



Pune District Education Association's

Baburaoji Gholap College

Sangvi, Pune 411027 (NAAC Accredited B+)

Permanently Affiliated to SPPU, Id No. PU/PN/ASC/073/1989, Ph.: 020 27280204
Fax: 020 27281722, E mail: bgc_sangvi@pdeapune.org, Web: www.pdeabgccollege.edu.in

Self Study Report Criterion - II

Key Indicator - 2.6
*Student Performance and Learning
Outcome*

October 2023





**Baburaoji Gholap College Sangvi,
Pune 411007, Maharashtra**

C – 41307

**Accreditation and Assessment
(Cycle - 4)**

October 2023

**Key Indicator – 2.6 Student Performance
and Learning Outcome**

**2.6.2 (QIM) - Attainment of POs and COs are
evaluated.**





Pune District Education Association's

Estd. : 1989

Baburaoji Gholap College

Arts, Science & Commerce
Sangvi, Pune - 411 027. (Maharashtra) Ph. : 020-27280204 Fax : 020-27281722
E-mail : principal@bgc.pdeapune.org, bgc_sangvi@pdeapune.org • Website : www.bgc.pdeapune.org
Affiliated to University of Pune (Id. No. PU/PN/ASC/073/1989) (Maharashtra)
• NAAC Reaccreditation "B+" Grade •

Outward No : BGCS/ 34/2/2023-24

Date : 17 NOV 2023

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Maharashtra State

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Principal
Dr. Balkrishna Zaware

DECLARATION

This is to certify that the information given in this report in the form of tables, numerical data, scanned documents, supporting documents etc. is true and correct to best of our knowledge and records. This declaration is being given in the support of NAAC accreditation of Baburaoji Gholap College, Sangvi, Pune for the 4th cycle for the period of 2018 - 2019 to 2022 - 2023.

SV Jagtap
Dr. Sangeeta V. Jagtap

Coordinator, NAAC
BABURAOJI GHOLAP COLLEGE
SANGVI, PUNE-411027



BK Zaware
Dr. Balkrishna N. Zaware

PRINCIPAL
Baburaoji Gholap College
Sangvi, Pune - 27

Date 17 Nov 2023

Place Pune



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Baburaoji Gholap College

Sangvi, Pune 411027, Maharashtra

Academic Year 2022 - 2023

**Mechanism used for
attainment of POs and COs**

Attainment of Outcomes

- The Program Outcomes (POs) are accomplished through curriculum.
- Course Outcomes (COs) are defined for each course and they are mapped to POs
- A set of performance evaluation criteria is used for quantitative assessment of COs
- Thus the attainment of COs provides an evidence of attainment of POs
- **Following are the different methods for Assessment, Evaluation and Measurement of Cos**

Table No.1 Attainment Levels of COs

Attainment Levels of COs				
Course Name:	Office Automation	Target-Attainment Levels		
DIRECT ASSESSMENT METHOD		Level 1	50% of students scoring more than 50% marks in internal assessment tools	Attainment
Internal Assessment		Level 2	60% of students scoring more than 50% marks in internal assessment tools	Level 1
		Level 3	70% of students scoring more than 50% marks in internal assessment tools	
		Target-Attainment Levels		
DIRECT ASSESSMENT METHOD		Level 1	50% of students scoring more than 40% marks in Different assessment tools	Attainment
University Assessment		Level 2	60% of students scoring more than 40% marks in Different assessment tools	Level 2
		Level 3	70% of students scoring more than 40% marks in Different assessment tools	
		Target-Attainment Levels		
INDIRECT ASSESSMENT METHOD		Level 1	0 (Not to all)	Attainment
COURSE EXIT SURVEY RESPONSES		Level 2	1 (Very Fair)	Level 3
		Level 3	2 (Fair)	
	Level 4	3 (Good)		
	Level 5	4 (Very Good)		
	Level 6	5 (Excellent)		
DIRECT ASSESSMENT METHOD WEIGHTAGE 80% and INDIRECT ASSESSMENT METHOD 20%				

Following are the different methods for Assessment, Evaluation and Measurement of POs

- Direct Assessment methods
- Indirect Assessment methods

Direct Assessment methods

- A. **Continuous Assessment:** COs are assessed through Home midterm internal exam, Assignments, MCQ test, Group discussion, presentation and Lab records. The COs are mapped against each question and CO analysis is carried out by faculty for each course and documented in **Faculty Course Assessment Report (FCAR)**. The contributions of COs are assessed in high, moderate and low levels, towards the attainment of POs.
- B. **Semester-end Theory Examinations(University Exam):** The questions in semester-end examinations are tested pertaining to all COs, in varying Blooms Taxonomy Levels (1956, Benjamin Bloom, **Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation**)
- C. **Laboratory Records:** Both continuous and semester-end examinations are conducted to test the COs attainment.

Indirect Assessment methods

- A. **Course Exit survey of each subject of all semester:** This survey taken from each semester and subject. On the bases of this survey COs assessment are taken.
- B. **Programme – Exit survey:** This survey taken from the final year students at the completion of their Bachelor and master degree. Tech programme, stands as the comprehensive feedback for the PO assessment.
- C. **Alumni Survey:** This survey is conducted annually through Google link or mail with the Alumni to obtain the inputs and suggestions on PO attainment in the real time societal environment.

D. **Employer Survey:** This survey is taken from the employer to measure the PO attainments.

In addition, the institution takes the **Placement record and higher education details** of the students as supporting evidences for the assessment of POs.

Attainments of POs and COs:

Table 2: Assessment of Course Outcomes

Course Outcomes	CO:1		CO:2		CO:3		CO:4	
	Que.	AV%	Que.	AV%	Que.	AV%	Que.	AV%
	Q1a	88	Q3b	89	Q3a	89	Q4c	98
	Q1b	87	Q4a	92	Q4b	85	Q5c	80
	Q1c	99	Q5b	80	Q5a	98		
	Q2a	98			Q2c	100		
	Q2b	88			Q3c	98		
	Total Average		92		87		94	

Mechanism for the attainment of CO:

The student performance in continuous assessment exams is verified for each question.

$$\text{CO Assessment(Direct)} = \frac{\text{Number of students reached in answering the question}}{\text{Number of students attempted the question}}$$

$$\text{CO Assessment(InDirect)} = \frac{\text{Sum of students response reached the expected level in answering the surve}}{\text{Number of students responded}}$$

Table 3: Assessment of Course Outcomes direct and indirect method

CO Assessment method	CO1	CO2	CO3	CO4
Direct method (Internal Exam/ Assignment/Tutorial/ Group discussion/Presentation) and (University Exam)	68.33	74.58	80.42	77.50
Weightage (80%)	54.67	59.67	64.33	62.00
Indirect method (Course Exit Survey)	90.57	96.00	90.57	90.57
Weightage (20%)	18.11	19.20	18.11	18.11
Final CO Attainment	72.78	78.87	82.45	80.11

In view of the threshold assumed for each course, individual course assessment is thus calculated

Table 4: Mapping of Course outcome with Program Outcomes

CO PO MAP PING	Disciplinary knowledge	Communication Skills	Critical thinking	Problem solving	Analytical reasoning	Research-related skills	Cooperation/ Team work	Scientific reasoning	Reflective thinking	Information /digital literacy	Self-directed learning	Multicultural competence
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	-	3	-	-	-	-	-	-	1
CO2	2	2	1	-	3	-	-	-	-	-	-	1
CO3	2	3	1	-	2	-	2	-	-	-	-	1
CO4	3	2	1	-	-	-	-	-	-	-	-	1
CO5	-	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes (COs) and Program Outcomes (POs)				
Mapping Correlation	Low	Median	High	No
		1	2	3

