHA	COMPUTER APPLICATION	66
25	22BSCCS44	JAI SURYA M	COMPUTER SCIENCE	64
26	22BSCCS98	MANASHIKUMAR CH	COMPUTER SCIENCE	60



27	21BCA64	ABINAYA.E	COMPUTER APPLICATIONS	64
28	21BCA32	POOJA SREE.R	COMPUTER APPLICATIONS	72
29	21BCA24	FAREEN BANUN	COMPUTER APPLICATIONS	71
30	22BCALE01	SRIMATHY.M	COMPUTER APPLICATIONS	56
31	21BCA28	MOHAMMED MUSAMMELS	COMPUTER APPLICATION	72
32	21BCA25	GANESH.M	COMPUTER APPLICATION	54
33	21BCA43	PARTHIBAN.E	COMPUTER APPLICATION	66
34	21BCA75	MOHAN.B	COMPUTER APPLICATION	44
35	21BCA10	PAUL.MASHAKMALAN.B	COMPUTER APPLICATION	40
36	21BCA29	MOHAMED ARSATH.R	COMPUTER APPLICATION	40
37	21BCA13	ASWEN.L	COMPUTER APPLICATION	40
38	21BCA30	JAGATHISWARAN	COMPUTER APPLICATION	42
39	21BCA56	GAUTHAM.J	COMPUTER APPLICATION	55
40	21BCA48	KARTHIKEYAN.M	COMPUTER APPLICATION	40
41	22BSCCS94	SATHISH KUMAR.R	COMPUTER SCIENCE	40
42	22BCA37	BHARATH.P	COMPUTER APPLICATIONS	64
43	22BCA99	RAJESH	COMPUTER APPLICATION	40
44	22BCA69	SAI BALAJI.K	COMPUTER APPLICATION	40
45	22BSCCS25	BHARATH.R	COMPUTER SCIENCE	40
46	22MSCCS10	G.K.THARUN	MSC COMPUTER SCIENCE	40
47	22BSCCS106	MARIYA.P	COMPUTER SCIENCE	AA
48	21BSCCS08	SSAM DANIEL	COMPUTER SCIENCE	66
49	22BSCCS51	MADHESH.M	COMPUTER SCIENCE	40



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S.NO	ID NO.	NAME	DEPARTMENT	MARKS
50	22BSCSA01	GOWTHAM B	SOFTWARE APPLICATIONS	40
51	22BSCSA30	GUNASEELAN. R	SOFTWARE APPLICATIONS	43
52	22BSCSA28	NAVEEN. W	SOFTWARE APPLICATIONS	40
53	22BSCSA24	RAGHUL.P	SOFTWARE APPLICATIONS	40
54	22BCA52	ABISHEKROBIN M J	COMPUTER APPLICATION	40
55	22BCA35	BALAGANESH M	COMPUTER APPLICATION	40
56	22BCA60	HRITHIK KUMAR.V	COMPUTER APPLICATION	41
57	22BCA84	JOSHUA DANIEL	COMPUTER APPLICATION	40
58	22BCA42	NAVEEN B	COMPUTER APPLICATION	40
59	22BCA08	NEVEEN R	COMPUTER APPLICATION	42
60	22BCA17	SURIYA R	COMPUTER APPLICATION	40
61	22BCA79	VAIBHAV.B	COMPUTER APPLICATION	50
62	22BCA29	YUVARAJ A	COMPUTER APPLICATION	40
63	22BCA104	KANISHKA.D	COMPUTER APPLICATION	50
64	22BCAE05	M.VENKATESH	COMPUTER APPLICATION	40
65	22BCAE09	A.HARISH	COMPUTER APPLICATION	40
66	22BCAE16	M.DHARSHINI	COMPUTER APPLICATION	45
67	22BCAE17	B.SESHNATH	COMPUTER APPLICATION	AAA
68	21BSCCS25	MOHAN RAJLR	COMPUTER APPLICATION	40
69	21BSCCS17	KALIDASS.B	COMPUTER APPLICATION	50
70	21BSCCS13	RASIKA.P	COMPUTER APPLICATION	43
71	21BCA53	BHARANIDHARAN K.P	COMPUTER APPLICATION	51
72	21BCA52	NAGARAJAN S	COMPUTER APPLICATION	44
73	21BCA34	NANDHA KUMAR V	COMPUTER APPLICATION	44
74	21BCA60	ROSHAN BEEVI M	COMPUTER APPLICATION	52
75	21BCA71	SANJAY .K	COMPUTER APPLICATION	60



76	21BCA55	SIVARAJ M	COMPUTER APPLICATION	42
77	21BCA44	TAMIL SELVAN R	COMPUTER APPLICATION	40
78	21BCA79	VIGNESH D	COMPUTER APPLICATION	48
79	21BCA08	YUVARAJA R	COMPUTER APPLICATION	57
80	21BCA82	VIMALRAJ S	COMPUTER APPLICATION	60
81	21BCA68	AATHIRA G	COMPUTER APPLICATION	AAA
82	21BCA46	ABHIRAJ M	COMPUTER APPLICATION	46
83	21BCA12	ANTHONY LAWRENCE A	COMPUTER APPLICATION	57
84	21BCA17	ARAVIND S	COMPUTER APPLICATION	53
85	21BCA18	SAIRAM V	COMPUTER APPLICATION	50
86	21BCA72	SAM RAJ KUMAR V	COMPUTER APPLICATION	43
87	21BCA45	SANTHOSH RAJ S	COMPUTER APPLICATION	59
88	21BCA01	SRIRAM S	COMPUTER APPLICATION	50
89	21BCA88	SHOBAN BABU	COMPUTER APPLICATION	40
90	22BCA62	DHARSHAN M	COMPUTER APPLICATION	51
91	21BCA67	HARISH SANKAR S	COMPUTER APPLICATION	41
92	21BCA05	HEMARAJ D	COMPUTER APPLICATION	50
93	22BCA87	R TEJASREE	COMPUTER APPLICATION	46
94	21BCA06	POORNI M	COMPUTER APPLICATION	80
95	21BCAFS01	RAGINISRI K R	COMPUTER APPLICATION	78
96	22BCALE105	RICHARD DANIEL	COMPUTER APPLICATION	41
97	22BCAE15	J.ANGEL	COMPUTER APPLICATION	44
98	21BCA51	ISAC JOSHUA	COMPUTER APPLICATION	44
99	21BCA35	IRSHAD AHAMED	COMPUTER APPLICATION	47



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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



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Selavayal, Chennai - 600 051.



CERTIFICATION OF COMPLETION

This Certificate is Presented to Growtham . B of
II BSC CSA for successful completion of 30 hours of Value Added Course
on Cyber security And Privacy during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent



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CERTIFICATION OF COMPLETION

This Certificate is Presented to RASIKA . P of
III BSC CS for successful completion of 30 hours of Value Added Course
on CYBER SECURITY AND PRIVACY during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent



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CERTIFICATION OF COMPLETION

This Certificate is Presented to *Naveen . W* of
..... *II BSC SA* for successful completion of 30 hours of Value Added Course
on *Cyber security And Privacy*... during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent

VALUE ADDED COURSE REPORT 2023-2024

Course: Cyber Security And Privacy

The Value Added Course entitled “ Cyber Security & Privacy” was conducted for 30 hours during the academic year 2023-2024. This course introduces technology, practices and challenging situations related to cybersecurity as applied in groups. Students are anticipated to broaden a healthy knowledge about cyber security and privacy risks to organizations covering governance, compliance and threat mitigation and carefully take a look at positive enterprise domains.

A total of 97 students from various departments (BCA, BSC CS & MSC CS) enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



ETHICAL HACKING

ETHICAL HACKING

Unit-1: Introduction to ethical hacking. Fundamentals of computer networking. TCP/IP protocol stack. IP addressing and routing. TCP and UDP. IP subnets. Routing protocols. IP version 6.

Unit- 2: Installation of attacker and victim system. Information gathering using advanced google search, archive.org, netcraft, whois, host, dig, dnsenum and NMAP tool.

Unit-3: Vulnerability scanning using NMAP and Nessus. Creating a secure hacking environment. System Hacking: password cracking, privilege escalation, application execution. Malware and Virus. ARP spoofing and MAC attack.

Unit-4: Introduction to cryptography, private-key encryption, public-key encryption. Cryptographic hash functions, digital signature and certificate, applications. Steganography, biometric authentication, network-based attacks, DNS and Email security. Packet sniffing using wireshark and burpsuite, password attack using burp suite. Social engineering attacks and Denial of service attacks

Unit-5: Elements of hardware security: side-channel attacks, physical inclinable functions, hardware trojans. Different types of attacks using Metasploit framework: password cracking, privilege escalation, remote code execution, etc. Attack on web servers: password attack, SQL injection, cross site scripting. Case studies: various attacks scenarios and their remedies.

BOOKS AND REFERENCES

1. Data and Computer Communications – W. Stallings.
2. Data Communication and Networking – B. A. Forouzan
3. TCP/IP Protocol Suite – B. A. Forouzan
4. UNIX Network Programming – W. R. Stallings
5. Introduction to Computer Networks and Cybersecurity – C-H. Wu and J. D. Irwin
6. Cryptography and Network Security: Principles and Practice -- W. Stallings
7. ** Various web resources **



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Selavoyal, Chennai, Tamil Nadu, India

VALUE ADDED COURSE 2023-2024

ASSESSMENT

Subject : Ethical Hacking

Date : 07/02/2024

Time :1 ½ hours

Sub Code :VACSOS2312

Marks : 100

PART -A (25 X 2 = 50 marks)

- 1) For which of the following, the tester is provided only with partial information about a network?
 - a.White box model
 - b.Black box model
 - c.Gray box model
 - d.None of these

- 2) In an IP packet , the value of HLEN is 5, and the value of the Total Length field is 1000(in decimal).The number of data bytes in the packet will be _____
 - a.120 bytes
 - b.362 bytes
 - c.1024 bytes
 - d.980 bytes

- 3)What does the G flag in a routing table signify?
 - a.The destination is in the same network
 - b.The destination is in a different network
 - c.The interface is up and running
 - d.None of the these

- 4) On what factor(s) does the security of the RSA algorithm depend on?
 - a.On the difficulty of breaking a large integer into its prime factors
 - b.On the difficulty of solving the discrete logarithm problem
 - c.Size of the key
 - d.All of these



- 5) Which of the following is /are active attack(s)?
- a.Interruption
 - b.Interception
 - c.Modification
 - d.Fabrication
- 6) The Hash digest length of SHA-256 is _____ bits
- a.256 bits
 - b.128 bits
 - c.64 bits
 - d.32 bits
- 7) What is Birthday attack?
- a.It is an attack on public-key cryptography
 - b. It is an attack on symmetric-key cryptography
 - c.It is an attack on Hash function
 - d.None of these
- 8) What is a Botnet in the context of a DDoS attack?
- a.A Host connected to the Internet,which runs one or more bots
 - b.It is a subnet through which the DDoS attack is mounted
 - c.It is a subnet that prevents DDoS attacks from taking place
 - d.None of the these
- 9) What is a Hardware Trojan ?
- a.It is a form of PUF that can be used for attacking
 - b.It isi a malicious modification of the circuitry in a chip
 - c.The payload of the Trojan is activated when the triggering condition is true
 - d.All of these
- 10) Which of the following statement(s) is/are false?
- a.Destination of hardware Trojans is relatively easy
 - b.No single method can detect all types of Trojans
 - c.Trojans detection involves a high overhead
 - d.None of these
- 11) Which of the following Linux distribution are suited for penetration testing?
- a.Backtrack
 - b.Trapdoor
 - c.Kali
 - d.All of these



12) Which of the following takes advantages of some security flaw in software to penetrate into a network or system?

- a.Malware
- b.Exploits
- c.Botnet
- d.All of these

13) Which of the following provides a comprehensive archive of public exploits associated with specific Vulnerabilities?

- a.Google
- b.Bing
- c.Exploit-db
- d.Hacker-site

14) Which of the following is /are example(s) of privilege escalation attack?

- a.An attacker with a privilege set of "read only" permission somehow elevates the set to include "read and write"
- b.An attacker prevents higher priority processes from running
- c.An attacker prevents access to resources by Legitimate clients
- d.None of these

15) Which of the following is /are true for securing a PC from malware?

- a.Use firewalls
- b.Open all email attachments
- c.Keep difficult passwords
- d.Update security software infrequently

16) Which of the following techniques can be used for password cracking?

- a.Phishing
- b.Salting
- c.Spidering
- d.Keylogger

17) For modular exponentiation computation of x^{25} , how many squaring and multiplication operations would be required?

- a. 4 and 4.
- b. 4 and 2.
- c. 3 and 4.
- d. 5 and 2.

18) Which of the following tools are used for web application scanning?