Table 5: Attainment of Course Outcomes

(I) CO Attainment						
A: Direct assessment (80%)-(Internal Exam/Assignment/Tutorial/Group discussion/Presentation) and (University Exam)						
B: Indirect assessment (20%)-(Course Exit Survey)						
COs	Mapping of POs	Direct Assessment	Indirect Assessment	Overall Attainment	Target (%)	Attainment
		(a)	(b)	0.8 (a) + 0.2(b)		
C01	PO1, PO2, PO3, PO5 & PO12	68.33	90.57	72.78	60	YES
C02	PO1, PO2, PO3, PO5 & PO12	74.58	96.00	78.87		
C03	PO1, PO2, PO3, PO5 & PO12	80.42	90.57	82.45		
C04	PO1, PO2, PO3 & PO12	77.50	90.57	80.11		
C05						

Using CO-PO Mapping, the mapped POs are considered for assessment by:

$$PO \text{ Direct Assessment} = \frac{\sum(\text{Level of mapping of PO with CO} * \text{Average of CO attainment})}{\sum(\text{Level of mapping of PO with Co})}$$

For example: Assessment of PO:1 Disciplinary knowledge

Table 6: Course Outcome Mapping with Program Outcome PO1

PO:1		Level of mapping
CO:1	95.6	3(H)
CO:2	90.2	3(H)
CO:3	85	3(H)

$$\text{PO Direct Assessment} = \frac{\sum(\text{Level of mapping of PO with CO} * \text{Average of CO attainment})}{\sum(\text{Level of mapping of PO with Co})}$$

$$= \frac{(3 \times 95.6 + 3 \times 90.2 + 3 \times 85)}{(3 + 3 + 3)} = 90.53$$

Set the target level of attainment for PO:1 say 80% , then it is concluded that PO:1 has attained.

Table 2: Program outcome attainment of using Course outcome

Course Outcomes		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	91	60	60	91		91							
CO2	96	64	64	32		96							24
CO3	91	60	91	30		60		60					23
CO4	91	91	60	30									23
CO5													
Average	92	69	69	46	-	82	-	-	-	-	-	-	23

REVISED Bloom’s Taxonomy Action Verbs

I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers	Demonstrate understanding of facts and ideas by organizing, comparing, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing new solutions.
<ul style="list-style-type: none"> • define • describe • duplicate • enumerate • examine • identify • label • list • locate • match • memorize • name • observe • omit • quote • read • recall • recite 	<ul style="list-style-type: none"> • ask • associate • cite • classify • compare • contrast • convert • describe • differentiate • discover • discuss • distinguish • estimate • explain • express • extend • generalize • give examples 	<ul style="list-style-type: none"> • act • administer • apply • articulate • calculate • change • chart • choose • collect • complete • compute • construct • determine • develop • discover • dramatize • employ • establish 	<ul style="list-style-type: none"> • advertise • analyze • appraise • calculate • categorize • classify • compare • conclude • connect • contrast • correlate • criticize • deduce • devise • diagram • differentiate • discriminate • dissect 	<ul style="list-style-type: none"> • appraise • argue • assess • choose • compare • conclude • consider • convince • criticize • critique • debate • decide • defend • discriminate • distinguish • editorialize • estimate • evaluate 	<ul style="list-style-type: none"> • adapt • anticipate • assemble • collaborate • combine • compile • compose • construct • create • design • develop • devise • express • facilitate • formulate • generalize • hypothesize • infer

Handout: 1# Workshop on Co, PO and PSO writing and mapping by Dr. Arjun Baban Doke

I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
<ul style="list-style-type: none"> • recognize • record • repeat • reproduce • retell • select • state • tabulate • tell • visualize 	<ul style="list-style-type: none"> • group • identify • illustrate • indicate • infer • interpret • judge • observe • order • paraphrase • predict • relate • report • represent • research • restate • review • rewrite • select • show • summarize • trace • transform • translate 	<ul style="list-style-type: none"> • examine • experiment • explain • illustrate • interpret • judge • manipulate • modify • operate • practice • predict • prepare • produce • record • relate • report • schedule • simulate • sketch • solve • teach • transfer • write 	<ul style="list-style-type: none"> • distinguish • divide • estimate • evaluate • experiment • explain • focus • illustrate • infer • order • organize • plan • prioritize • select • separate • subdivide • survey • test 	<ul style="list-style-type: none"> • find errors • grade • judge • justify • measure • order • persuade • predict • rank • rate • recommend • reframe • score • select • summarize • support • test • weigh 	<ul style="list-style-type: none"> • integrate • intervene • invent • justify • manage • modify • negotiate • originate • plan • prepare • produce • propose • rearrange • reorganize • report • revise • rewrite • role-play • simulate • solve • speculate • structure • test • validate • write

Adapted from Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching, and assessing*, Abridged Edition. Boston, MA: Allyn and Bacon.

Handout: 2# Workshop on Co, PO and PSO writing and mapping by Dr. Arjun Baban Doke

Direct Attainment Tools	Rubrics
Assignments, exams, projects, research papers, Semester Exam, oral presentations/exams, recital, play, performance, project, Poster presentation • Case studies • Reflective journals, Experiential Learning evaluation • External examiners	(Understanding, Presentation, Participation, Use of Material, Behaviour, Group work, Leadership, Communication Skills, etc.)
Indirect Attainment Tools	Rubrics
Departmental survey • Exit interview • Survey of current students • Survey of faculty members • Alumni survey • Employer survey • Focus group survey	(Analysis of Surveys in terms of CO-PO attainments)

Baburaoji Gholap College

Sangvi, Pune 411027, Maharashtra

Academic Year 2022 - 2023

**Activities taken related to the attainment of
Course Outcomes (COs) and Programme
Outcomes (POs)**



Pune District Education Association's
Baburaoji Gholap College, Sangvi, Pune 411027.



List of Activities taken

Sr. No.	Name of Activity	Date of Activity
1.	Online CO/PO Mapping Workshop	07/08/2020
2.	Offline CO/PO Formation and mapping workshop	24/05/2022

H.O.D.
Department of Geography
Baburaoji Gholap College
Sangvi, Pune-27
Prof. A. B. Doke



PRINCIPAL
Baburaoji Gholap College
Sangvi Pune - 411027

Dr. Balkrishna N. Zaware

TRANSLATION



**PDEA's Baburaoji Gholap College Sangvi, Pune-
411027**

Online CO/OP Mapping Workshop

Date: 7th September 2020

Venue: Online Platform

Time: 03:15 pm

Department: IQAC Baburaoji Gholap College, Sangvi-411027

Introduction:

A one-day workshop focusing on Course Outcome (CO) and Program Outcome (PO) was conducted by the Internal Quality Assurance Cell (IQAC) of Baburaoji Gholap College, Sangvi Pune-411027. The workshop aimed to enhance the understanding of faculty members regarding the importance and implementation of clear and measurable course and program outcomes, thereby ensuring quality education and continuous improvement.

Inauguration:

The workshop commenced at 03:15 pm with Dr. M. V. Monut from PICT College Pune as the Chief Guest. His extensive knowledge in the field of education added significant value to the workshop. Deputy Secretary, Mr. L.M. Powar, representing Pune District Education Association, presided as the Chairman of the program.

Objective:

The primary objective of the workshop was to facilitate a comprehensive understanding of the concepts of Course Outcome and Program Outcome, and to equip faculty members with the necessary skills to design effective outcomes that align with the educational goals of the institution.

Key Participants:

The workshop saw active participation from all staff members of Baburaoji Gholap College. Dr. Nitin Ghorpade, the Principal of the college, played a pivotal role as the guide of the program. Assisting him was Dr. Sangita Jagtap, the Coordinator of IQAC.

MOUSAMI V. MUNOT

Associate Professor, Dept. of E&TC, PICT, Pune
+91 98 22 60 75 38, munot.mousami@gmail.com, mvmunot@pict.edu



Qualification	:	<ul style="list-style-type: none">Ph. D., Electronics and Telecommunication Engineering, Nov. 2013, College of Engineering, Pune, IndiaM.Tech., Electronics and Telecommunication Engineering, May 2007, College of Engineering, Pune, IndiaB.E., Electronics and Telecommunication Engineering, August 2001, SVPM college of Engineering, Malegaon BK., Pune, India
Experience	:	<ul style="list-style-type: none">Associate Professor, Department of Electronics and Telecommunication Engineering, Pune Institute of Computer Technology, Pune, India (December 2013- present)Assistant Professor, Department of Electronics and Telecommunication Engineering, Pune Institute of Computer Technology, Pune, India (2007-2013)

Workshop Proceedings:

Inaugural Address: Dr. M. V. Monut delivered an insightful inaugural address, emphasizing the significance of clearly defined Course and Program Outcomes in fostering a learner-centered approach and ensuring the relevance of education in a rapidly changing world.



पुणे जिल्हा शिक्षण मंडळाचे
बाबुरावजी घोळप महाविद्यालय, सांगवी, पुणे २७



पुणे जिल्हा शिक्षण मंडळ वर्धापन दिनानिमित्त
ऑनलाईन व्याख्यानाचे आयोजन

CO / PO MAPPING

सोमवार, ०७ सप्टेंबर २०२०, वेळ : दुपारी ३:१५ वा. **Zoom Meeting App** वर

व्याख्याते - डॉ. एम.व्ही. मुनोत (PICT कॉलेज, पुणे)
अध्यक्ष - मा. एल. एम. पवार (उपसचिव, पुणे जिल्हा शिक्षण मंडळ)

Zoom Meeting ID : 237 793 2975, Password : bgc123

डॉ. अर्जुन डोके
समन्वयक

डॉ. नितीन घोरपडे
प्राचार्य



Introduction to CO and PO: The workshop began with an introduction to Course Outcome (CO) and Program Outcome (PO), highlighting their role in mapping the intended learning objectives and expected competencies of students.

Importance of Measurable Outcomes: The participants engaged in discussions on the importance of measurable and observable outcomes for effective teaching, learning, and assessment.

Aligning Outcomes with Curriculum: The workshop addressed the process of aligning COs and POs with the curriculum, ensuring a coherent and structured educational experience for students.

Designing Effective Outcomes: Faculty members were guided on how to draft clear, concise, and achievable COs and POs that reflect the skills, knowledge, and attitudes students should acquire by the end of a course or program.

Assessment and Evaluation: The workshop explored the relationship between COs, POs, and assessment methods, emphasizing the need for assessment tools that align with the defined outcomes.

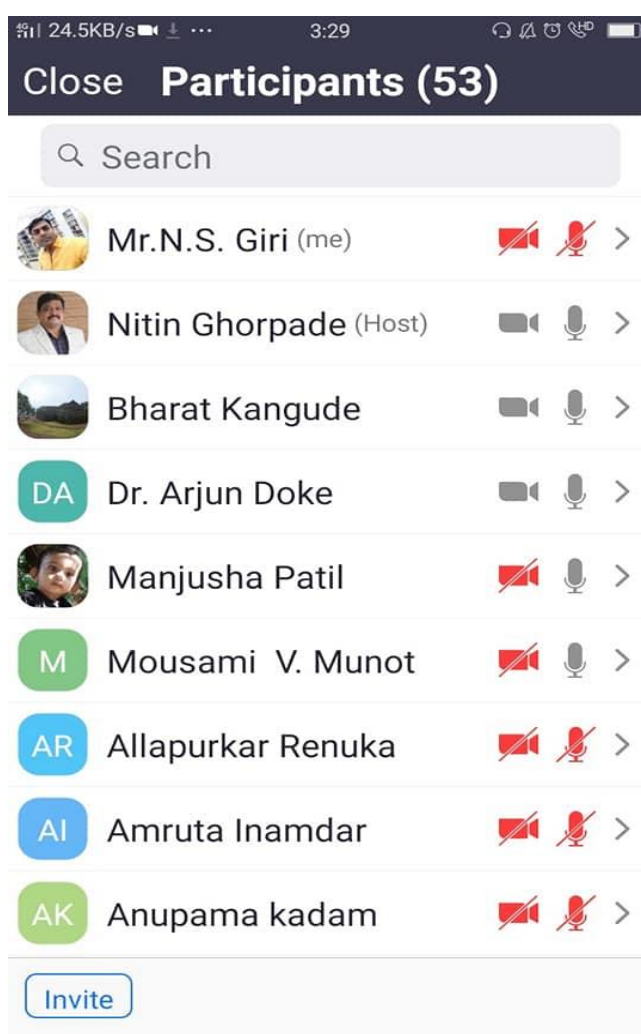
Interactive Sessions: The participants engaged in interactive sessions, discussing real-world scenarios, challenges, and best practices in implementing COs and POs.

Conclusion:

The one-day workshop on Course Outcome and Program Outcome provided a platform for faculty members to deepen their understanding of outcome-based education. It equipped them with practical insights and tools to integrate outcome-focused strategies into their teaching practices.

Anchoring and Vote of Thanks:

The workshop was adeptly anchored by Dr. Arjun Baban Doke, Professor and Head of the Department of Geography. He effectively guided the flow of the workshop sessions. The event



concluded with a Vote of Thanks by Dr. Arjun Baban Doke, expressing gratitude to all participants, guests, and organizers for their valuable contributions to the workshop's success. The workshop concluded with participants having gained valuable insights into outcome-based education and its potential to enhance the quality and effectiveness of teaching and learning processes.



A handwritten signature in black ink, appearing to read "Arjun Doke".

H.O.D.
Department of Geography
Baburaoji Gholap College
Sangvi, Pune-27

A handwritten signature in black ink, appearing to be a stylized name.

PRINCIPAL
Baburaoji Gholap College
Sangvi, Pune-27.

Baburaoji Gholap College Sangvi Pune-411027

Department of Geography

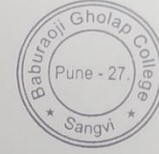
CO and PO Formation and Mapping workshop



Prof. (Dr.) Arjun Baban Doke

Professor and HOD Department of Geography

Baburaoji Gholap College Sangvi Pune-411027



PDEAs

Baburaoji Gholap College, Sangvi Pune-411027

NOTICE

Date: 20.05.2022

All the teaching staff is here by informed that IQAC of our college is organizing “**One Day Training Workshop on CO-PO Formation and Mapping**” on 24th May 2022 at 9.30am onwards. So, all must present for the same.