- a.Dirb
- b.Host
- c.Uniscan
- d.All of the above



- 19) Which of the following is used to take advantage of system/application bugs?
- Exploit
 - Payload
 - Auxiliary
 - Encoder
- 20) What type of packets can be captured by Wireshark?
- TCP and UDP packets
 - IP packets
 - ICMP packets
 - All of these
- 21) Which of the Following is not an example of active security attack?
- Masquerade
 - Replay
 - Traffic analysis
 - Modification
 - Denial of Service
- 22) Which of the following are volume-based attacks?
- UDP Flood
 - HTTP Flood
 - DNS cache poisoning
 - All of these
- 23) Which of the following is /are types of viruses?
- UN-encrypted virus
 - File virus
 - Stealth virus
 - All of these
- 24) Which of the following are true in biometric System?
- For authentication application a user template is compared against a single template stored in the database
 - For verification /identification application ,a user template is compared against all the templates stored in the Database
 - Multimodal biometrics is used to improve accuracy
 - None of these
- 25)How is the Smurf denial of Service attack mounted?
- By sending ICMP echo request to a broadcast address and using the victim IP address as sender
 - By opening a large number of TCP half-open connection
 - By sending an echo Packet that is larger than the maximum permissible size
 - None of these

PART -B (5 X 10 – 50 marks)

- Briefly Explain the concepts of Networking Devices with neat Diagram
- Explain in Detail Layers of OSI Model
- Write Short notes about IPV Version 6
- Explain about Basic Concepts of Cryptography
- Discuss in details Types of Biometrics used in Ethical Hacking



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ASSESSMENT MARK SHEET

Subject : ETHICAL HACKING

Date : 07/02/2024

Sub Code : VACSOS2312

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	21BSCCS26	KAMESHWARAN.P	COMPUTER SCIENCE	43
2	21BSCCS22	VELAN.K	COMPUTER SCIENCE	40
3	21BSCCS28	ANAND KUMAR.P	COMPUTER SCIENCE	40
4	22BSCCS83	VASANTH KUMAR.M	COMPUTER SCIENCE	40
5	22BSCCS17	VEERASAMY A	COMPUTER SCIENCE	40
6	22BSCCS92	EZHILARASI.K	COMPUTER SCIENCE	40
7	22BSCCS95	SURUTHI SELVAM.S	COMPUTER SCIENCE	40
8	22BSCCS23	KAVITHA.B	COMPUTER SCIENCE	40
9	22BSCCS24	LAVANYA.S	COMPUTER SCIENCE	40
10	22BSCCS91	NIVETHA.S	COMPUTER SCIENCE	40
11	22BSCCS73	MARI.R	COMPUTER SCIENCE	40
12	22BSCSA12	DEEPAK RAJ P	SOFTWARE APPLICATIONS	46
13	22BSCSA15	SATHISH. R	SOFTWARE APPLICATIONS	44
14	21BCA39	PRADEEP S	COMPUTER APPLICATION	40
15	22MSCCS01	DEVATHAMILINI A	MSC COMPUTER SCIENCE	57
16	22MSCCS11	KARTHIKA.K	MSC COMPUTER SCIENCE	44
17	22BCA07	T ASKAR ALI	COMPUTER APPLICATION	52
18	22BCA38	M.NAVEEN	BCA	46
19	22BCA15	S.DEEPAK RAJ	BCA	52
20	22BCA01	S. MEGALA	BCA	50
21	22BCA43	S.GOKULAKRISHNAN	BCA	48
22	22BCA63	GOWTHAM A	BCA	49
23	22BCA60	R.KISHORE	BCA	40
24	22BCA96	V.VIGNESHWARAN	BCA	43
25	22BCA09	K.DARSHAN	BCA	43
26	22BCA67	R MADHESH	BCA	53



27	22BCA22	S KALISAKTHI	BCA	40
28	22BCA16	S.BALAKRISHNAN	BCA	46
29	22BCA85	A BHARATH	BCA	44
30	22BCA93	M SANTHANA KUMAR	BCA	41
31	22BCA25	S.SUYAMBUKARTHIKEYAN	BCA	42
32	22BSCCS37	NAVEENDRAN S	COMPUTER SCIENCE	49
33	22BSCCS16	RAKESH R	COMPUTER SCIENCE	40
34	22BSCCS62	J.BABU PRASAD	COMPUTER SCIENCE	51
35	22BSCCS38	S.DHAMODHARAN	COMPUTER SCIENCE	41
36	22BSCCS100	P.VAIGUNDA RAJA	COMPUTER SCIENCE	49
37	22BSCCS55	MANIKANDAN M I	COMPUTER SCIENCE	40
38	22BSCCS06	ROHAN J	COMPUTER SCIENCE	40
39	22BSCCS99	R.YOGESH	COMPUTER SCIENCE	40
40	22BSCCS108	F JOSHUA RAJA	COMPUTER SCIENCE	51
41	21BSCM03	SOUNDARIYA E	MATHEMATICS	40
42	22BSCCS35	GOPINATH.K	COMPUTER SCIENCE	40
43	22BSCSA10	DILLI BABU P	SOFTWARE APPLICATIONS	40
44	22BSCSA03	YUKESH R	SOFTWARE APPLICATIONS	40
45	21BSCM04	SWETHA K	MATHEMATICS	40



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Year: 2023-2024



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Selavayal, Chennai - 600 051.



CERTIFICATION OF COMPLETION

This Certificate is Presented to MADHESH . R of
II BCA for successful completion of 30 hours of Value Added Course
on ETHICAL HACKING during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent



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Dr. V.DEVI
Principal

A.N.M.
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Year: 2023-2024



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CERTIFICATION OF COMPLETION

This Certificate is Presented to SATHISH P of
II BSC CS for successful completion of 30 hours of Value Added Course
on ETHICAL HACKING during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent

VALUE ADDED COURSE REPORT 2023-2024

Course: Ethical Hacking

The Value Added Course entitled “ Ethical Hacking” was conducted for 30 hours during the academic year 2023-2024. This course outlines the vulnerabilities in a system or network and evaluates techniques that are used to break into an insecure web application and identify relevant countermeasures.

A total of 45 students from various departments(BCA, BSC CS, BSC SA ,BSC MATHS & MSC CS) enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



INTRODUCTION TO INDUSTRY 4.0 AND INDUSTRIAL INTERNET OF THINGS

INTRODUCTION TO INDUSTRY 4.0 AND INDUSTRIAL INTERNET OF THINGS

Unit- 1 : Introduction: Sensing & actuation, Communication-Part I, Part II, Networking-Part I, Part II. Industry 4.0: Globalization and Emerging Issues, The Fourth Revolution, LEAN Production Systems, Smart and Connected Business Perspective, Smart Factories

Unit-2 : Industry 4.0: Cyber Physical Systems and Next Generation Sensors, Collaborative Platform and Product Lifecycle Management, Augmented Reality and Virtual Reality, Artificial Intelligence, Big Data and Advanced Analysis . Cybersecurity in Industry 4.0, Basics of Industrial IoT: Industrial Processes-Part I, Part II, Industrial Sensing & Actuation, Industrial Internet Systems.

Unit- 3 : : IIoT-Introduction, Industrial IoT: Business Model and Reference Architecture: IIoT-Business Models-Part I, Part II, IIoT Reference Architecture-Part I, Part II. Industrial IoT- Layers: IIoT Sensing-Part I, Part II, IIoT Processing-Part I, Part II, IIoT Communication-Part I. Industrial IoT- Layers: IIoT Communication-Part II, Part III, IIoT Networking-Part I, Part II, Part III. Industrial IoT: Big Data Analytics and Software Defined Networks: IIoT Analytics - Introduction, Machine Learning and Data Science - Part I, Part II, R and Julia Programming, Data Management with Hadoop.

Unit- 4 : : Industrial IoT: Big Data Analytics and Software Defined Networks: SDN in IIoT-Part I, Part II, Data Center Networks, Industrial IoT: Security and Fog Computing: Cloud Computing in IIoT-Part I, Part II. Industrial IoT: Security and Fog Computing - Fog Computing in IIoT, Security in IIoT-Part I, Part II, Industrial IoT- Application Domains: Factories and Assembly Line, Food Industry. Industrial IoT- Application Domains: Healthcare, Power Plants, Inventory Management & Quality Control, Plant Safety and Security (Including AR and VR safety applications), Facility Management.

Unit- 5 Industrial IoT- Application Domains: Oil, chemical and pharmaceutical industry, Applications of UAVs in Industries, Real case studies :
Case study - I : Milk Processing and Packaging Industries
Case study - II: Manufacturing Industries - Part I
Case study - III : Manufacturing Industries - Part II
Case study - IV : Student Projects - Part I
Case study - V : Student Projects - Part II
Case study - VI : Virtual Reality Lab
Case study - VII : Steel Technology Lab

BOOKS AND REFERENCES

- 1) S. Misra, A. Mukherjee, and A. Roy, 2020. *Introduction to IoT*. Cambridge University Press. Availability: https://www.amazon.in/Introduction-IoT-Sudip-Misra/dp/1108959741/ref=sr_1_1?dchild=1&keywords=sudip+misra&qid=1627359928&sr=8-1
- 2) S. Misra, C. Roy, and A. Mukherjee, 2020. *Introduction to Industrial Internet of Things and Industry 4.0*. CRC Press. Availability: https://www.amazon.in/dp/1032146753/ref=sr_1_3?dchild=1&keywords=sudip+misra&qid=1627359971&sr=8-3
- 3) Research Papers



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VALUE ADDED COURSE 2023-2024

ASSESSMENT

Subject :Introduction To Industry 4.0 And Industrial Internet Of Things Sub Code :VACSOS2307

Date : 07/02/2024

Marks : 100

Time :1 ½ hours

PART -A (25 X 2 = 50 marks)

1. What are the benefits of using IoT in Oil and Gas Industries?
 - a. Decreased production efficiency
 - b. Save cost and time
 - c. Deteriorate asset maintenance
 - d. None of the above
2. Which of the following statement does not represents the advantage of using IoT in the chemical industry?
 - a. Predictive maintenance
 - b. Reduce energy expenses
 - c. Maximize supply chain risks
 - d. Improve logistics
3. What is/are the advantages of using IoT in the Pharmaceutical industry?
 - a. Real-time monitoring
 - b. Inability to control the areas remotely
 - c. Increased production cost and wastage
 - d. All of the above
4. Which of the following can be performed through predictive maintenance?
 - a. Address real-time issues
 - b. Reduce equipment breakdown
 - c. Efficient and effective maintenance
 - d. All of the above
5. Which of the following is true about the features of second-generation UAVs?
 - a. Static design, fixing camera mount, still photography, video recording, and manual steering control
 - b. Transformable designs, 1080 HD video or higher value instrumentation, three-axis gimbals
 - c. Improved safety and regulatory, platform and payload adaptability, automated safety modes
 - d. Enhanced intelligent piloting models and full autonomy, full airspace awareness, auto action



6. What is/are the application field(s) of UAVs?
 - a. Agriculture
 - b. Mining
 - c. Forestry
 - d. All of the above
7. Which of the following does not represent an application of UAV in Agriculture?
 - a. Crop health monitoring
 - b. Monitoring soil quality, counting plants, identifying plot size
 - c. Inspect construction site infrastructure and construct roadways
 - d. Increase effective yields
8. Which of the following does not represent the application of UAVs for energy management?
 - a. Optimized use of seed, fertilizer, and water
 - b. Eliminate the need to get close to the dangerous wires
 - c. Inspections without climbing power poles
 - d. None of the above
9. What is/are the application(s) of UAVs in oil and gas industry?
 - a. Reducing manpower requirements and increasing safety by eliminating the need for industrial mountaineering
 - b. Monitoring pipelines for detecting leakage of oil and gas pipelines
 - c. Collecting videos and thermal imagery of oil and gas fields
 - d. All of the above
10. Which of the following is/are true about the necessity of case studies?
 - a. The case study investigates real-life phenomena through a detailed analysis of related events.
 - b. The case study generally selects a vast geographical area or a large number of individuals as the subject matter.
 - c. Both (a) and (b)
 - d. Neither (a) nor (b)
11. Which of the following is/are the major challenge(s) associated with the healthcare industry?
 - a. Drug overdose
 - b. Wrong drug prescription
 - c. Costly hospitals and clinics
 - d. All of the above
12. Fill in the blanks. _____ is an example of a wireless ECG monitoring device.
 - a. QardioCore
 - b. BMP280
 - c. ESP8266
 - d. BME280



13. Which of the following is a body temperature monitoring device?
 - a. Ihealth BP5
 - b. Kinsa smart thermometer
 - c. Dexcom
 - d. ADAMM
14. Which of the following represents an intelligent asthma monitoring device?
 - a. BME280
 - b. Kinsa smart thermometer
 - c. ADAMM
 - d. Dexcom
15. Which of the following does not represent the challenge of IIoT in a power plant?
 - a. Security issues
 - b. Scalability issues
 - c. Smart metering
 - d. Low power devices
16. Fill in the blanks. _____ is the full form of SCADA.
 - a. Supervisory Control and Data Acquisition
 - b. Superlative Control and Data Acquittance
 - c. Supervisory Condition and Data Acceptance
 - d. None of the above
17. Which of the following does not represent communication networks?
 - a. Home area network
 - b. House area network
 - c. Wide area network
 - d. Neighborhood area network
18. Which of the following is true about passive RFID tags?
 - a. Broadcasts information signals in the form of a beacons
 - b. Relies on backscattering
 - c. Have longer range than active RFID tags
 - d. Bulky and expensive as compared to active RFID
19. Which of the following is represented through the following statement?
Statement- It has an onboard battery for powering the IC but does not have an active transmitter. It relies on backscattering. However, it neither depends on signals from the reader for power nor creates additional noise.
 - a. Active RFID tags
 - b. Passive RFID tags
 - c. Semi-passive Tags
 - d. None of the above
20. Which of the following is an example of augmented reality?
 - a. Oculus Rift
 - b. Samsung Gear VR
 - c. Bus stop prank by Pepsi Max
 - d. Google Cardboard



21. Which of the following represents IoT applications in facility management?
- Smart meter
 - Security and safety alarms
 - Both (a) and (b)
 - Neither (a) nor (b)
22. Which of the following does not represent the benefit of the IIoT applications in inventory management?
- Automation in the process of inventory tracking and packing
 - Inability to recognize the reason behind the bottlenecks in the operation
 - Optimization of the amount of inventory
 - Real-time update of the quantity of inventory items, their location, and tracking
23. Which of the following can be achieved by performing analytics in facility management?
- Unmanaged energy consumption
 - Unoptimized operational cost
 - Remote monitoring of the facilities
 - None of the above
24. What are the main 5 Vs of big data?
- Volume, virtualization, viscosity, veracity, variety
 - Volume, virtualization, variability, viscosity, variety
 - Volume, velocity, virtualization, veracity, viscosity
 - Volume, velocity, variability, veracity, variety
25. Which of the following is an example of Classification?
- Bayes Regression
 - Support Vector Machine
 - Gaussian Mixture Model
 - All of the above

PART -B (5 X 10 = 50 marks)

- Describe Product Lifecycle management in detail.
- Explain briefly about LoRa and LoRaWAN.
- Describe some of the fog platform providers.
- Compare and Contrast Julia and R programming language in detail.
- Explain briefly about Software Defined Network (SDN) architecture in detail.