Date: 24th May 2022

Place: Seminar Hall

Time: 9.30am

Dr. Arjun Doke

(Converner)

H.O.D.

Department of Geography
Baburaoji Gholap College
Sangvi, Pune-27

Prof. Dr. Sangeeta Jagtap

(IQAC Coordinator)

Coordinator, IQAC
BABURAOJI GHOLAP COLLEGE
SANGVI, PUNE-411027

Dr. Nitin Ghorpade

(Principal)

PRINCIPAL
Baburaoji Gholap College
Sangvi, Pune - 411027.



REDMI NOTE 5 PRO
MI DUAL CAMERA

Aim: To enhance the knowledge of CO-PO Formation and Mapping.



Objectives: To encourage and apply Outcome Based Education in the college for attaining a futuristic approach towards education along with improved learning outcomes.

 Pune District Education Association's

Baburaoji Gholap College, Sangvi, Pune 27 

One Day Training Workshop on

CO-PO FORMATION & MAPPING

 **Resource Person**

Dr. Deepak Nanaware
(Professor and Head, Dept. of English,
D.A.V. Velanker College of Commerce, Solapur)

Organized By : Internal Quality Assurance Cell (IQAC)


Tuesday, 24th May 2022, Time: 9:30 am to 4:30 pm

Dr. Arjun Doke Convener	Prof. Dr. Sangeeta Jagtap IQAC Coordinator	Dr. Nitin Ghorpade Principal
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Arts, Science & Commerce

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● NAAC Reaccreditation "B+" Grade ●



Outward No : BGCS/ 46-2/ 2022-2023 Date: 23/05/2022

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Ajit Pawar

Vice President
Rajendra Ghadge

Hon. Secretary
Adv. Sandeep Kadam

Treasurer
Adv. Mohanrao Deshmukh

Dy. Secretary
L. M. Pawar

Principal
Dr. Nitin Ghorpade

To,
Dr. Deepak Nanaware
Professor and Head,
Department of English,
D.A.V. Velanker College of Commerce,
Maharshi Dayanand Chowk, Dayanand Nager, Raviwar path, Solapur
(MS) - 413002

Sub: - Letter of Invitation for a Guest Speaker.

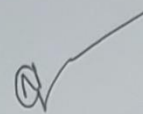
Respected Sir,

We are delighted by having the opportunity to invite you as a guest speaker in our College on occasion **"One Day Training Workshop on CO-PO Formation and Mapping"** to enlighten our precious teaching staff regarding the subject of **"CO-PO Formation and Mapping"**. They will be honoured to have been able to share your experiences and opinions. This guest lecture will take on 24th May 2022 from 9.30am onwards.

We hope you will accept our request for this invitation and help our teaching staff.

We hope that we will benefit a lot from your presence.

Thank you very much,
Regards,


Dr. Nitin Ghorpade
PRINCIPAL
Baburaoji Gholap College
Sangvi, Pune-27

Report: CO-PO Formation and Mapping training took place in the college seminar hall in association with Internal Quality Assurance Cell (IQAC).



The resource person was Dr. Deepak Nanaware, Professor and Head of Department of English, D. A. V. Velankar College of commerce, Solapur (MS)-413002. Honorable speaker enlightened the teaching staff of the college regarding the above said subject.




The training took place in the presence of respected Principal Dr. Nitin Ghorpade Sir, Vice Principal Dr. Latesh Nikam Sir, IQAC coordinators Dr. Sangeeta Jagtap Madam, convener Dr. Arjun Doke Sir and all teaching staff of the college.

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Affiliated to University of Pune (Id. No. PU/PN/ASC/073/1989) (Maharashtra)
● NAAC Reaccreditation "B+" Grade ●



Outward No : BGCSI/ 46-2/ 2022-2023 Date : 23/05/2022

President
Ajit Pawar

Vice President
Rajendra Ghadge

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L. M. Pawar

Principal
Dr. Nitin Ghorpade

To,
Dr. Deepak Nanaware
Professor and Head,
Department of English,
D.A.V. Velanker College of Commerce,
Maharshi Dayanand Chowk, Dayanand Nager, Raviwar path, Solapur
(MS) - 413002

Sub: - Letter of Invitation for a Guest Speaker.

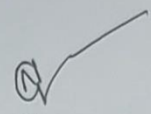
Respected Sir,

We are delighted by having the opportunity to invite you as a guest speaker in our College on occasion **"One Day Training Workshop on CO-PO Formation and Mapping"** to enlighten our precious teaching staff regarding the subject of **"CO-PO Formation and Mapping"**. They will be honoured to have been able to share your experiences and opinions. This guest lecture will take on 24th May 2022 from 9.30am onwards.

We hope you will accept our request for this invitation and help our teaching staff.

We hope that we will benefit a lot from your presence.

Thank you very much,
Regards,


Dr. Nitin Ghorpade
PRINCIPAL
Baburaoji Gholap College
Sangvi, Pune-27

Outcome: All teaching staff participated in 'One Day Training Workshop on CO-PO Formation and Mapping and benefitted from it.

“One Day Training Workshop on CO-PO Formation and Mapping” on 24th May 2022.



Staff Attendance

1) श्री. कमल विनायक	
2) S. V. Jagtap	S. V. Jagtap
3) M. S. Misra	M. S. Misra
4) M. A. Mahajan	M. A. Mahajan
5) S. V. Chavan	S. V. Chavan
6) Deepali Jashi	Deepali Jashi
7) Prihi Jashi	Prihi Jashi
8) Shradha Mahindrakar	Shradha Mahindrakar
9. Khodade S.	Khodade S.
10) C. P. Hase	C. P. Hase
11) Dr. Jyoti Ramad	Dr. Jyoti Ramad
12) Poojatta Kumbhar	Poojatta Kumbhar
13) Karanjawane Kirti V.	K. V. Karanjawane
14) Maneesha shewale	Maneesha shewale
15) Vaishali M. Bausad	Vaishali M. Bausad
16) Dr. Jyoti A. Khairnar	Dr. Jyoti A. Khairnar
17) D. V. Madhavi latta	D. V. Madhavi latta
18) Jyoti Vijay Yande	Jyoti Vijay Yande
19) Dr R. B. Bhagat	Dr R. B. Bhagat
20) Swati P. Kolhe	Swati P. Kolhe
21) Renuka R. Gante	Renuka R. Gante
22) Kadam A. M.	Kadam A. M.
23) Gavakar S. P.	Gavakar S. P.
24) Gavakar P. S.	Gavakar P. S.
25) Gavakar S. P.	Gavakar S. P.
26) Kulkarni D. S.	Kulkarni D. S.
27) Rokade P. C.	Rokade P. C.
28) Jyoti D. shendage	Jyoti D. shendage
29) Fadnis S. A.	Fadnis S. A.
30)	

31)	Sharmila Deo	<i>[Signature]</i>
32)	Madhuri Chaudhari	<i>[Signature]</i>
33)	Ratna Chaudhari	<i>[Signature]</i>
34)	Ghule S.S	<i>[Signature]</i>
35)	Sujata Modhak	<i>[Signature]</i>
36)	Taru Tanuja	<i>[Signature]</i>
37)	Nilam N Khomane	<i>[Signature]</i>
38)	Dr. Yewale R.B	<i>[Signature]</i>
39)	Namrata D. Pawar	<i>[Signature]</i>
100)	Rupali Rasale	<i>[Signature]</i>
41)	Nagesh Bhulesuo	<i>[Signature]</i>
42)	Suddam Ghetwale	<i>[Signature]</i>
43)	Dr. Nane S. N	<i>[Signature]</i>
44)	Santosh Karbhari	<i>[Signature]</i>
45)	Dr. Pawan R. Hande	<i>[Signature]</i>
46)	Kharat N.B	<i>[Signature]</i>
47)	Sonawane Santosh	<i>[Signature]</i>
48)	Nandkumar Rukhant	<i>[Signature]</i>
49)	Pokharkar Taliaadaz	<i>[Signature]</i>
50)	A C Pawar	<i>[Signature]</i>
51)	Dr P.R. Yawale	<i>[Signature]</i>
52)	Dr. Ganeshji Dene	<i>[Signature]</i>
53)	Dr. Jyoti D. Dene	<i>[Signature]</i>
54)	Vikram Maltumkar	<i>[Signature]</i>
55)	Jitendra Wadshingkar	<i>[Signature]</i>
56)	Sachin Bhasale	<i>[Signature]</i>
57)	B.R. GHODKE	<i>[Signature]</i>
58)	Y.B. Khotlam	<i>[Signature]</i>
59)	P. P. Sondkar	<i>[Signature]</i>
60)	Kirti R. Zude	<i>[Signature]</i>

[Signature]

H.O.D.
 Department of Geography
 Baburaoji Gholap College
 Sangvi, Pune-27



[Signature]

PRINCIPAL
 Baburaoji Gholap College
 Sangvi, Pune-27.



Baburaoji Gholap College

Sangvi, Pune 411027, Maharashtra

Academic Year 2022 - 2023



Attainment of POs and COs

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:		Data Science		
Year:	Third	Subject Credit:	2	Subject Code:	CS354	

Roll No.	Enrollment No.	Name of Students	Gender	Category
1	20192045	PALANGE AKANSHA RAKESH	Female	SC
2	20192089	SURYAWANSHI RUTUJA VIKAS	Female	SC
3	20192093	BHAWARI MAHESH SITARAM	Male	ST
4	201920145	JAGTAP NIKITA SHAILENDRA	Female	OBC
5	201920224	DUSANE YUKTA JAYRAJ	Female	OBC
6	201920234	KSHIRSAGAR KAJAL BIRAPPA	Female	OBC
7	201920242	BHANGALE HARSHADA ASHOK	Female	OBC
8	201920267	MANE AKASH SATISH	Male	VJ-A
9	201920268	PAWAR ROHIT SANJAY	Male	OPEN
10	201920295	NALAWADE SIDDHI SANJAY	Female	VJ-A
11	201920350	LUNGARE ABHISHEK SANJAY	Male	OBC
12	201920356	YANNEWAR DHANANJAY DINESH	Male	OBC
13	201920425	SHINDE ANIKET ANIL	Male	OPEN
14	201920466	SHEDGE PRATHMESH MARUTI	Male	OPEN
15	201920481	JADHAV VAIBHAV VARSHBHAN	Male	OPEN
16	201920482	SHINDE SANTOSHI SHIVAJI	Male	OPEN
17	201920499	KOLKARNI TARUN	Female	OPEN
18	201920524	GAIKWAD ROHAN RAJESH	Male	OPEN
19	201920537	KADAM SHWETA SANTOSH	Male	SC
20	201920618	JADHAV RUTURAJ SATISH	Male	OPEN
21	201920642	MARATHE PRASAD ANIL	Male	OPEN
22	201920643	PATIL MINAKSHI DATTATRAY	Female	OPEN
23	201920656	DESHMUKH KRANTI ABASAHEB	Female	OPEN
24	201920706	JADHAV PURVA VIKAS	Female	OPEN
25	201920715	BHOSLE MAITHILI SHAILENDRA	Female	SC
26	201920716	INGAWALE SUMIT ARUN	Male	OPEN
27	201920804	BHANDARI SHREYAS SUNIL	Male	OBC
28	201920810	BHOSALE SAIRAJ BHAUSAHEB	Male	OPEN
29	201920861	PATIL SAMARTH MAHADEV	Male	OPEN
30	201920867	MISAL YUVRAJ GANESH	Male	OBC
31	201920877	DHORE VAISHNAVI SANJAY	Female	OPEN
32	201920879	VARMA NEHA RAJESH	Female	OBC
33	201920894	YERME SHIVAM NAGESH	Male	OBC
34	201920924	GAIKWAD YASH RAHUL	Male	SC
35	201920932	PANDIT DISHANT VISHWANATHRAO	Male	SC
36	201920948	MAMIDWAR NUPUR RAKESH	Female	NT-B
37	2019201016	KALAMKAR RUPAM MADHUKAR	Male	OBC
38	2019201033	RASKAR PRATIKSHA SUDAM	Female	OBC
39	2019201046	SONAWANE TRICHARAN SHARAD	Male	SC
40	2019201095	KOLKARNI PRATHAMESH	Male	OPEN
41	2019201120	RANVIR ANJALI GOPICHAND	Female	SC
42	2019201124	INGOLE RUTUJA SAMBHAJI	Female	OPEN
43	2019201142	KARJURKAR VAISHNAVI	Female	OPEN
44	2019201165	SONAWANE DIVYANSHU MADAN	Male	SC

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:		Data Science		
Year:	Third	Subject Credit:	2	Subject Code:	CS354	

Roll No.	Enrollment No.	Name of Students	Gender	Category
45	2019201199	MORE PRATHMESH TATYASAHEB	Male	SC
46	2019201292	VANJARE YESHUDAS BABASAHEB	Male	SC
47	2019201302	YADAV ABHISHEK DILIP	Male	SC
48	2019201325	GAWANDE ASHUTOSH VINOD	Male	OPEN
49	2019201333	MORE JYOTI SANJAY	Female	ST
50	2019201375	RAKSHE VIRAJ PANDURANG	Male	OBC
51	2019201437	BHOIR OMKAR SUNIL	Male	ST
52	2019201469	TALWARE SANDHYA RAJENDRA	Female	SC
53	2019201515	KOLI BHAGIRATHI HANUMANTA	Female	SBC
54	2019201517	JADHAV SWATI SATISH	Female	OPEN
55	2019201557	WAGHMARE SHUBHANGI GOMNATH	Female	SC
56	2019201572	BHOSALE NILKAMAL BABASAHEB	Male	SC
57	2019201575	MORE YASH RAJENDRA	Male	OPEN
58	2019201586	VALSE ONKAR CHANDRAKANT	Male	OPEN
59	2019201594	MATRE RAVIKUMAR SHIVAJI	Male	SC
60	2019201654	PUND SUDEEP DEEPAK	Male	OBC
61	2019201700	AMBRE KUNAL SANDEEP	Male	OPEN
62	2019201810	NAIDU CHAITRALI RAJENDRA	Female	OPEN
63	2019201922	GULMIRE GAURI VINOD	Female	OPEN
64	2019201938	SHINDE VRUSHALI BHAGWAN	Female	SC
65	2019201971	DHAWASE SNEHA SATYAKUMAR	Female	SC
66	2019202001	SHETTY AKSHITA SHEKHAR	Female	OPEN
67	2019202335	NAIKWADI ADINATH BHIMRAO	Male	OPEN
68	2019202492	SHEWALE YOGESH RATILAL	Male	SC
69	2019202505	AGHAV RUTUJA BABASAHEB	Female	NT-D
70	2019202514	GAJARMAL VIVEK VISHAL	Male	SC
71	2019202587	SALUNKE ARYAN RAMCHANDRA	Male	OPEN
72	2019202626	GAIKWAD AKSHAY SANJAY	Male	SC
73	2019202764	SONKAMBLE ADESH SUNIL	Male	SC
74	2019202782	TAKALE ARYAN DATATRAYA	Male	OPEN
75	2019202793	PINJARI SHOYAB GULAB	Male	OBC
76	2019202825	THAKARE TUSHAR SANJAY	Male	OBC
77	2019202872	PATHAN SOHEL PASHA	Male	OPEN
78	2019203070	ZINJE GANESH DADA	Male	NT-C
79	2019203144	JAGDHANE VIDYA RAMESH	Female	SC
80	2019203327	KHADE ASHWINI SHIVAJI	Female	NT-D
81	2019203412	NAVASARE KSHITIJA SATISH	Female	OBC
82	2019203435	DATE PRADEEP LAXMAN	Male	ST
83	2019203545	KAMBLE KOMAL MAROTI	Female	SC
84	2019203600	GAIKWAD MANSI SANDESH	Female	SC
85	2019203634	PATIL SHRADDHA VISHWANATH	Female	OPEN
86	2020214554	ALURKAR ANJALI MALLAPPA	Female	SC
87	2020215043	SUNTAHANSHI VISHAL BABASAHEB	Male	SC
88	2020215134	BHAMARE HARSHAL RAVINDRA	Male	OBC
89	2020215700	BIBAVE SNEHAL GANPAT	Female	OPEN
90	2021226563	NIKAM YUKTA PRAMOD	Female	OBC
91	2021227001	VIDEKAR YOGITA GOVIND	Female	VJ-A
92	2021227205	SONAWANE PANKAJ DEVIDAS	Male	SC
93	2021227234	KAMBLE SAURABH SARJERAO	Male	SC