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NAAC CYCLE III - AQAR

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1.2 Academic Flexibility

Year: 2023-2024





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VALUE ADDED COURSE 2023-2024

ASSESSMENT MARK SHEET

Subject : INTERNET OF THINGS

Date : 07/02/2024

Sub Code : VACSOS2307

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	22BSCCS50	DHARSHINI T	COMPUTER SCIENCE	47
2	22BSCCS71	HARINI PRIYA R	COMPUTER SCIENCE	63
3	22BSCCS90	LAVANYA P	COMPUTER SCIENCE	51
4	22BSCCS01	SANDHIYA S	COMPUTER SCIENCE	55
5	21BSCM07	CHANDRALEKHA R	MATHEMATICS	42
6	21BSCM02	SHALINI R	MATHEMATICS	40
7	22BSCCS110	JOEL JEBASEELAN.J	COMPUTER SCIENCE	40
8	22BSCCS88	JETHRO JOHN.K	COMPUTER SCIENCE	40
9	22BSCCS33	RIYASH KHAN M	COMPUTER SCIENCE	40
10	22BSCCS20	RUBANESH.R	COMPUTER SCIENCE	40
11	22BSCCS78	VIGNESH.K	COMPUTER SCIENCE	40
12	22BSCCS43	VIGNESHVARAN S	COMPUTER SCIENCE	40
13	22BSCCS75	YAMUNA.D	COMPUTER SCIENCE	44
14	22BSCSA18	KAVIARASU. G	SOFTWARE APPLICATION	40
15	21BCA33	SOHAIB T	BCA	41
16	21BCA87	KARTHICK RAJAN	BCA	47
17	22BSCSA14	VANA MUKESH B	SOFTWARE APPLICATION	48
18	22BSCCS42	RISHWAN S	COMPUTER SCIENCE	42
19	22BCA68	MOHAMMED IMRAN.F	BCA	40
20	22BCA61	SAI SURYA.G	BCA	41
21	22BCA51	SHREEJITH KUMAR DAS S	BCA	40
22	22BCA44	SRINATH M	BCA	46
23	22BCA06	DINESH R	BCA	40
24	22BCA92	GANESH RAJA S	BCA	40
25	22BCA10	MADHAN KUMAR B	BCA	40
26	22BCA40	SACHIN V	BCA	53
27	22BCA90	SANJAY.M	BCA	A
28	22BCA65	VIKRAM.E	BCA	40
29	22BCA103	VIMAL RAJ.B	BCA	40



30	22BCA91	MOHANA PRIYANKA M	BCA	59
31	22BCAE11	S.JEEVA	BCA	49
32	22BCAE13	C.GOPINATH	BCA	43
33	22BCAE18	M.GOVINDA RAJ	BCA	42
34	22BCAE19	A.BHARANIDHARAN	BCA	40
35	21BSCCS15	SHANKAR.P.M	COMPUTER SCIENCE	40
36	21BSCCS23	VIJAY KUMAR.V	COMPUTER SCIENCE	40
37	21BCA81	MANISH M	BCA	43
38	21BCA49	MOHAMED NASIM S	BCA	41
39	21BCA70	SATHYA NARAYANAN K	BCA	41
40	22BCALE02	RAGHUL S S	BCA	43
41	22BSCCS81	ARTHLE	COMPUTER SCIENCE	40
42	22BCAE01	M.PRASANTH KUMAR	BCA	40
43	22BCAE08	R.HEMNATHAN	BCA	40
44	22BCAE04	S.JAISURYA	COMPUTER APPLICATIONS	40



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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024





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Year: 2023-2024



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CERTIFICATION OF COMPLETION

This Certificate is Presented to SHALINI R of
III BSC [MATHS] for successful completion of 30 hours of Value Added Course
 on INTERNET OF THINGS during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
 Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
 Secretary & Correspondent

VALUE ADDED COURSE REPORT 2023-2024

Course: Introduction To Industry 4.0 And Industrial Internet Of Things

The Value Added Course entitled “Introduction To Industry 4.0 And Industrial Internet Of Things” was conducted for 30 hours during the academic year 2023-2024. This course deals with the transformation of commercial strategies through the integration of cutting-edge technologies such as sensors, communication, and computational processing.

A total of 43 students from various departments(BCA, BSC CS, BSC SA & BSC MATHS) enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



ARTIFICIAL INTELLIGENCE: SEARCH METHODS FOR PROBLEM SOLVING

ARTIFICIAL INTELLIGENCE : SEARCH METHODS FOR PROBLEM SOLVING

Unit-1: Introduction: History, Can Machines think?, Turing Test, Winograd Schema Challenge, Language and Thought, Wheels & Gears. Introduction: Philosophy, Mind, Reasoning, Computation, Dartmouth Conference, The Chess Saga, Epiphenomena

Unit-2: State Space Search: Depth First Search, Breadth First Search, Depth First Iterative Deepening. : Heuristic Search: Best First Search, Hill Climbing, Solution Space, TSP, Escaping Local Optima, Stochastic Local Search. Population Based Methods: Genetic Algorithms, SAT, TSP, emergent Systems, Ant Colony Optimization

Unit-3: Finding Optimal Paths: Branch & Bound, A*, Admissibility of A*, Informed Heuristic Functions. Space Saving Versions of A*: Weighted A*, IDA*, RBFS, Monotone Condition, Sequence Alignment, DCFS, SMGS, Beam Stack Search. Game Playing: Game Theory, Board Games and Game Trees, Algorithm Minimax, AlphaBeta and SSS*

Unit-4:Automated Planning: Domain Independent Planning, Blocks World, Forward &Backward Search, Goal Stack Planning, Plan Space Planning. Problem Decomposition: Means Ends Analysis, Algorithm Graphplan, Algorithm AO*

Unit-5 : Rule Based Expert Systems: Production Systems, Inference Engine, Match-Resolve-Execute, Rete Net. Deduction as Search: Logic, Soundness, Completeness, First Order Logic, Forward Chaining, Backward Chaining. Constraint Processing: CSPs, Consistency Based Diagnosis, Algorithm Backtracking, Arc Consistency, Algorithm Forward Checking



BOOKS AND REFERENCES

Text Book:

1. Deepak Khemani. A First Course in Artificial Intelligence, McGraw Hill Education (India), 2013.

Reference Books:

1. Stefan Edelkamp and Stefan Schroedl. Heuristic Search: Theory and Applications, Morgan Kaufmann, 2011.
2. John Haugeland, Artificial Intelligence: The Very Idea, A Bradford Book, The MIT Press, 1985.
3. Pamela McCorduck, Machines Who Think: A Personal Inquiry into the History and Prospects of Artificial Intelligence, A K Peters/CRC Press; 2 edition, 2004.
4. Zbigniew Michalewicz and David B. Fogel. How to Solve It: Modern Heuristics. Springer; 2nd edition, 2004.
5. Judea Pearl. Heuristics: Intelligent Search Strategies for Computer Problem Solving, Addison-Wesley, 1984.
6. Elaine Rich and Kevin Knight. Artificial Intelligence, Tata McGraw Hill, 1991.
7. Stuart Russell and Peter Norvig. Artificial Intelligence: A Modern Approach, 3rd Edition, Prentice Hall, 2009.
8. Eugene Charniak, Drew McDermott. Introduction to Artificial Intelligence, Addison-Wesley, 1985.
9. Patrick Henry Winston. Artificial Intelligence, Addison-Wesley, 1992.



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Selavayal, Chennai, Tamil Nadu, India

VALUE ADDED COURSE 2023-2024

ASSESSMENT

**Subject : Artificial Intelligence Search Methods
For Problem Solving**

Sub Code : VACSOS2310

Date : 07/02/2024

Marks : 100

Time : 1 ½ hours

PART -A (25 X 2 = 50 marks)

1. Who first said that reasoning is manipulation of symbols, reasoning is computation?

- a. Galileo Galilei
- b. Gottfried Wilhelm von Leibniz
- c. John McCarthy
- d. Thomas Hobbes

2. Augusta Ada Byron _____ .

- a. is also known as Ada Lovelace
- b. was a mathematician
- c. is often referred to as the "first programmer"
- d. has a programming language named after her, called ADA

3. _____ was the first general-purpose mobile robot to move around autonomously.

- a. Blue Gene
- b. ELIZA
- c. SHAKEY
- d. SHRDLU

4. The Hill Climbing algorithm may run into a local optimum because _____.

- a. the heuristic function is not informed enough
- b. the heuristic function overestimates the distance to the goal
- c. the MoveGen (neighbourhood) function does not connect the node to a better neighbour
- d. the MoveGen function does not generate reversible moves



5. In stochastic local search

- a. random walk introduces exploitation in search
- b. random walk introduces exploration in search
- c. gradient descent introduces exploitation in search
- d. gradient descent introduces exploration in search

6. Darwin's theory of natural selection can be seen as

- a. a process of selecting the best leaders based on their education
- b. a process of selecting the best leaders based on their ability to tell lies
- c. a process to design life forms that evolve and improve over generations
- d. a process where members of a population compete for survival

7. What is the role an individual ant plays in the Ant Colony Algorithm?

- a. It conveys the messages from the queen to the soldiers
- b. It constructs a candidate solution using divide and conquer approach
- c. It constructs a candidate solution using a greedy local stochastic search approach
- d. It guards the entrance of the ant colony

8. Game Theory is concerned with _____.

- a. improving the techniques of players in individual games
- b. how best to plan the first two throws in a javelin throw competition
- c. analysing rational behaviour in a scenario of multiple independent agents
- d. the science of strategy of independent agents in competitive environments
- e. graphics associated with video games

9. The Prisoner's Dilemma demonstrates that _____.

- a. there are moral reasons why prisoners do not attempt jailbreak
- b. a prisoner cannot decide whether to inform others before jailbreak
- c. two agents each acting rationally may end up with less than optimal payoff
- d. two accused need to judge how much to trust an accomplice

10. When is an action 'a' applicable to a state 'S' ?

- a. $(S \cap \text{AddEffects}(a)) = \emptyset$
- b. $(S \cap \text{DelEffects}(a)) \neq \emptyset$
- c. $(S \cap \text{preconditions}(a)) = \emptyset$
- d. $\text{preconditions}(a) \subseteq S$

12. Which of the following is true about Goal Stack Planning?

- a. It searches the space like BSSP, and constructs the plan like BSSP
- b. It searches the space like BSSP, and constructs the plan like FSSP



- c. It searches the space like FSSP, and constructs the plan like BSSP
- d. It searches the space like FSSP, and constructs the plan like FSSP

13. The Sussman Anomaly illustrates that _____.
- a. even simple blocks problems may have non-serializable sub-goals
 - b. even simple blocks problems can have serializable sub-goals
 - c. Goal Stack Planning always finds the shortest plan in the blocks world domain
 - d. Backward State Spec Planning always finds the shortest plan in the blocks world domain

14. The term "Means" in the Means-Ends-Analysis (MEA) proposed by Newell and Simon refers to _____.
- a. the semantics or meaning of the domain predicates
 - b. the average length of the solutions possible for a given problem
 - c. the set of operators available to the problem solver
 - d. a set of goalTest functions for the domain

15. The AO* algorithm is most similar to _____.
- a. Backward State Space Planning
 - b. Forward State Space Planning
 - c. The SSS* algorithm for game playing
 - d. The A* algorithm

16. In a Match-Resolve-Execute cycle, the Resolve phase _____.
- a. identifies a rule-data tuple that will fire in the current cycle
 - b. resolves/removes syntax errors in rules and data
 - c. decides which WMEs reside in which node in the Rete Net
 - d. resolves runtime errors that occur when rules are fired

17. Automated theorem proving is a search algorithm _____.
- a. that needs to choose between rules with matching facts in forward chaining.
 - b. that needs to choose between rules matching with goals in forward chaining.
 - c. that needs to choose between rules with matching facts in backward chaining.
 - d. that needs to choose between rules matching with goals in backwards chaining.

18. In propositional logic and first-order-logic, _____.
- a. a KB allows only true sentences.
 - b. a KB allows false sentences to represent what is false in a domain.
 - c. a KB cannot represent what is false in a domain.
 - d. a KB can represent what is false in the domain.



19. A unifier is _____.
- a disjunction operator that is used for combining a set of formulas into one formula
 - a conjunction operator that is used for combining a set of formulas into one formula
 - a set of assignments that make two different formulas to become identical to each other.
 - a set of rules of substitution that makes two different formulas to become identical to each other.
20. A constraint on a subset of the variables _____.
- expresses the fact that the variables must participate in a solution to the CSP.
 - expresses the fact that the values that the variables can take are interdependent.
 - expresses all combinations of values that the variables can take.
 - expresses all combinations of values that are part of some solution.
21. The goal of constraint propagation or consistency enforcement is _____.
- to extend the existing constraints to newer variables in the network.
 - to distribute the constraints more evenly amongst the variables.
 - to ensure that the CSP has a solution.
 - to modify the constraint network to prune the space explored by the search algorithm.
22. The "Father of Artificial Intelligence" is:
- Alan Turing
 - Charles Babbage
 - John McCarthy
 - None of the above
23. Which of the following is not an application of artificial intelligence?
- Computer Vision
 - Natural Language Processing
 - Database Management System
 - Digital Assistants
24. Which of the following are informed search methods?
- Best First Search
 - A* Search
 - Memory Bound Heuristic Search
 - All of the above
25. The 'Imitation Game' was the original name of?
- LISP
 - The Turing Test
 - The Halting Problem
 - None of the above

PART -B (5 X 10 – 50 marks)

1. Explain about state space tree with example.
2. Explain in detail about Travelling Sales man problem.
3. Explain Ant Colony Optimization techniques with example.
4. Explain in detail about First Order Logic with example.
5. Explain AO* algorithm with an example.



THIRUTHANGAL NADAR COLLEGE				
VALUE ADDED COURSE 2023-2024				
ASSESSMENT MARK SHEET				
Subject : Artificial Intelligence:Search Methods For Problem Solving				
Date : 07/02/2024			Sub Code : VACSOS2310	
S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	21BSCCS18	D.LOKESH RAJA	COMPUTER SCIENCE	52
2	21BSCCS30	KEERTHISH T K	COMPUTER SCIENCE	52
3	21BSCCS02	G.SRIKANTH	COMPUTER SCIENCE	48
4	21BSCCS11	B.AKASH	COMPUTER SCIENCE	45
5	22BCA22	K TAMIL SELVAN	COMPUTER APPLICATION	42
6	22BCA46	N S MITHUSHAN	COMPUTER APPLICATION	51
7	22BCA33	REEMESH MONDAL R	COMPUTER APPLICATION	51
8	22BCA89	S Santhosh Kumar	COMPUTER APPLICATION	52
9	22BCA19	B.ASICK	COMPUTER APPLICATION	45
10	22BCA21	I MOHAMMAD SHAMEER	COMPUTER APPLICATION	53
11	22BCA18	S.Somesh (A)Harrish	COMPUTER APPLICATION	43
12	22BCA03	G.M.Sivadesh	COMPUTER APPLICATION	50
13	22BSCM03	K.KARTHIKEYAN	B.SC MATHEMATICS	60
14	22BSCM01	A.MOHITH	B.SC MATHEMATICS	54
15	22BSCM06	J.AROKIYA NAVINA	B.SC MATHEMATICS	48
16	22BSCM04	M.RISHA	B.SC MATHEMATICS	49
17	22BSCM02	S.SWATHI	B.SC MATHEMATICS	47
18	22BSCM05	ASWATHI M	B.SC MATHEMATICS	40
19	22BSCCS10	AKASH.D	COMPUTER SCIENCE	52
20	22BSCCS36	ARUL SAKTHI.K.S	COMPUTER SCIENCE	51
21	22BSCCS30	KARTHICK.D	COMPUTER SCIENCE	40
22	22BSCCS41	SACHIN A	COMPUTER SCIENCE	40
23	22BSCCS54	SANJAY.S	COMPUTER SCIENCE	42
24	22BSCCS104	ASHWINI.G	COMPUTER SCIENCE	41
25	22BSCSA04	DHANAN JAYAN P	SOFTWARE APPLICATIONS	41
26	22BSCSA13	DHINAKARAN N	SOFTWARE APPLICATIONS	42
27	22BSCSA20	MADHUMITHA. S	SOFTWARE APPLICATIONS	40
28	22BSCSA31	MAHESH. G	SOFTWARE APPLICATIONS	49



29	22BSCSA17	VASANTHAKUMAR. N	SOFTWARE APPLICATIONS	52
30	22BSCSA16	KEERTHIKA. M	SOFTWARE APPLICATIONS	55
31	22BCA78	VETRIVELAN.M	BCA	40
32	22BCA94	ANIRUDH. J	BCA	50
33	22BCA80	KARTHICK BHARATHI.H	BCA	45
34	22BCA20	RANJITH KUMAR B	BCA	41
35	22BCA02	TAMIMANZAR J	BCA	55
36	22BCA66	SANDENABOINA SAIKUMAR S	BCA	57
37	22BCA100	GUHAN T S	BCA	60
38	22BCA36	HEMANTH KUMAR R	BCA	62
39	22BCA76	MADHAN PRASANTH.M	BCA	59
40	22BCA26	MOHAMMED AMEER ALI KHAN	BCA	40
41	22BCA13	SARAN G	BCA	60
42	22BCA55	SELVA KUMAR R	BCA	58
43	22BCA88	YUGENDRAN.M	BCA	49



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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



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Selavayal, Chennai - 600 051.



CERTIFICATION OF COMPLETION

This Certificate is Presented to **RISHA M** of
..... **II BSC M** for successful completion of 30 hours of Value Added Course
on **ARTIFICIAL INTELLIGENCE** during the Academic year 2023 – 2024.

Search Methods For Problem Solving

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent



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Search Methods For Problem Solving

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent



VALUE ADDED COURSE REPORT 2023-2024

Course: Artificial Intelligence:Search Methods For Problem Solving

The Value Added Course entitled “Artificial Intelligence:Search Methods For Problem Solving” was conducted for 30 hours during the academic year 2023-2024. This course aims to build a strong foundation for Artificial Intelligence and also provides an exclusive formalism for problem solving, where the quest and reasoning approaches can operate collectively.

A total of 43 students from various departments(BCA, BSC CS, BSC SA ,BSC MATHS & MSC CS) enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



PYTHON FOR DATA SCIENCE

PYTHON FOR DATA SCIENCE

Unit-1:Basics Of Python Spyder (Tool):Introduction Spyder, Setting working Directory, Creating and saving a script file, File execution, clearing console, removing variables from environment, clearing environment, Commenting script files, Variable creation, Arithmetic and logical operators, Data types and associated operations

Unit- 2: Sequence data types and associated operations: Strings, Lists, Arrays, Tuples, Dictionary, Sets, Range, NumPy and Array

Unit- 3: Pandas data frame and data frame related operations on Toyota Corolla dataset: Reading files, Exploratory data analysis, Data preparation and preprocessing

Unit- 4 :Data visualization on Toyoto Corolla dataset using matplotlib and seaborn libraries: Scatter plot, Line plot, Bar plot, Histogram, Box plot, Pair plot

Unit- 5 :Control structures using Toyota Corolla dataset: if-else family, for loop, for loop with if break, while loop-Functions - CASE STUDY :Regression-Predicting price of pre-owned cars. Classification- Classifying personal income

BOOKS AND REFERENCES

1. Introduction to linear algebra - by Gilbert Strang
2. Applied statistics and probability for engineers – by Douglas Montgomery
3. Mastering python for data science, Samir Madhavan



35	21BCA83	SUDHAKARAN E	<i>[Handwritten signature]</i>
36	21BCA16	THARUN V	<i>[Handwritten signature]</i>
37	21BCA62	ROHITH G	<i>[Handwritten signature]</i>
38	21BCA42	VENKATHESH A D	<i>[Handwritten signature]</i>
39	TRANSFER	ARUNKUMAR S	<i>[Handwritten signature]</i>
40	22 B.COM CA24	RESHMA F	<i>[Handwritten signature]</i>
41	22 B.COM CA58	RUBINI A	<i>[Handwritten signature]</i>
42	22 B.COM CA65	SAMUEL J	<i>[Handwritten signature]</i>
43	22 B.COM CA45	SANTHOSH M	<i>[Handwritten signature]</i>
44	22BCA14	B.SARAVANA PRAKASH	<i>[Handwritten signature]</i>
		STAFF SIGNATURE	<i>[Handwritten signature]</i>



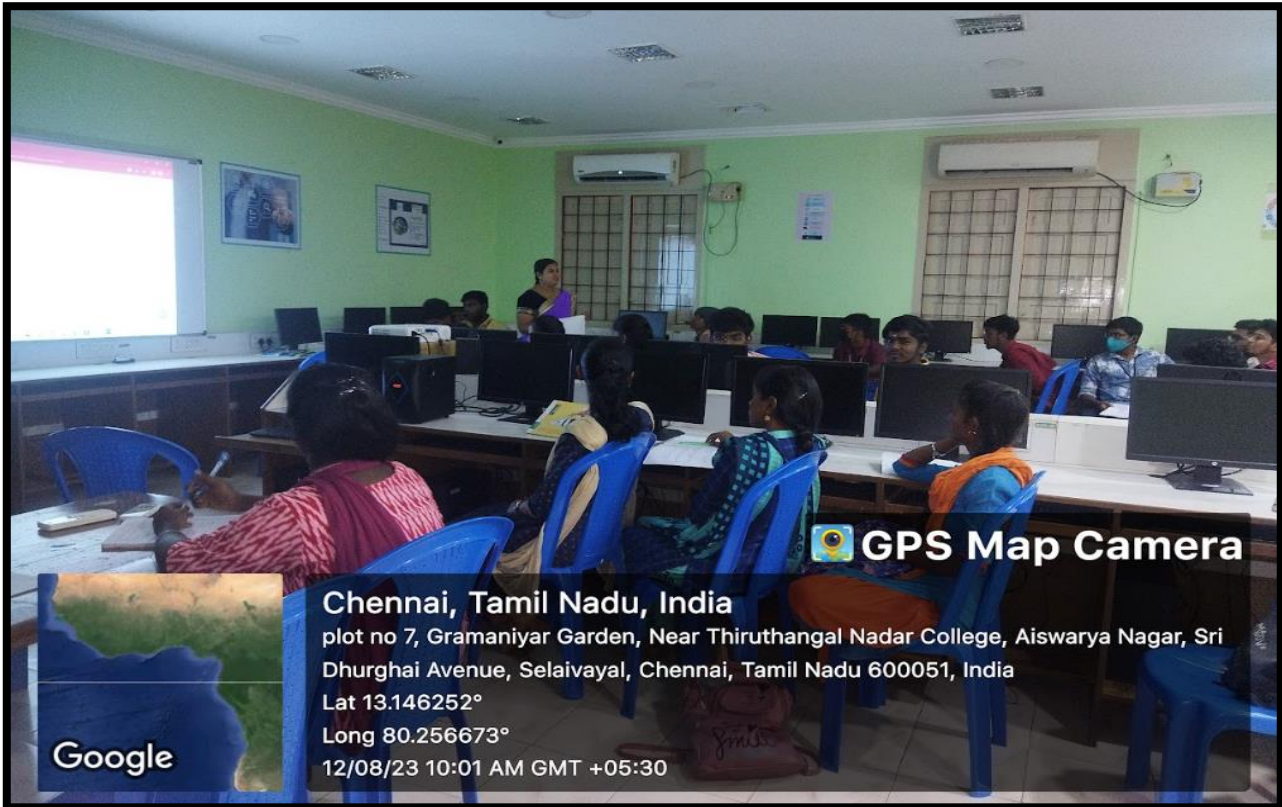
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NAAC CYCLE III - AQAR

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1.2 Academic Flexibility

Year: 2023-2024





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Selavayal, Chennai, Tamil Nadu, India

VALUE ADDED COURSE 2023-2024

ASSESSMENT

Subject : Python for Data Science

Sub Code :VACSOS2309

Date : 07/02/2024

Marks : 100

Time :1 ½ hours

PART -A (25 X 2 = 50 marks)

1. Who developed Python Programming Language?
 - a) Wick van Rossum
 - b) Rasmus Lerdorf
 - c) Guido van Rossum
 - d) Niene Stom
2. Which type of Programming does Python support?
 - a) object-oriented programming
 - b) structured programming
 - c) functional programming
 - d) all of the mentioned
3. Which of the following is the correct extension of the Python file?
 - a) .python
 - b) .pl
 - c) .py
 - d) .p
4. Is Python code compiled or interpreted?
 - a) Python code is both compiled and interpreted
 - b) Python code is neither compiled nor interpreted
 - c) Python code is only compiled
 - d) Python code is only interpreted
5. Which of the following is used to define a block of code in Python language?
 - a) Indentation
 - b) Key
 - c) Brackets
 - d) All of the mentioned
6. Which keyword is used for function in Python language?
 - a) Function
 - b) def
 - c) Fun
 - d) Define



7. Which of the following character is used to give single-line comments in Python?

- a) //
- b) #
- c) !
- d) /*

8. What is the order of precedence in python?

- a) Exponential, Parentheses, Multiplication, Division, Addition, Subtraction
- b) Exponential, Parentheses, Division, Multiplication, Addition, Subtraction
- c) Parentheses, Exponential, Multiplication, Division, Subtraction, Addition
- d) Parentheses, Exponential, Multiplication, Division, Addition, Subtraction

9. Which of the following functions is a built-in function in python?

- a) factorial()
- b) print()
- c) seed()
- d) sqrt()

10. Which of the following is true for variable names in Python?

- a) underscore and ampersand are the only two special characters allowed
- b) unlimited length
- c) all private members must have leading and trailing underscores
- d) none of the mentioned

11. What will be the output of the following Python function?

```
len(["hello", 2, 4, 6])
```

- a) Error
- b) 6
- c) 4
- d) 3

12. To add a new element to a list we use which Python command

- a) list1.addEnd(5)
- b) list1.addLast(5)
- c) list1.append(5)
- d) list1.add(5)

13. Which one of the following is the use of function in python?

- a) Functions don't provide better modularity for your application
- b) you can't also create your own functions
- c) Functions are reusable pieces of programs
- d) All of the mentioned

14. What will be the output of the following Python code?

```
x = 'abcd'
for i in range(len(x)):
    print(i)
```



- a) error
- b) 1 2 3 4
- c) a b c d
- d) 0 1 2 3

15. Which one of the following is not a keyword in Python language?

- a) pass
- b) eval
- c) assert
- d) nonlocal

16. What arithmetic operators cannot be used with strings in Python?

- a) *
- b) -
- c) +
- d) All of the mentioned

17. What is output of `print(math.pow(3, 2))`?

- a) 9.0
- b) None
- c) 9
- d) None of the mentioned

18. Which module in Python supports regular expressions?

- a) re
- b) regex
- c) pyregex
- d) none of the mentioned

19. Which of the following creates a pattern object?

- a) `re.create(str)`
- b) `re.regex(str)`
- c) `re.compile(str)`
- d) `re.assemble(str)`

20. What will be the output of the following Python code?

```
x = 'abcd'
for i in x:
    print(i.upper())
```

- a) Abcd
- b) a b c d
- c) error
- d) ABCD



21. What is the order of namespaces in which Python looks for an identifier?

- a) Python first searches the built-in namespace, then the global namespace and finally the local namespace
- b) Python first searches the built-in namespace, then the local namespace and finally the global namespace
- c) Python first searches the local namespace, then the global namespace and finally the built-in namespace
- d) Python first searches the global namespace, then the local namespace and finally the built-in namespace

22. What will be the output of the following Python statement?

```
>>>"a"+"bc"
```

- a) bc
- b) abc
- c) a
- d) bca

23. To add a new element to a list we use which Python command?

- a) list1.addEnd(5)
- b) list1.addLast(5)
- c) list1.append(5)
- d) list1.add(5)

24. Which one of the following is the use of function in python?

- a) Functions don't provide better modularity for your application
- b) you can't also create your own functions
- c) Functions are reusable pieces of programs
- d) All of the mentioned

25. What is the maximum possible length of an identifier in Python?

- a) 79 characters
- b) 31 characters
- c) 63 characters
- d) none of the mentioned

PART -B (5 X 10 – 50 marks)

- 1.write a python program to find Fibonacci series of number
- 2.Explain the data types in python
3. What is Dictionary? Explain Python dictionaries in detail discussing its operations and methods.
4. What is an exception? Explain with few examples
- 5.Why do people use Pandas in Python? What are the features of Pandas?