BABURAOJI GHOLAP COLLEGE SANGVI PUNE-411027	
Department of Computer Science	
Course Outcome and Program Outcome Attainment Worksheet for Courses	
Academic Year	2021-22
Stream	B.Sc. Computer Science
Class	Third
Year	2021-22
Semester	VI
Division	A
Title of Course	Data Science
Course Code (Theory)	CS354
Course Credit	2
Course Number(Theory)	1
Course Code (lab)	CS-367
Course Number(Lab)	1
Course Coordinator(Theory)	Dr. Seema Chowhan
Course Coordinator(Lab)	NIL



Course Outcome and Program Outcome Attainment Worksheet for Courses

INDEX

Sr. No.	Description	NAAC SSR Metrics
	<i>Student</i>	2.6.1
1	<i>Title Page</i>	2.6.1
2	<i>Index</i>	2.6.1
3	<i>Program Outcome Statements</i>	2.6.1
4	<i>Program Specific Outcome Statements</i>	2.6.1
5	<i>Course Outcome Statements</i>	2.6.1
6	<i>CO-PO Matrix</i>	2.6.2
7	<i>CO-PSO Matrix</i>	2.6.2
8	<i>Tools and Rubrics for Assessment (Process)</i>	2.6.2
9	<i>Setting CO Attainment Target</i>	2.6.2
10	<i>CA-1 Question Paper</i>	2.6.2
11	<i>CA-1 Assessment</i>	2.6.2
12	<i>CA-2 Question Paper</i>	2.6.3
13	<i>CA-2 Assessment</i>	2.6.2
14	<i>Mid sem Question Paper</i>	2.6.2
15	<i>Mid sem Assessment</i>	2.6.2
16	<i>End Semester Examination</i>	2.6.2
17	<i>CES-Course Exit Survey</i>	2.6.2
18	<i>CES Attainment</i>	2.6.3
19	<i>Computation of Attainment of COs</i>	2.6.2
20	<i>CO Attainment Gap</i>	2.6.2
21	<i>Computation of Attainment of POs and PSOs</i>	2.6.2
22	<i>PES- Programme Exit Survey</i>	2.6.3
23	<i>PES- Attainment</i>	2.6.4
24	<i>Overall PO Attainment</i>	2.6.5

25	<i>PO Attainment Gap</i>	2.6.6
26	<i>Dept. Overall PO Attainment</i>	2.6.7



Name of the College: Baburaoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	Sem:	VI	Academic Year:	2021-22		
Course:	B.Sc. Computer Science	Division:	A				
Branch:	Computer Science	Subject:	Data Science				
Year:	Third	Subject Credit:	2	Subject Code:	CS354		



Program Outcome Statements

PO	Statements	
P01	Knowledge Acquisition	Basics: Understand the basic theory of Computer Science and Information Technology with good foundation on theory, systems and applications such as algorithms, data structures, data handling, data communication and computation.
P02	Skill Development	Problem solving: Apply problem solving techniques in IT tasks, both individually and collaboratively.
P03	Legal Awareness:	Languages & Tools: Illustrate with different programming languages, development tools and simulation tools, the concepts in software engineering and testing.
P04	Professional Accounting Practices	Real life problems: Estimate results of real-life computing problems for evaluating future developments.
P05	Communication and leadership skills	Development: Develop system for specific applications using computational tools and techniques.
P06	Analytical Skills	Methods: Identify relevant problem-solving methodologies.
P07	Use of Tools and Technology	Principles: Describe the fundamental principles of Computer Science and allied subjects.
P08	Environment and Sustainability	Apply basics: Apply mathematics, logic, and statistics to the design, development, and analysis of software systems
P09	Programming	Choose from range of programming languages and tools for system solutions.
P010	Create	Formulate and validate applications by constructively and methodically exploring ideas and theories.
P011	Ethics	Ethics: Practice moral and ethical ethos in personal, professional and social dealings in life.
P012	Lifelong Learning and Collaborative Skills	Knowledge and Skills: Demonstrate competence in accordance with challenges of emerging times.

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	Sem:	VI	Academic Year:	2021-22	 		
Course:	B.Sc. Computer Science	Division:	A					
Branch:	Computer Science	Subject:	Data Science					
Year:	Third	Subject Credit:	2	Subject Code:	CS354			
Course No.	Course Outcome No.	Statements				Knowledge(K) Skill(S) Attitude(A)	Blooms level	Blooms level
At the end of the course, students will be able to:								
CS354	CO:1	Describe Exploratory and statistical Data Analysis with a variety of statistical methods and models				Knowledge(K)	L1	Remembering
	CO:2	Discus detects and diagnoses common data issues, such as missing values, special values, outliers, inconsistencies, and localization.				Knowledge(K)	L2	Understanding
	CO:3	Classify and obtain, clean/process, transform data and demonstrate proficiency with statistical analysis of data and present results using data visualization techniques.				Knowledge(K)	L3	Analyzing
	CO:4	Evaluate how the quality of the data and the means of data collection may affect conclusions.				Skill(S)	L4	Evaluating

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	Sem:	VI	Academic Year:	2021-22	 	
Course:	B.Sc. Computer Science	Division:	A	Data Science			
Branch:	Computer Science	Subject:	2		Subject Code:		CS354
Year:	Third	Subject Credit:					