THIRUTHANGAL NADAR COLLEGE

VALUE ADDED COURSE 2023-2024

ASSESSMENT MARK SHEET

Subject : PYTHON FOR DATA SCIENCE

Date : 07/02/2024

Sub Code : VACSOS2309

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	21BSCSA01	ARAVINDHAN.V	SOFTWARE APPLICATIONS	41
2	21BSCSA04	DHANUSH KUMAR.R	SOFTWARE APPLICATIONS	42
3	21BSCSA03	KARTHIKEYAN.M	SOFTWARE APPLICATIONS	40
4	21BCA23	KOWSHIK BALAJI .A	COMPUTER APPLICATIONS	42
5	21BCA15	GOKUL RAJS	COMPUTER APPLICATION	52
6	21BCA63	ELUMALALR	COMPUTER APPLICATION	41
7	21BCA76	DANIEL.S	COMPUTER APPLICATION	42
8	21BSCM08	KRISHNA KANTH G M	MATHEMATICS	42
9	21BSCM06	EKAMBARAM S	MATHEMATICS	41
10	22BSCCS19	BHUVANESH.V	COMPUTER SCIENCE	42
11	22BSCCS39	DIWAKARM	COMPUTER SCIENCE	40
12	22BSCCS15	SATHYA NARAYANAN S	COMPUTER SCIENCE	40
13	22BSCCS65	SHABEER.C	COMPUTER SCIENCE	47
14	22BSCSA05	IMMANUEL S	SOFTWARE APPLICATIONS	40
15	22BSCSA29	SELVAM. R	SOFTWARE APPLICATIONS	40
16	22BSCCS89	ASWIN KUMAR.K	COMPUTER SCIENCE	41
17	22BCA13	BHARATHS	BCA	40
18	22BCA12	SANJAY K	BCA	41
19	22MSCCS04	R.JANKIRAMAN	MSC CS	41
20	22MSCCS12	RAKESHA	MSC CS	40
21	22BCA71	PRAVEEN.G	BCA	52
22	22BCA11	VENKATAKRISHNAN T	BCA	40
23	21BCA84	JOHN BENNY HINN C	BCA	42
24	21BCA61	KARTHICK M	BCA	42
25	021BCOMISME04	Harish.E	ISM	44
26	021BCOMISME01	Issac Daniel.D	ISM	40



27	22BCOMISME08	AAKASH G.	ISM	40
28	22 B.COM CA18	PRAVEEN KUMAR. H	BCOM CA	44
29	22 B.COM CA22	RAGHUL. V	BCOM CA	41
30	21BCA27	MOHAMMED JAVEED I	BCA	42
31	21BCA20	YOGESWARAN B	BCA	40
32	21BCA19	YOKESH R	BCA	40
33	22BSCCS07	MAGESHS	COMPUTER SCIENCE	42
34	22BSCCS11	SARATHLS	COMPUTER SCIENCE	40
35	21BCA83	SUDHAKARAN E	BCA	42
36	21BCA16	THARUN V	BCA	41
37	21BCA62	ROHITH G	BCA	40
38	21BCA42	VENKATHESH A D	BCA	41
39	TRANSFER	ARUNKUMAR S	BCA	40
40	22 B.COM CA24	RESHMA. F	BCOM CA	A
41	22 B.COM CA58	RUBINI . A	BCOM CA	53
42	22 B.COM CA05	SAMUEL. J	BCOM CA	43
43	22 B.COM CA45	SANTHOSH. M	BCOM CA	40
44	22BCAE14	B.SARAVANA PRAKASH	BCA S2	40
45	21BSCSA02	PRABU.E	SOFTWARE APPLICATIONS	57
46	21BSCSA05	PUGAZHUDIYARA	SOFTWARE APPLICATIONS	52
47	22BSCSA02	RAMYA D	SOFTWARE APPLICATIONS	48
48	22BSCSA11	KATHIRVEL G	SOFTWARE APPLICATIONS	59
49	21BCA22	AMEER	COMPUTER APPLICATION	47
50	22BCA28	V.MAHESHWARAN	COMPUTER APPLICATION	40
51	22BSCCS08	MOHAMAD ASIFA	COMPUTER SCIENCE	40
52	22BSCCS26	NOOR MOHAMED. S	COMPUTER SCIENCE	51
53	22BSCCS109	PADMASINLP	COMPUTER SCIENCE	40
54	22BSCCS85	ROHINLY	COMPUTER SCIENCE	45
55	22BSCSA21	RUDHRA RAJESH. E	SOFTWARE APPLICATIONS	A
56	22BCA95	KARTHIKEYAN.P.K	BCA	40
57	22BCA101	PRABAKARAN.S	BCA	41
58	22BCA34	SANTHI VEERAN P	BCA	42



59	22BCA98	DHANUSH RAJ.M	BCA	40
60	22BCAE02	R.HARIHARAN	BCA	45
61	21BCA14	DEVADHARSHAN D	BCA	42
62	21BCA02	MOHAMEED ASLAM	BCA	40
63	22BSCSA08	MOHAN K	SOFTWARE APPLICATIONS	41
64	22BSCSA22	MANJULA. M	SOFTWARE APPLICATIONS	45
65	22BCOMISME05	ASIF KHAN Y.	ISM	41
66	22BCOMISME07	HARISH KUMAR M.V	ISM	40
67	22BCOMISME02	SANJAY S	ISM	45
68	21BCA35	IRSHID AHAMED	BCA	45
69	21BCA51	ISAAC JOSHUA D	BCA	40
70	21BCA65	STEEPHEN A	BCA	40
71	21BCAE05	BASKARAN V	BCA	40
72	21BCAE01	KRITHIKRAJ G	BCA	45
73	21BCAE04	MOHAMMED SALEEM A	BCA	45
74	21BCA31	KEERTHIKA M	BCA	45
75	21BCA04	LOGAPREETHI V	BCA	40
76	21BCA36	LOGESH M	BCA	40
77	21BCA69	KISHORE KUMAR P	BCA	45
78	22BSCCS34	JAGADEESH. S	COMPUTER SCIENCE	40
79	22BSCCS76	RAGHUL.M	COMPUTER SCIENCE	41
80	22BSCCS68	SRIRAM.M	COMPUTER SCIENCE	41
81	21BCOMCA54	AAMINA A	BCOM CA	41
82	21BCOMCA34	AJITH R	BCOM CA	40
83	21BCOMCA71	AMMAN M	BCOM CA	40
84	21BCOMCA22	ARTHYRAJ S	BCOM CA	45
85	22 B.COM CA62	PAVITHRA. S	BCOM CA	45
86	22 B.COM CA32	PRASANTH . M	BCOM CA	45
87	22 B.COM CA63	SARAVANAN. B	BCOM CA	40



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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



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CERTIFICATION OF COMPLETION

This Certificate is Presented to KRISHNA KANTH G M of
iii BSC (MATHS) for successful completion of 30 hours of Value Added Course
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V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent



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Principal

A.N.M.
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Secretary & Correspondent



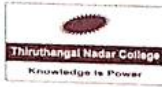
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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



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Selavayal, Chennai - 600 051.



CERTIFICATION OF COMPLETION

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.....II BSC SA..... for successful completion of 30 hours of Value Added Course
onPYTHON FOR DATA SCIENCE..... during the Academic year 2023 – 2024.

V. Devi
Dr. V.DEVI
Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
Secretary & Correspondent

VALUE ADDED COURSE REPORT 2023-2024

Course: Python For Data Science

The Value Added Course entitled “ Python for Data Science” was conducted for 30 hours during the academic year 2023-2024. This course kickstarts the learning of Python from scratch and also makes the students experience |how python involves solving problems in Data science.

A total of 86 students from various departments(BCA, BSC CS, BSC SA ,BSC MATHS, BCOM CA , BCOM ISM & MSC CS) enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



GOOGLE CLOUD COMPUTING FOUNDATIONS

GOOGLE CLOUD COMPUTING FOUNDATIONS

Unit-1: Introduction to the course- So, What's the Cloud anyway? Start with a Solid Platform

Unit-2: Use GCP to build your Apps- Where do I store this stuff?

Unit-3: There's an API for that! You can't secure the Cloud right?

Unit-4: It helps to network!- Let Google keep an eye on things. You have the data, but what are you doing with it?

Unit-5: Let machines do the work

Books and references

- <https://cloud.google.com/docs/>
- <https://www.qwiklabs.com/>



Thiruthangal Nadar College
Knowledge is Power

NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



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(Belongs to the Christian and Thiruthangal Hindu and Government (Dharma) Fund)
A Self Financing Co-Educational College of Arts & Science
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Solemnal, Chinnai, Tamil Nadu, India

VALUE ADDED COURSES 2023-2024

CLASSES: II YR & III YR

GOOGLE CLOUD COMPUTING FOUNDATIONS

ROOM NO. : MB2

S.NO	ID NO.	NAME	10/02/23	12/02/23	14/02/23	16/02/23	18/02/23	20/02/23	22/02/23	24/02/23	26/02/23	28/02/23	01/03/23	03/03/23	05/03/23	07/03/23	09/03/23	11/03/23	13/03/23	15/03/23	17/03/23	19/03/23	21/03/23	23/03/23	25/03/23	27/03/23	29/03/23	31/03/23	02/04/23	04/04/23	06/04/23	08/04/23	10/04/23	12/04/23	14/04/23	16/04/23	18/04/23	20/04/23	22/04/23	24/04/23	26/04/23	28/04/23	30/04/23	02/05/23	04/05/23	06/05/23	08/05/23	10/05/23	12/05/23	14/05/23	16/05/23	18/05/23	20/05/23	22/05/23	24/05/23	26/05/23	28/05/23	30/05/23	01/06/23	03/06/23	05/06/23	07/06/23	09/06/23	11/06/23	13/06/23	15/06/23	17/06/23	19/06/23	21/06/23	23/06/23	25/06/23	27/06/23	29/06/23	01/07/23	03/07/23	05/07/23	07/07/23	09/07/23	11/07/23	13/07/23	15/07/23	17/07/23	19/07/23	21/07/23	23/07/23	25/07/23	27/07/23	29/07/23	31/07/23	02/08/23	04/08/23	06/08/23	08/08/23	10/08/23	12/08/23	14/08/23	16/08/23	18/08/23	20/08/23	22/08/23	24/08/23	26/08/23	28/08/23	30/08/23	01/09/23	03/09/23	05/09/23	07/09/23	09/09/23	11/09/23	13/09/23	15/09/23	17/09/23	19/09/23	21/09/23	23/09/23	25/09/23	27/09/23	29/09/23	01/10/23	03/10/23	05/10/23	07/10/23	09/10/23	11/10/23	13/10/23	15/10/23	17/10/23	19/10/23	21/10/23	23/10/23	25/10/23	27/10/23	29/10/23	31/10/23	02/11/23	04/11/23	06/11/23	08/11/23	10/11/23	12/11/23	14/11/23	16/11/23	18/11/23	20/11/23	22/11/23	24/11/23	26/11/23	28/11/23	30/11/23	02/12/23	04/12/23	06/12/23	08/12/23	10/12/23	12/12/23	14/12/23	16/12/23	18/12/23	20/12/23	22/12/23	24/12/23	26/12/23	28/12/23	30/12/23	01/01/24	03/01/24	05/01/24	07/01/24	09/01/24	11/01/24	13/01/24	15/01/24	17/01/24	19/01/24	21/01/24	23/01/24	25/01/24	27/01/24	29/01/24	31/01/24	02/02/24	04/02/24	06/02/24	08/02/24	10/02/24	12/02/24	14/02/24	16/02/24	18/02/24	20/02/24	22/02/24	24/02/24	26/02/24	28/02/24	01/03/24	03/03/24	05/03/24	07/03/24	09/03/24	11/03/24	13/03/24	15/03/24	17/03/24	19/03/24	21/03/24	23/03/24	25/03/24	27/03/24	29/03/24	31/03/24	02/04/24	04/04/24	06/04/24	08/04/24	10/04/24	12/04/24	14/04/24	16/04/24	18/04/24	20/04/24	22/04/24	24/04/24	26/04/24	28/04/24	30/04/24	02/05/24	04/05/24	06/05/24	08/05/24	10/05/24	12/05/24	14/05/24	16/05/24	18/05/24	20/05/24	22/05/24	24/05/24	26/05/24	28/05/24	30/05/24	01/06/24	03/06/24	05/06/24	07/06/24	09/06/24	11/06/24	13/06/24	15/06/24	17/06/24	19/06/24	21/06/24	23/06/24	25/06/24	27/06/24	29/06/24	01/07/24	03/07/24	05/07/24	07/07/24	09/07/24	11/07/24	13/07/24	15/07/24	17/07/24	19/07/24	21/07/24	23/07/24	25/07/24	27/07/24	29/07/24	31/07/24	02/08/24	04/08/24	06/08/24	08/08/24	10/08/24	12/08/24	14/08/24	16/08/24	18/08/24	20/08/24	22/08/24	24/08/24	26/08/24	28/08/24	30/08/24	01/09/24	03/09/24	05/09/24	07/09/24	09/09/24	11/09/24	13/09/24	15/09/24	17/09/24	19/09/24	21/09/24	23/09/24	25/09/24	27/09/24	29/09/24	01/10/24	03/10/24	05/10/24	07/10/24	09/10/24	11/10/24	13/10/24	15/10/24	17/10/24	19/10/24	21/10/24	23/10/24	25/10/24	27/10/24	29/10/24	31/10/24	02/11/24	04/11/24	06/11/24	08/11/24	10/11/24	12/11/24	14/11/24	16/11/24	18/11/24	20/11/24	22/11/24	24/11/24	26/11/24	28/11/24	30/11/24	02/12/24	04/12/24	06/12/24	08/12/24	10/12/24	12/12/24	14/12/24	16/12/24	18/12/24	20/12/24	22/12/24	24/12/24	26/12/24	28/12/24	30/12/24	01/01/25	03/01/25	05/01/25	07/01/25	09/01/25	11/01/25	13/01/25	15/01/25	17/01/25	19/01/25	21/01/25	23/01/25	25/01/25	27/01/25	29/01/25	31/01/25	02/02/25	04/02/25	06/02/25	08/02/25	10/02/25	12/02/25	14/02/25	16/02/25	18/02/25	20/02/25	22/02/25	24/02/25	26/02/25	28/02/25	01/03/25	03/03/25	05/03/25	07/03/25	09/03/25	11/03/25	13/03/25	15/03/25	17/03/25	19/03/25	21/03/25	23/03/25	25/03/25	27/03/25	29/03/25	31/03/25	02/04/25	04/04/25	06/04/25	08/04/25	10/04/25	12/04/25	14/04/25	16/04/25	18/04/25	20/04/25	22/04/25	24/04/25	26/04/25	28/04/25	30/04/25	02/05/25	04/05/25	06/05/25	08/05/25	10/05/25	12/05/25	14/05/25	16/05/25	18/05/25	20/05/25	22/05/25	24/05/25	26/05/25	28/05/25	30/05/25	01/06/25	03/06/25	05/06/25	07/06/25	09/06/25	11/06/25	13/06/25	15/06/25	17/06/25	19/06/25	21/06/25	23/06/25	25/06/25	27/06/25	29/06/25	01/07/25	03/07/25	05/07/25	07/07/25	09/07/25	11/07/25	13/07/25	15/07/25	17/07/25	19/07/25	21/07/25	23/07/25	25/07/25	27/07/25	29/07/25	31/07/25	02/08/25	04/08/25	06/08/25	08/08/25	10/08/25	12/08/25	14/08/25	16/08/25	18/08/25	20/08/25	22/08/25	24/08/25	26/08/25	28/08/25	30/08/25	01/09/25	03/09/25	05/09/25	07/09/25	09/09/25	11/09/25	13/09/25	15/09/25	17/09/25	19/09/25	21/09/25	23/09/25	25/09/25	27/09/25	29/09/25	01/10/25	03/10/25	05/10/25	07/10/25	09/10/25	11/10/25	13/10/25	15/10/25	17/10/25	19/10/25	21/10/25	23/10/25	25/10/25	27/10/25	29/10/25	31/10/25	02/11/25	04/11/25	06/11/25	08/11/25	10/11/25	12/11/25	14/11/25	16/11/25	18/11/25	20/11/25	22/11/25	24/11/25	26/11/25	28/11/25	30/11/25	02/12/25	04/12/25	06/12/25	08/12/25	10/12/25	12/12/25	14/12/25	16/12/25	18/12/25	20/12/25	22/12/25	24/12/25	26/12/25	28/12/25	30/12/25	01/01/26	03/01/26	05/01/26	07/01/26	09/01/26	11/01/26	13/01/26	15/01/26	17/01/26	19/01/26	21/01/26	23/01/26	25/01/26	27/01/26	29/01/26	31/01/26	02/02/26	04/02/26	06/02/26	08/02/26	10/02/26	12/02/26	14/02/26	16/02/26	18/02/26	20/02/26	22/02/26	24/02/26	26/02/26	28/02/26	01/03/26	03/03/26	05/03/26	07/03/26	09/03/26	11/03/26	13/03/26	15/03/26	17/03/26	19/03/26	21/03/26	23/03/26	25/03/26	27/03/26	29/03/26	31/03/26	02/04/26	04/04/26	06/04/26	08/04/26	10/04/26	12/04/26	14/04/26	16/04/26	18/04/26	20/04/26	22/04/26	24/04/26	26/04/26	28/04/26	30/04/26	02/05/26	04/05/26	06/05/26	08/05/26	10/05/26	12/05/26	14/05/26	16/05/26	18/05/26	20/05/26	22/05/26	24/05/26	26/05/26	28/05/26	30/05/26	01/06/26	03/06/26	05/06/26	07/06/26	09/06/26	11/06/26	13/06/26	15/06/26	17/06/26	19/06/26	21/06/26	23/06/26	25/06/26	27/06/26	29/06/26	01/07/26	03/07/26	05/07/26	07/07/26	09/07/26	11/07/26	13/07/26	15/07/26	17/07/26	19/07/26	21/07/26	23/07/26	25/07/26	27/07/26	29/07/26	31/07/26	02/08/26	04/08/26	06/08/26	08/08/26	10/08/26	12/08/26	14/08/26	16/08/26	18/08/26	20/08/26	22/08/26	24/08/26	26/08/26	28/08/26	30/08/26	01/09/26	03/09/26	05/09/26	07/09/26	09/09/26	11/09/26	13/09/26	15/09/26	17/09/26	19/09/26	21/09/26	23/09/26	25/09/26	27/09/26	29/09/26	01/10/26	03/10/26	05/10/26	07/10/26	09/10/26	11/10/26	13/10/26	15/10/26	17/10/26	19/10/26	21/10/26	23/10/26	25/10/26	27/10/26	29/10/26	31/10/26	02/11/26	04/11/26	06/11/26	08/11/26	10/11/26	12/11/26	14/11/26	16/11/26	18/11/26	20/11/26	22/11/26	24/11/26	26/11/26	28/11/26	30/11/26	02/12/26	04/12/26	06/12/26	08/12/26	10/12/26	12/12/26	14/12/26	16/12/26	18/12/26	20/12/26	22/12/26	24/12/26	26/12/26	28/12/26	30/12/26	01/01/27	03/01/27	05/01/27	07/01/27	09/01/27	11/01/27	13/01/27	15/01/27	17/01/27	19/01/27	21/01/27	23/01/27	25/01/27	27/01/27	29/01/27	31/01/27	02/02/27	04/02/27	06/02/27	08/02/27	10/02/27	12/02/27	14/02/27	16/02/27	18/02/27	20/02/27	22/02/27	24/02/27	26/02/27	28/02/27	01/03/27	03/03/27	05/03/27	07/03/27	09/03/27	11/03/27	13/03/27	15/03/27	17/03/27	19/03/27	21/03/27	23/03/27	25/03/27	27/03/27	29/03/27	31/03/27	02/04/27	04/04/27	06/04/27	08/04/27	10/04/27	12/04/27	14/04/27	16/04/27	18/04/27	20/04/27	22/04/27	24/04/27	26/04/27	28/04/27	30/04/27	02/05/27	04/05/27	06/05/27	08/05/27	10/05/27	12/05/27	14/05/27	16/05/27	18/05/27	20/05/27	22/05/27	24/05/27	26/05/27	28/05/27	30/05/27	01/06/27	03/06/27	05/06/27	07/06/27	09/06/27	11/06/27	13/06/27	15/06/27	17/06/27	19/06/27	21/06/27	23/06/27	25/06/27	27/06/27	29/06/27	01/07/27	03/07/27	05/07/27	07/07/27	09/07/27	11/07/27	13/07/27	15/07/27	17/07/27	19/07/27	21/07/27	23/07/27	25/07/27	27/07/27	29/07/27	31/07/27	02/08/27	04/08/27	06/08/27	08/08/27	10/08/27	12/08/27	14/08/27	16/08/27	18/08/27	20/08/27	22/08/27	24/08/27	26/08/27	28/08/27	30/08/
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Thiruthangal Nadar College
Knowledge is Power

NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024





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Selavayal, Chennai, Tamil Nadu, India

VALUE ADDED COURSE 2023-2024

ASSESSMENT

Subject :Google Cloud Computing

Date : 07/02/2024

Time :1 ½ hours

Sub Code :VACSOS2311

Marks : 100

PART -A (25 X 2 = 50 marks)

1. Peering between two VPC is possible only when
 - a) Source allows connectivity to the destination
 - b) Destination allows traffic from the source
 - c) Source and destination are within same project
 - d) Source and destination VPC belongs to same organization
2. Cloud VPN connects an on-premise network to a VPC through _____
 - a) TCP/IP protocol
 - b) Peering
 - c) Shared network connectivity
 - d) IPSec VPN tunnel
3. Which of the following distributes the traffic from GCP virtual machine instances to a group of instances in the same region?
 - a) Network load balancing
 - b) Internal load balancing
 - c) Virtual load balancing
 - d) Proxy load balancing
4. Which of the following is true?
 - a) Subnets are regional features whereas VPCs are global
 - b) VPCs are regional and subnets are zonal
 - c) VPCs are regional but subnets are not used in GCP
 - d) Both VPCs and subnets are global
5. Which of the following GCP services helps you to create a secure environment for the application deployments?
 - a) Compute engine.
 - b) Google App engine.
 - c) Cloud load balancing.
 - d) VPC.
6. How many types of global load balancers are there in GCP??
 - a) 3 b) 4 c) 5 d) 6



7. Which of the following statement is wrong?
- a) You can use proxy and brokerage services to separate clients from direct access to shared cloud storage
 - b) Any distributed application has a much greater attack surface than an application that is closely held on a Local Area Network.
 - c) Cloud computing doesn't have vulnerabilities associated with Internet applications
 - d) All of the above.
8. which of the following is true about VPC network peering?
- a) It supports communication between VPC networks in different projects.
 - b) It allows sharing of resources like subnets and firewall rules between peered VPC networks.
 - c) It incurs additional data transfer costs.
 - d) It can be established across different cloud providers.
9. Which of the following service provider provides the least amount of built in security?
- a) SaaS b) Paas c) Iaas d) All of the above
10. What are some of the factors that can affect the performance of dynamic routing?
- a) Reception's MAC address.
 - b) The number of routers in the network.
 - c) The type of dynamic routing protocol being used.
 - d) Ciphers used for encryption of data.
11. Which of the following enables the GCP users to trigger their codes based on some event?
- a) Compute Engine
 - b) App Engine
 - c) Cloud Functions
 - d) Kubernetes Engine
12. CIDR stands for _____
- a) Classful inter domain routing
 - b) Classless intra domain routing
 - c) Classful intra domain routing
 - d) Classless inter domain routing
13. Building applications as decoupled microservices is possible with _____?
- a) IaaS
 - b) PaaS
 - c) SaaS
 - d) Standalone environment
14. The maximum number of VPC networks that can be peered with a single network is _____.
- a) 1 b) 5 c) 10 d) Unlimited
15. Which interconnection option provides a direct physical link between on-premises infrastructure and a public cloud provider?
- a) Virtual Private Network (VPN)
 - b) Direct Connect
 - c) Internet peering
 - d) Cloud Load Balancer



16. Which load balancing option operates at the Transport layer (Layer 4) of the OSI model?
- Network Load Balancer
 - HTTP(S) Load Balancer
 - Internal TCP/UDP Load Balancer
 - SSL Proxy Load Balancer
17. Consider following statements
- In auto subnet mode range of addresses are expandable upto /16 only.
 - Custom subnet mode comes with predefined ip ranges. Select correct option
- Only 1 is true
 - Only 2 is true
 - Both are true
 - Both are false
18. Which of the following is an example of the zonal resource in Google Cloud architecture?
- Cloud Datastore
 - Compute Engine
 - HTTP(S) Load Balancer
 - Virtual Private Cloud
19. Which of the following statements about VPC peering is correct?
- VPC peering allows communication between VPC networks in different cloud providers.
 - VPC peering is automatically enabled when creating multiple VPC networks.
 - VPC peering requires IP address overlap between the peered networks.
 - VPC peering can be used to create a full mesh connectivity between all VPC networks.
20. The full form of DHCP is _____
- Distributed Host Configuration Protocol
 - Dynamic Host Configuration Protocol
 - Dynamic Host Controlling Protocol
 - Distributed Host Controlling Protocol
21. Fill in the blanks: Machine learning is a way to use standard _____ to derive _____ insights from data and make repeated decisions.
- Intelligence, technical
 - Techniques, intelligent
 - Predictions, algorithmic
 - Algorithms, predictive
22. Tensor flow uses the _____ for solving a given numerical problem.
- Tree
 - Stack
 - Acyclic undirected graph
 - Acyclic directed graph
23. Tensor Flow is developed by _____?
- Microsoft Team
 - Google Brain team
 - IBM Team
 - None of the above



24. Machine learning is a subset of _____ ?

- a) Data Learning
- b) Deep Learning
- c) Artificial Intelligence
- d) None of the above

25. Which machine learning APIs should be used to gain meaning and sentiment from a speech?

- a) Cloud Natural Language API
- b) Cloud Vision API
- c) Cloud Speech-to-Text API
- d) Cloud Video Intelligence API

PART -B (5 X 10 – 50 marks)

1. Explain about the Google networks architecture?
2. Explain about Service provided by the Cloud?
3. Explain about Google Cloud Architecture?
4. Explain about how to Deploy the Cloud Manager?
5. Explain in detail monitoring Multiple Cloud Projects with Stack Drivers



THIRUTHANGAL NADAR COLLEGE

VALUE ADDED COURSE 2023-2024

ASSESSMENT MARK SHEET

Subject : GOOGLE CLOUD COMPUTING

Date : 07/02/2024

Sub Code : VACSOS2311

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	21BCA40	SRIRAM.D	COMPUTER APPLICATION	50
2	21BCA77	RAGUL K	COMPUTER APPLICATION	60
3	22BCALE03	ABISHEK JOYAL H	COMPUTER APPLICATION	44
4	21BCA86	SANJAY S	COMPUTER APPLICATION	46
5	21BCA37	SAGAR O N	COMPUTER APPLICATION	56
6	21BCA11	SRIDHAR K	COMPUTER APPLICATION	51
7	21BCA66	NARESH KUMAR V	COMPUTER APPLICATION	56
8	21BCA09	SANTHOSH S	COMPUTER APPLICATION	53
9	21BCA47	RAJESH G	COMPUTER APPLICATION	50
10	21BCA07	SURENDAR M	COMPUTER APPLICATION	49
11	21BCA57	DILLI BABU S	COMPUTER APPLICATION	48
12	22MSCCS03	Balaji K	MSC COMPUTER SCIENCE	45
13	22MSCCS14	Gopinath S	MSC COMPUTER SCIENCE	44
14	22MSCCS02	Nithish N	MSC COMPUTER SCIENCE	55
15	22MSCCS06	Bhuvaneshwari P	MSC COMPUTER SCIENCE	59
16	21BSCCS24	D.AJITH KUMAR	COMPUTER SCIENCE	54
17	22BCA39	R . SWATHI	BCA	49
18	22BSCCS102	AFRIN FARHANA	COMPUTER SCIENCE	70
19	22BSCCS86	BHUVANESHWARI Y	COMPUTER SCIENCE	61
20	22BSCCS103	DIVYA DHARSHINI S	COMPUTER SCIENCE	62
21	22BSCCS84	KEERTHIKA A	COMPUTER SCIENCE	66
22	22BSCCS107	MAHALAKSHMI S	COMPUTER SCIENCE	50



23	22BSCCS101	VINODHINI R	COMPUTER SCIENCE	45
24	22BSCCS74	S.RANI MARIYA	COMPUTER SCIENCE	50
25	22BSCCS69	A.REVATHI	COMPUTER SCIENCE	52
26	22BCA97	K Siva Karthik	COMPUTER APPLICATION	44
27	22BCA27	SM.Sri Harish	COMPUTER APPLICATION	43
28	22BCA70	K.Deenadhayalan	COMPUTER APPLICATION	44
29	21BSCCS10	VINAYAGAMOORTHI.M	COMPUTER SCIENCE	48
30	22BSCCS48	MADHUMITHA.R	COMPUTER SCIENCE	72
31	22MSCCS15	V.THANASRI	MSC CS	44
32	21BSCCS06	HARI PRASANTH.V	COMPUTER SCIENCE	54
33	21BSCCS20	HARISH.L	COMPUTER SCIENCE	51
34	21BSCCS12	KARTHICK.N	COMPUTER SCIENCE	55
35	22BSCCS27	MOHAMED ANSAR YOON	COMPUTER SCIENCE	40
36	21BSCCS09	NANDHAKUMAR.S	COMPUTER SCIENCE	52
37	21BSCCS05	SHEEBAVATHI.D	COMPUTER SCIENCE	63
38	21BSCCS01	RAMYA.K	COMPUTER SCIENCE	79
39	21BSCCS27	LAVANYA.M	COMPUTER SCIENCE	57
40	21BSCCS07	MALATHI.S	COMPUTER SCIENCE	56
41	21BSCCS16	JAYA LAKSHMI.V	COMPUTER SCIENCE	57
42	21BSCCS29	JOHNSON.V	COMPUTER SCIENCE	56
43	22BCA64	JEEVA R	BCA	48
44	22BCA05	KARAN KARTHIKEYAN S	BCA	45
45	22BCA32	DHAVITHRAJA B	BCA	50
46	22BCA73	KRITHICK NAGARJUR.B	BCA	48