CO-PO MATRICS

CO PO MAPPING	Knowledge Acquisition	Problem solving	Language and Tools	Real life problem	Developem net	Methods	Principles	Apply Basics	Program ming	Create	Ethics	Knowlege and Sills
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	-	-	-	3	-	1	-	-	3	-	-
C02	1	-	-	-	3	-	-	-	-	-	-	-
C03	-	3	-	-	2	-	-	-	-	-	-	-
C04	-	-	-	-	-	3	-	-	1	3	-	-
WT. AVG	2.00	3.00			2.67	3.00	1.00		1.00	3.00		
Overall Mapping of Subject											2.24	



Mapping of Course Outcomes (COs) and Program Outcomes (POs)

Mapping Correlation	Low	Median	High	No
	1	2	3	-

Justification for CO to PO Attainment



CO1-P01	Correlation analysis is commonly used to determine if there is a relationship between variables and to what extent they are related.
CO1-P05	Correlation analysis is commonly used to understand the strength and direction of the relationship between variables, which can be useful in making predictions or identifying patterns in the data.
CO1-P07	Correlation analysis is commonly used in data analysis to assess the degree of association between variables and to identify patterns or trends in the data
CO1-P010	Correlation analysis is commonly used to understand the strength and direction of relationships between variables, which can be valuable in making informed decisions and predictions.
CO2-P01	Correlation analysis is commonly used to determine if there is a relationship between variables and to what extent they are related.
CO2-P05	By calculating the correlation coefficient, one can assess the strength and direction of the relationship. This information can be valuable in understanding patterns and making predictions based on the data.
CO3-P02	It can be used to identify patterns, make predictions, and guide decision-making processes.
CO3-P05	By calculating correlation coefficients, one can assess the degree of association between variables and understand how changes in one variable may affect the other. Correlation analysis is a valuable tool for identifying patterns and relationships in data.
CO4-P06	Correlation analysis can be a useful tool for understanding relationships between variables, but it is important to note that correlation does not imply causation. Other factors and variables may be influencing the observed correlation, and further analysis is often needed to establish causal relationships.
CO4-P09	Correlation, as mentioned earlier, is a statistical measure that quantifies the relationship between variables. The choice of programming language and tools can affect the ease of calculating and interpreting correlation coefficients. It is important to select programming languages and tools that have robust statistical libraries and functions to accurately calculate and interpret correlations.
CO4-P010	It is important to select programming languages and tools that have robust statistical libraries and functions to accurately calculate and interpret correlations.

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	Sem:	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A	Data Science		
Branch:	Computer Science	Subject:				
Year:	Third	Subject Credit:	2	Subject Code:	CS354	
Course Code	Course Name	Direct Assessment Tools				Indirect Assessment Tool
		External	Internal			
CS354	Data Science	ESE	CA1	CA2	Mid Semester Exam	Course Exit Survey
		35	5	5	20	
Direct Attainment Ratio		35	15			
Final Attainment Ratio		35				15

Direct Attainment Ratio	
INTERNAL	
CA1- Assignments	05 Marks
CA2 - Tutorial	05 Marks
CA3 - Project, 15 Marks each	00 Marks
MSE- Covering 50 % Syllabus	20 Marks
EXTERNAL	
ESE - (Covering all Cos)	35 Marks
Indirect Attainment Ratio	
Course Exit Survey - 5 - 10 feedback questions	

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	Sem:	VI	Academic Year:	2021-22		
Course:	B.Sc. Computer Science	Division:	A				
Branch:	Computer Science	Subject:		Data Science			
Year:	Third	Subject Credit:	2	Subject Code:	CS354		



Setting CO Attainment Targets

Course Code.	Course Outcome No.	Statements	Target (Class Average)	justification	CA1	CA2	MSE
CS354	C01	Describe Exploratory and statistical Data Analysis with a variety of statistical methods and models	60%	All the CO are considered equally important, hence assigned same target for each CO.As this is basic core subject ,hence the target assigned is 60%	N	N	Y
	C02	Discuss detects and diagnoses common data issues, such as missing values, special values, outliers, inconsistencies, and localization.			N	Y	Y
	C03	Classify and obtain, clean/process, transform data and demonstrate proficiency with statistical analysis of data and present results using data visualization techniques.			Y	Y	Y
	C04	Evaluate how the quality of the data and the means of data collection may affect conclusions.			Y	N	Y

Note: Targets can be set on the basis of average or the set point that can be decided by faculty member of concern subject for e.g. 60 / first class

Note: Individual targets for each CO can be set

Name of the College: Baburaoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22		
Course:	B.Sc. Computer Science	Division:	A				
Branch:	Computer Science	Subject:	Data Science				
Year:	Third	Subject Credit:	2	Subject Code:	CS354		
Class Test-CA1 Assignment1							
Course Name:	Data Science	Course Code:	CS354	SEM	VI		
Class:	B.Sc. Computer Science	Division	A	Subject Credit	2		
Date:	17/01/2022				Maximum Marks :15		
CO 3 and CO 4							

PDEA's
BABURAOJI GHOLAP COLLEGE SANGVI, Pune 27
Department of Computer Science
Class: T.Y.B.Sc (Computer Science)



Assignment – 4

Chapter 1: Introduction to Data Science

Q.1] Short Answer Questions:

1. Define data science.
2. What is role of data science?
3. Define unstructured Data.
4. Define data source?
5. What is data set?
6. What is CSV format?
7. What are uses of Zip files?
8. What is open data?
9. What is meant by semi-structured data?
10. What is rasterized and vectorized image files?
11. What is SAS?
12. List applications of data science.
13. What is social media data?
14. List tools for data scientist.
15. What is 3V's?
16. What is data science life cycle?
17. Give the use of tar files.
18. What is compressed data?
19. What is data source?



Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

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Branch:	Computer Science	Subject:			
Year:	Third	Subject Credit:	2	CS354	