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VALUE ADDED COURSE 2023-2024

ASSESSMENT MARK SHEET

Subject : GOOGLE CLOUD COMPUTING

Date : 07/02/2024

Sub Code : VACSOS2311

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	22BSCCS77	SORNAKALA.S	COMPUTER SCIENCE	46
2	22BSCCS49	BOOMIKA.R	COMPUTER SCIENCE	50
3	22BSCCS70	GUNASUNDARI.M	COMPUTER SCIENCE	46
4	22BSCCS97	KEERTHANA.R	COMPUTER SCIENCE	46
5	22BSCCS80	RENUKADEVI.S	COMPUTER SCIENCE	57
6	22BSCCS45	MEGALA.M	COMPUTER SCIENCE	48
7	22BSCCS02	CHANDRU A	COMPUTER SCIENCE	52
8	22BSCCS87	ROHIT.T.S (O.L)	COMPUTER SCIENCE	46
9	22BSCCS63	SAKTHI.P	COMPUTER SCIENCE	46
10	22BSCCS14	VEERA RAJESH A	COMPUTER SCIENCE	43
11	22BSCCS18	PRAKASH RAJ B	COMPUTER SCIENCE	46
12	22BSCCS66	MOHAMMED ASHIF.N	COMPUTER SCIENCE	40
13	22BSCCS56	KISHORE R	COMPUTER SCIENCE	48
14	22BSCCS31	SANJAY.V	COMPUTER SCIENCE	50
15	22BSCCS61	JOHN ELIJAH.D	COMPUTER SCIENCE	Long absent
16	22BSCCS22	JANARTHANAN.S	COMPUTER SCIENCE	46
17	22BSCCS58	PAVITHRAN.B	COMPUTER SCIENCE	46
18	22BSCCS105	JOHN PAL.P	COMPUTER SCIENCE	55
19	22BSCCS21	MOHAMED IRFAN.A	COMPUTER SCIENCE	50
20	21BSCCS21	MAGESHWARAN.S	COMPUTER SCIENCE	55
21	22BSCCS47	KLINTON.L	COMPUTER SCIENCE	52
22	22BSCCS03	KARTHIKEYAN.G	COMPUTER SCIENCE	50



23	22BCA31	P.THIRUPATHI ALWAR	BCA	54
24	22BCA47	P. BHARATH KUMAR	BCA	46
25	22BCA54	BABU.V	BCA	52
26	22BSCCS82	YUVARANI R	COMPUTER SCIENCE	41
27	22BSCCS29	G.POOJA LAKSHMI	COMPUTER SCIENCE	53
28	22BSCCS60	STEPHEN INBARAJ WINS	COMPUTER SCIENCE	52
29	22BSCCS79	RUBASHREE.R	COMPUTER SCIENCE	56
30	22BSCSA23	LOKIN.V	SOFTWARE APPLICATIONS	60
31	22BSCSA09	SANTHOSH KUMAR B	SOFTWARE APPLICATIONS	52
32	22BSCSA27	SARAVANAN. B	SOFTWARE APPLICATIONS	44
33	22MSCCS07	A.SAGAYA MANO RANJAI	MSC CS	AAA
34	22BSCCS72	GOKUL KRISHNAN.R	COMPUTER SCIENCE	50
35	22BSCCS28	BHUVAN P	COMPUTER SCIENCE	46
36	22BSCCS57	GANESH R	COMPUTER SCIENCE	52
37	22BSCCS04	MANIKANDAN.M	COMPUTER SCIENCE	45
38	22BSCCS53	SHANKAR PRASATH.S	COMPUTER SCIENCE	62
39	21BCA41	RAJAESH RAGAVENDRA	BCA	62
40	21BCA21	PRAWIN M V	BCA	58
41	22BSCCS67	DHANUSH.S	COMPUTER SCIENCE	48
42	21BSCCS03	SANTHOSH KUMAR.R	COMPUTER SCIENCE	57
43	21BSCCS14	AAMEER.A	COMPUTER SCIENCE	64
44	22BCA23	HARI HARAN J	BCA	52
45	21BCA78	MUKESH V	BCA	46
46	21BSCCS04	MANIKANDAN.C	COMPUTER SCIENCE	64



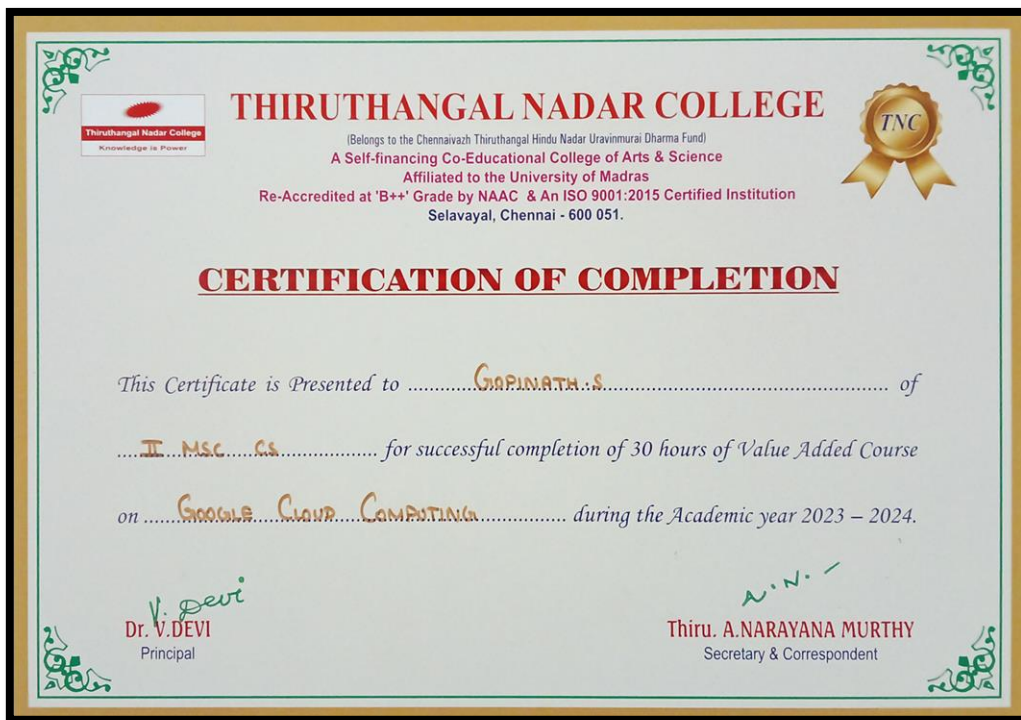
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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024





VALUE ADDED COURSE REPORT 2023-2024

Course: Google Cloud Computing Foundations

The Value Added Course entitled “Google Cloud Computing Foundations” was conducted for 30 hours during the academic year 2023-2024. The course aims to provide students with a detailed overview of cloud basics, big data, and machine learning and where and how the Google Cloud Platform suits in.

A total of 90 students from various departments(BCA, BSC CS & MSC CS) enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



BIO ANALYTICS TECHNIQUES & BIO INFORMATICS

BIO ANALYTIC TECHNIQUES & BIO INFORMATICS

Unit-1:

Introduction Introduction, Modern approaches in Bioanalysis and Bioassays -Spectroscopic techniques Spectroscopic techniques: UV-Visible spectroscopy, Fluorescence spectroscopy, IR spectroscopy, CD spectroscopy, and Mass spectroscopy

Unit 2: Microscopic Techniques- Light Microscopy; Fluorescence microscopy, Atomic force microscope, Electron microscope, Scanning electron microscopy, Transmission Electron microscope. Application of microscope in analyzing biological samples.

Unit 3 :Electrophoretic Technique Electrophoresis; Principle, Design of horizontal and vertical gel electrophoresis apparatus, performing electrophoresis techniques, application of electrophoresis in analyzing macromolecules.

Unit 4: Chromatographic Techniques Chromatographic techniques; Principles, Column chromatography, HPLC, TLC, Paper chromatography

Unit 5: Bioinformatics Tools- Computational approaches in analyzing protein and nucleic acid sequences; Analysis of protein structures; Computer aided drug design and screening.



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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



GPS Map Camera



Google

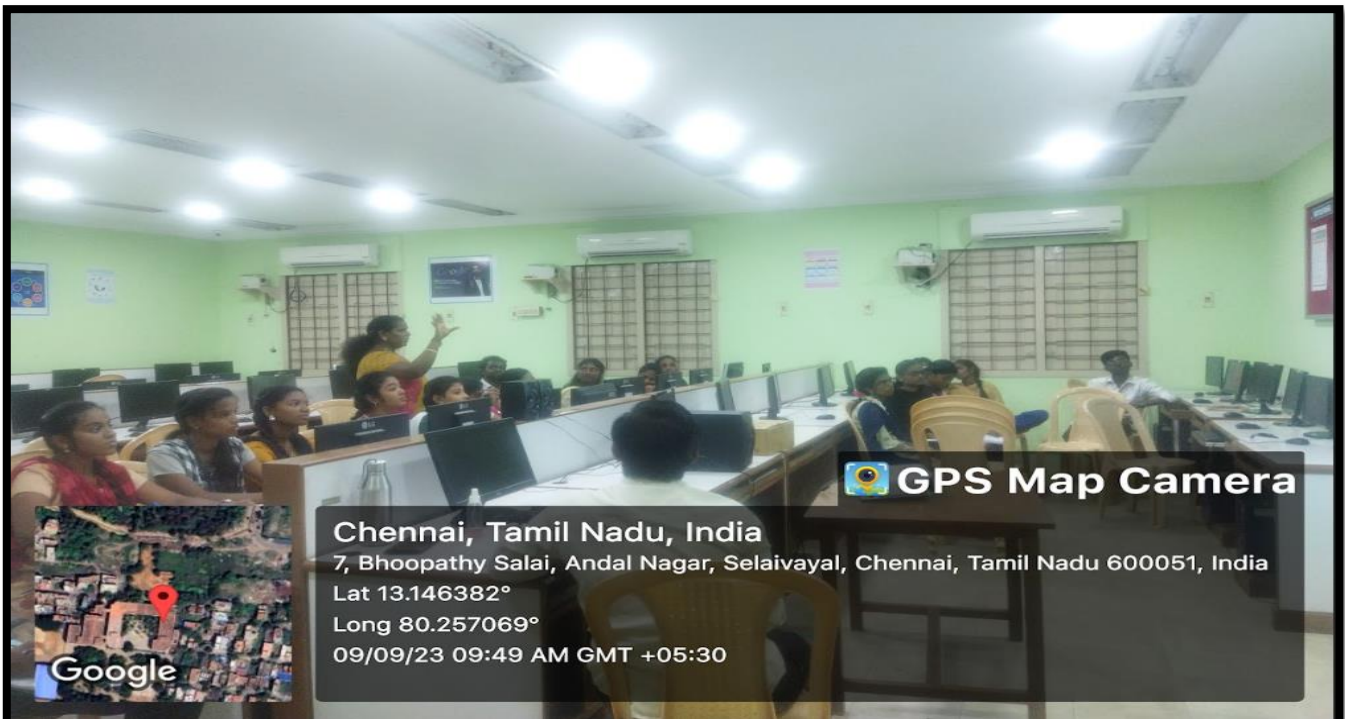
Chennai, Tamil Nadu, India

plot no 7, Gramaniyar Garden, Near Thiruthangal Nadar College, Aiswarya Nagar, Sri Dhurghai Avenue, Selaivayal, Chennai, Tamil Nadu 600051, India

Lat 13.146252°

Long 80.256673°

19/08/23 10:32 AM GMT +05:30



GPS Map Camera



Google

Chennai, Tamil Nadu, India

7, Bhoopathy Salai, Andal Nagar, Selaivayal, Chennai, Tamil Nadu 600051, India

Lat 13.146382°

Long 80.257069°

09/09/23 09:49 AM GMT +05:30



- a) High performance liquid chromatography
 - b) High pressure liquid chromatography
 - c) Both
 - d) None of the above
- 8) Mass spectroscopy is used to analyze
- a) Double bond
 - b) Triple bond
 - c) Molecular mass
 - d) Density
- 9) Which one is correct?
- a) Mass spectrophotometer
 - b) Mass spectrometer
 - c) Both
 - d) None of the above
- 10) The material related to thin layer chromatography is _____
- a) Sodium hydroxide
 - b) Hydrochloric acid
 - c) Sand
 - d) Silica gel
- 11) A bioassay is the use of a -----organism to test for the presence of a compound or to determine the amount of the compound that is present in a sample
- a) Living
 - b) Non-living
 - c) Hybrid
 - d) None
- 12) The graphical representation of the relationship between the **dose** of a drug versus the **effects** that the drug exerts on the system is represented as
- a) Sigmoid curve
 - b) Linear curve
 - c) Dose-response curve
 - d) Non-linear curve
- 13) Indirect Assays based upon----- responses
- a) Quantitative
 - b) Qualitative
 - c) Quantal
 - d) None
- 14) A -----is an optical instrument used for viewing typically magnified.
- a) Microscope
 - b) Monocular microscope
 - c) Bionocular microscope
 - d) Compound microscope
- 15) An electron microscope can magnify between----- times
- a) More than 2million
 - b) 1 and 50 million
 - c) Up to 2 million



- d) None
- 16) The image of the surface topography of the sample by force by scanning the cantilever over a section of interest takes by
- SEM
 - TEM
 - AFM
 - FESEM
- 17) ----- is a simple and sensitive separation technique in clinical and research laboratories
- Chromatography
 - HPLC
 - Electrophoresis
 - Blotting
- 18) Horizontal gel apparatus used for immune electrophoresis, iso-electric focusing and electrophoresis of DNA and RNA in the agarose gel i) DNA ii) RNA
- option i only
 - option ii only
 - Both i & ii
 - None
- 19) Staining with a ----- (for radioactive samples) helps in the detection of the separated components.
- dye or autoradiography
 - iodine chamber
 - UV chamber
 - None
- 20) ----- is an interdisciplinary field directly involving molecular biology, genetics, computer science, mathematics, and statistics
- Bioinformatics
 - Bioinstrumentation
 - Biostatistics
 - Nanotechnology
- 21) ----- are a type of biological database that contain original and unprocessed biological data
- Primary databases
 - Secondary databases
 - Tertiary databases
 - None
- 22) One of the main features of ----- is its user-friendly interface, which allows researchers to easily search for and retrieve data.
- PDB
 - DDBJ
 - EMBL
 - GEO
- 23) The ----- is read in sets of three nucleotides
- genetic code
 - codons
 - nucleocide
 - Triplet code



24) The concept of -----attracts attention due to its higher selectivity, efficiency, efficacy, short time duration, low toxicity, and better to fit with various pharmacokinetic parameters

- a) CADD
- b) SBDD
- c) LBDD
- d) None

25) Tools used for Pharmacophore modeling and applications

- i. ZINCPharmer (pitt.edu)
- ii. BioInfo3D Group
- iii. Linux
- iv. Pharmit

- a. option i only
- b. option ii only
- c. Both i & ii
- d. None

PART -B (5 X 10 – 50 marks)

1. Write an essay on different types of bioassays
2. Discuss the principle, instrumentation, working and applications of UV-Vis spectrophotometer
3. Discuss the principle, instrumentation, working and applications of IR spectrophotometer
4. Briefly explain the principles of thin layer chromatography.
5. Discuss the principle, instrumentation, working and applications of electrophoresis



THIRUTHANGAL NADAR COLLEGE

VALUE ADDED COURSE 2023-2024

ASSESSMENT MARK SHEET

Subject : Bio Analytic Techniques & Bio Informatics

Date : 07/02/2024

Sub Code : VACSOS2308

S.NO	ID NO.	NAME	DEPARTMENT	MARKS
1	22BSCCHE01	ASSWINKUMAR S	CHEMISTRY	41
2	22BSCCHE02	TABASUM I	CHEMISTRY	A
3	22BSCCHE03	DEEPIKA B	CHEMISTRY	41
4	22BSCCHE04	SWETHA M	CHEMISTRY	A
5	22BSCCHE05	DHANALAKSHMI K	CHEMISTRY	40
6	22BSCCHE06	MADHAN KUMAR P	CHEMISTRY	40
7	22BSCCHE07	NAVEEN J	CHEMISTRY	41
8	22BSCCHE08	THANSHIYA S	CHEMISTRY	42
9	22BSCCHE09	NANCY JOYANNA D	CHEMISTRY	40
10	22BSCCHE10	MIDHUN PANDI M	CHEMISTRY	40
11	22BSCCHE11	VIDHUBALA A	CHEMISTRY	44
12	22BSCCHE12	KATHIRAVAR M	CHEMISTRY	42
13	22BSCCHE13	MOHANA R	CHEMISTRY	52
14	22BSCCHE16	KARTHIGA R	CHEMISTRY	62
15	22BSCCHE17	KRISHNA SAI	CHEMISTRY	48
16	22BSCCHE18	KAVYA M	CHEMISTRY	A
17	22BSCPBPB01	ARUNA DEVI. S	PBPB	40
18	22BSCPBPB02	HITHYSHINI . C. .S	PBPB	56
19	22BSCPBPB03	ABINESH. B	PBPB	40
20	22BSCPBPB06	SARUMATHY S	PBPB	42
21	22BSCPBPB07	CHILUKURI MOUNIKA LA	PBPB	40
22	22BSCPBPB08	SATHISH KUMAR. R	PBPB	40
23	22BSCPBPB09	PRAVEEN KUMAR.S	PBPB	50
24	21BSCCHE02	GURUBALAKRISHNAN. K	CHEMISTRY	46
25	21BSCCHE09	NAVEEN. M	CHEMISTRY	48



26	21BSCCHE01	NISHANTH. R	CHEMISTRY	54
27	21BSCCHE04	HEMAMALINI. M	CHEMISTRY	56
28	21BSCCHE03	LAVANYA. J	CHEMISTRY	56
29	21BSCCHE05	LAVANYA. S	CHEMISTRY	A
30	21BSCCHE08	SANDHANAMARI. T	CHEMISTRY	42
31	21BSCCHE06	THANGA MANI. M	CHEMISTRY	54
32	21BSCPBO2	JAGARAO GANTA	PBFB	52
33	21BSCPBO3	ESWARI R	PBFB	40
34	21BSCPBO4	KOWSALYA K	PBFB	41
35	21BSCPBO5	S. MOUNIKA	PBFB	41
36	21BSCPBO6	NIMITHA	PBFB	56





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 Re-Accredited at 'B++' Grade by NAAC & An ISO 9001:2015 Certified Institution
 Selavayal, Chennai - 600 051. 

CERTIFICATION OF COMPLETION

This Certificate is Presented to NIMITHA of
III B8C (PBPB) for successful completion of 30 hours of Value Added Course
 on BIO ANALYTIC TECHNIQUES during the Academic year 2023 – 2024.
& BIO INFORMATICS

V. Devi
Dr. V.DEVI
 Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
 Secretary & Correspondent

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& BIO INFORMATICS

V. Devi
Dr. V.DEVI
 Principal

A.N.M.
Thiru. A.NARAYANA MURTHY
 Secretary & Correspondent



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NAAC CYCLE III - AQAR

1.2.2 & 1.2.3 Add-on / Certificates / MoU

1.2 Academic Flexibility

Year: 2023-2024



VALUE ADDED COURSE REPORT 2023-2024

Course: Bio Analytic Techniques & Bioinformatics

The Value Added Course entitled “ Bio Analytic Techniques & Bioinformatics” was conducted for 30 hours during the academic year 2023-2024. This course tends to accomplish modern approaches in Bio Analysis and interprets vast biological data using computational techniques.

A total of 32 students from the department of Chemistry & PBPB enrolled in the course and were awarded with certificates after continuous assignments and summative assessment.



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NAAC CYCLE III - AQAR

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FEEDBACK

Timestamp	Student Id No.	Register Number	Name of the Student	Email ID	Contact Number	Class & Sec	Course	Feedback of the course
7/15/2024 12:15:38	22bcomcs070	122202666	Giridharan V	giridharan66601@gmail.com	9840688599	Bcomcs 'B'	Google Cloud Computing Foundations	Good
7/15/2024 12:22:39	22BCA101	212203906	Prabakaran s	sprabha5460@gmail.com	7358326489	III BCA&B	Python For Data Science	Good
7/15/2024 12:26:02	22BCAE18	212203961	M.GOVINDA RAJ	govindaraj_munusami@07305434977		3rd bca b	Introduction To Industry 4.0 And Industrial Internet Of Things	Good
7/15/2024 12:44:51	22bscche16	222208474	Karthika R	rkarthika2004@gmail.com	9360411157	bsc chemistry	Bio Analytics & Bio Informatics	Excellent and it was useful for our career
7/15/2024 12:45:14	22bscbbp02	222208597	Hithyshini	C.s.hithyshini@gmail.com	8667792730	3 Rd year plant biology	Bio Analytics & Bio Informatics	Yes
7/15/2024 12:45:46	22BSCCHE06	222204669	Madhankumar P	Madhankumar333@gam	9080274049	3rd year	Bio Analytics & Bio Informatics	Its nice
7/15/2024 12:46:29	22bscbbp02	222208597	Hithyshini	C.s.hithyshini@gmail.com	8667792730	3 Rd year plant biology	Bio Analytics & Bio Informatics	Yes
7/15/2024 12:46:47	22BSCCHE11	222208481	Vidhubala A	vidhubala2005@gmail.co	8610072170		Bio Analytics & Bio Informatics	Good
7/15/2024 12:47:47	22bscsa17	222208618	Vasanth Kumar. N	vasanthkumar8015@gm	7397089217	3rd BSC SA	Artificial Intelligence:Search Methods For Problem Solving	Good
7/15/2024 12:49:13	22bscsa43	222208543	Vigneshvaran S	vigneshvaranrajakshmi	8883840106	computer science 3rd yr	Introduction To Industry 4.0 And Industrial Internet Of Things	Not bad
7/15/2024 12:50:02	22BCAE18	212203961	M.GOVINDA RAJ	govindaraj_munusami@07305434977		2nd bca b	Introduction To Industry 4.0 And Industrial Internet Of Things	Good
7/15/2024 12:55:56	22BSCS26	222208518	S.Noor Mohamed	noormohamed1308@gm	9360289549	3rd b sc cs - 'b' section	Python For Data Science	Good teaching
7/15/2024 13:01:46	22BSCS01	222208576	Sandhya.S	sandhiyacs2225@gmail.com	9840338242	2 nd year -A section	Introduction To Industry 4.0 And Industrial Internet Of Things	Good
7/15/2024 13:02:14	22BCA04	212203902	Nagulan M	nagulanagulan042@gm	9941755054	III BCA -A	Cyber Security And Privacy	Excellent
7/15/2024 13:05:40	22bscbbp07	222208596	Chikuri mounika Laksh	bhanuprakash41216@g	8072511537	3rd year	Bio Analytics & Bio Informatics	Very nice and it help full for studies
7/15/2024 13:05:42	22bcomca48	312211776	balaji s	22bcomca48@thiru	09940216830	3rd boom ca	Cyber Security And Privacy	excellent
7/15/2024 13:06:11	21BSCCHE08	222107069	T. Sandhanamari	Sandhanamari1705@gm	9150252081	B.Sc.Chemistry	Bio Analytics & Bio Informatics	Good
7/15/2024 13:08:31	21bscbb05	222107107	S. Mounika	padmaseenu836@gmail.com	7305863887	3rd year	Bio Analytics & Bio Informatics	No
7/15/2024 13:05:09	22bscbbp01	222208595	S. Aruna Devi	aruna355devi@gmail.com	9551925396	Bsc plant biology and pla	Bio Analytics & Bio Informatics	Good
7/15/2024 13:59:40	22bscche03	222208472	B.Deepika	deepikadeepikabhaskar	9962194934	3 year chemistry	Bio Analytics & Bio Informatics	Good
7/15/2024 14:27:52	22bcomaf30	312211512	Ganesh J	gananesh2005@gmail.c	8825859760	3boom A/F	Ethical Hacking	Good
7/15/2024 14:34:59	22bscsa08	222208513	Mohamad asif. A	boxerasi2004@gmail.co	6382483537	Baccs3rd year B	Python For Data Science	Good
7/15/2024 14:38:44	22bscbbp06	222208598	S. Sarumathy	sarumathysankar@gmail	6379564938	Bsc pbbp	Bio Analytics & Bio Informatics	Excellent
7/15/2024 14:53:15	21BCA39	212103348	PRADEEP. S	jopradeep90@gmail.com	7401010175	3rd BCA-A	Ethical Hacking
7/15/2024 15:01:47	21bscbb06	222107112	Nimitha N	nimitha.n17@gmail.com	9884460223	3rd Bsc pbbp	Bio Analytics & Bio Informatics	Good
7/15/2024 15:02:22	22bcae19	212203958	Bharanidharan A	bharanidharanadhi@gm	9363877042	Bca &c	Google Cloud Computing Foundations	Good
7/15/2024 15:05:21	22bcae08	212203965	Hemanathan R	hemanathanhemanathan72	8248601316	3 Bca & C	Google Cloud Computing Foundations	Excellent
7/15/2024 15:12:51	22BSCCHE13	222208476	R. Mohana	mohananarendran023@g	9884101651	3rd year B.Sc chemistry	Bio Analytics & Bio Informatics	It is very useful
7/15/2024 15:22:06	21bscbb04	222107111	K Kowsalya	kkowsalya236@gmail.co	6369914053	3rd B.sc PBPB	Bio Analytics & Bio Informatics	Good
7/15/2024 15:27:30	22 Bscpbb08	222208594	Sathish Kumar. R	rajeshsathishkumarr@g	6381760012	Bsc plant biology and pla	Bio Analytics & Bio Informatics	Good
7/15/2024 17:49:00	21BSCP03	222107109	Eswari R	eswarigayu1@gmail.com	6379569526	BSC plant biology and pl	Bio Analytics & Bio Informatics	Course is very useful
7/15/2024 18:53:54	22BSCOMG123	312211624	Jayachandran.s	22bcomg123@thiru	6380644066	3c	Cyber Security And Privacy	Good
7/15/2024 18:55:23	21BCA19	212103378	YOKESH R	yokeshr44@gmail.com	6382630642	BCA 'B'	Python For Data Science	Good
7/15/2024 19:22:37	22bscche09	222208477	D.Nancy joyanna	nancyjoyanna@gmail.co	9884959372	3rd B. SC chemistry	Bio Analytics & Bio Informatics	It is very useful
7/15/2024 19:40:15	22BCA46	212203899	Mithushan N S	nsmithushan@gmail.com	8681010881	3rd BCA-A	Artificial Intelligence:Search Methods For Problem Solving	Good
7/15/2024 20:13:50	22BSCS90	222208590	Lavanya.P	lavanya.cs2225@gmail.c	7401031833	3rd Bsc Cs(A)	Introduction To Industry 4.0 And Industrial Internet Of Things	Very usefull and learning new things
7/15/2024 20:17:42	22BSCCHE01	222208466	S.Asswin kumar	saravananasswin@gmail	8754579677	3rd BSC CHEMISTRY	Bio Analytics & Bio Informatics	Very good
7/15/2024 20:47:46	22BSCCHE08	222208480	S. Thanshiya	thanshiyathanshiya8@g	6384988407	3year	Bio Analytics & Bio Informatics	Good
7/16/2024 9:01:25	22BSCSA02	222208624	Ramya D	22bscsa02@thiruthangal	8015883320	II BSC SA	Python For Data Science	Improve my python knowledge
7/16/2024 9:02:25	22BSCSA14	222208614	Vanamukesh B	22bscsa14@thiruthangal	8428194373	II BscSA	Introduction To Industry 4.0 And Industrial Internet Of Things	Good & informative
7/16/2024 9:03:05	22BSCSA22	222208623	MANJULA M	22bscsa22@thiruthangal	9514698183	II BSC SA	Python For Data Science	ALL THE CLASSES ARE TOOKEN THROUGH THE SMART BOARD WHICH IS MORE INTRESTED AND USED TO GAIN A KNOWLEDGE ABOUT IT
7/19/2024 11:32:13	22BCA91	212203952	M. MOHANA PRIYANKA	mohanapriyankamariapp	9791146747	III BCA-B	Introduction To Industry 4.0 And Industrial Internet Of Things	Nothing
7/23/2024 7:06:00	21BSCCHE06	222107070	M. THANGAMAN	deepaadeepaa42@gmai	9342777316	3rd bsc chemistry	Bio Analytics & Bio Informatics	Good
8/5/2024 9:07:23	22bscsa23	222208608	Lokin.v	22bscsa23@thiruthangal	8248382307	Bscsa	Google Cloud Computing Foundations	Well teaching