Class Test-CA1 Assignment

Roll No.	Enrollment No.	Name of Students	Gender	Category	Q.1	Q.3	Q.4	Q.5	Total	CO1	CO2	CO3	CO4	CO-TOTAL
					1		1	1						
					CO1	CO2	CO3	CO4						
1	20192045	PALANGE AKANSHA RAKESH	Female	SC	-	-	1	4	5	-	-	1	2	3
2	20192089	SURYAWANSHI RUTUJA VIKAS	Female	SC	-	-	0	0	0	-	-	1	2	3
3	20192093	BHAWARI MAHESH SITARAM	Male	ST	-	-	1	1.5	2.5	-	-	1	2	3
4	201920145	JAGTAP NIKITA SHAIENDRA	Female	OBC	-	-	0	0	0	-	-	1	2	3
5	201920224	DUSANE YUKTA JAYRAJ	Female	OBC	-	-	1	4	5	-	-	1	2	3
6	201920234	KSHIRSAGAR KAJAL BIRAPPA	Female	OBC	-	-	1	1	2	-	-	1	2	3
7	201920242	BHANGALE HARSHADA ASHOK	Female	OBC	-	-	1	4	5	-	-	1	2	3
8	201920267	MANE AKASH SATISH	Male	VJ-A	-	-	1	4	5	-	-	1	2	3
9	201920268	PAWAR ROHIT SANJAY	Male	OPEN	-	-	1	1	2	-	-	1	2	3
10	201920295	NALAWADE SIDDHI SANJAY	Female	VJ-A	-	-	1	4	5	-	-	1	2	3
11	201920350	LUNGARE ABHISHEK SANJAY	Male	OBC	-	-	0	0	0	-	-	-	-	-
12	201920356	YANNEWAR DHANANJAY DINESH	Male	OBC	-	-	1	3	4	-	-	1	2	3
13	201920425	SHINDE ANIKET ANIL	Male	OPEN	-	-	1	4	5	-	-	1	2	3
14	201920466	SHEDGE PRATHMESH MARUTI	Male	OPEN	-	-	1	5	2.5	-	-	1	2	3
15	201920481	JADHAV VAIBHAV VARSHBHAN	Male	OPEN	-	-	1	4	5	-	-	1	2	3
16	201920482	SHINDE SANTOSHI SHIVAJI	Male	OPEN	-	-	0	0	0	-	-	1	2	3
17	201920499	KULKARNI APURVA DNYANESHWAR	Female	OPEN	-	-	1	1.5	2.5	-	-	1	2	3
18	201920524	GAIKWAD ROHAN RAJESH	Male	OPEN	-	-	0	0	0	-	-	1	2	3
19	201920537	KADAM SHWETA SANTOSH	Male	SC	-	-	1	4	5	-	-	1	2	3
20	201920618	JADHAV RUTURAJ SATISH	Male	OPEN	-	-	1	4	5	-	-	1	2	3
21	201920642	MARATHE PRASAD ANIL	Male	OPEN	-	-	1	4	5	-	-	1	2	3
22	201920643	PATIL MINAKSHI DATTATRAY	Female	OPEN	-	-	1	4	5	-	-	-	-	-
24	201920706	JADHAV PURVA VIKAS	Female	OPEN	-	-	0	0	0	-	-	1	2	3
25	201920715	BHOSLE MAITHILI SHAIENDRA	Female	SC	-	-	0	0	0	-	-	1	2	3
26	201920716	INGAWALE SUMIT ARUN	Male	OPEN	-	-	0	0	0	-	-	1	2	3
27	201920804	BHANDARI SHREYAS SUNIL	Male	OBC	-	-	0	0	0	-	-	1	2	3
28	201920810	BHOSALE SAIRAJ BHAUSAHEB	Male	OPEN	-	-	1	1.5	2.5	-	-	1	2	3
29	201920861	PATIL SAMARTH MAHADEV	Male	OPEN	-	-	0	0	0	-	-	1	2	3
30	201920867	MISAL YUVRAJ GANESH	Male	OBC	-	-	0	0	0	-	-	1	2	3
31	201920877	DHORE VAISHNAVI SANJAY	Female	OPEN	-	-	1	4	5	-	-	1	2	3
32	201920879	VARMA NEHA RAJESH	Female	OBC	-	-	1	4	5	-	-	1	2	3
33	201920894	YERME SHIVAM NAGESH	Male	OBC	-	-	1	4	5	-	-	1	2	3
34	201920924	GAIKWAD YASH RAHUL	Male	SC	-	-	1	4	5	-	-	1	2	3
35	201920932	PANDIT DISHANT VISHWANATHRAO	Male	SC	-	-	1	4	5	-	-	1	2	3
36	201920948	MAMIDWAR NUPUR RAKESH	Female	NT-B	-	-	1	1.5	2.5	-	-	1	2	3
37	2019201016	KALAMKAR RUPAM MADHUKAR	Male	OBC	-	-	0	0	0	-	-	1	2	3
38	2019201033	RASKAR PRAKISHA SUDAM	Female	OBC	-	-	0	0	0	-	-	1	2	3
39	2019201046	SONAWANE TRICHARAN SHARAD	Male	SC	-	-	0	0	0	-	-	1	2	3
40	2019201095	KULKARNI PRATHMESH PRAVEEN	Male	OPEN	-	-	1	4	5	-	-	1	2	3
41	2019201120	RANVIR ANJALI GOPICHAND	Female	SC	-	-	1	4	5	-	-	1	2	3
42	2019201124	INGOLE RUTUJA SAMBHAJI	Female	OPEN	-	-	1	4	5	-	-	1	2	3
43	2019201142	RAJPUROHIT VAISHNAVI MEGHSINGH	Female	OPEN	-	-	1	4	5	-	-	1	2	3
44	2019201165	SONAWANE DIVYANSHU MADAN	Male	SC	-	-	1	4	5	-	-	1	2	3
45	2019201199	MORE PRATHMESH TATYASAHEB	Male	SC	-	-	0	0	0	-	-	1	2	3
46	2019201292	VANJARE YESHUDAS BABASAHEB	Male	SC	-	-	0	0	0	-	-	1	2	3
47	2019201302	YADAV ABHISHEK DILIP	Male	SC	-	-	1	1.5	2.5	-	-	1	2	3
48	2019201325	GAWANDE ASHUTOSH VINOD	Male	OPEN	-	-	0	0	0	-	-	1	2	3
49	2019201333	MORE JYOTI SANJAY	Female	ST	-	-	1	1.5	1.5	-	-	1	2	3
50	2019201375	RAKSHE VIRAJ PANDURANG	Male	OBC	-	-	0	0	0	-	-	1	2	3
51	2019201437	BHOIR OMKAR SUNIL	Male	ST	-	-	1	4	5	-	-	1	2	3
52	2019201469	TALWARE SANDHYA RAJENDRA	Female	SC	-	-	1	1.5	2.5	-	-	1	2	3
53	2019201515	KOLI BHAGIRATHI HANUMANTA	Female	SBC	-	-	1	4	5	-	-	1	2	3
54	2019201517	JADHAV SWATI SATISH	Female	OPEN	-	-	1	1.5	2.5	-	-	1	2	3

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM		2021-22	 
Course:	B.Sc. Computer Science	Division:	A		
Branch:	Computer Science	Subject:			
Year:	Third	Subject Credit:	2	CS354	

Class Test-CA1 Assignment

					Q.1	Q.3	Q.4	Q.5	Total						
					1		1	1		CO1	CO2	CO3	CO4	CO-TOTAL	
					CO1	CO2	CO3	CO4							
55	2019201557	WAGHMARE SHUBHANGI	Female	SC	-	-	1	1.5	2.5	-	-	1	2	3	
56	2019201572	BHOSALE NILKAMAL BABASAHEB	Male	SC	-	-	1	4	5	-	-	1	2	3	
57	2019201575	MORE YASH RAJENDRA	Male	OPEN	-	-	0	0	0	-	-	1	2	3	
58	2019201586	VALSE ONKAR CHANDRAKANT	Male	OPEN	-	-	0	0	0	-	-	1	2	3	
59	2019201594	MATRE RAVIKUMAR SHIVAJI	Male	SC	-	-	0	0	0	-	-	1	2	3	
60	2019201654	PUND SUDEEP DEEPAK	Male	OBC	-	-	0	0	0	-	-	1	2	3	
61	2019201700	AMBRE KUNAL SANDEEP	Male	OPEN	-	-	1	4	5	-	-	1	2	3	
62	2019201810	NAIDU CHAITRALI RAJENDRA	Female	OPEN	-	-	0	0	0	-	-	1	2	3	
63	2019201922	GULMIRE GAURI VINOD	Female	OPEN	-	-	1	4	5	-	-	1	2	3	
64	2019201938	SHINDE VRUSHALI BHAGWAN	Female	SC	-	-	2	0	2	-	-	1	2	3	
65	2019201971	DHAWASE SNEHA SATYAKUMAR	Female	SC	-	-	1	4	5	-	-	1	2	3	
66	2019202001	SHETTY AKSHITA SHEKHAR	Female	OPEN	-	-	1	4	5	-	-	1	2	3	
67	2019202335	NAIKWADI ADINATH BHIMRAO	Male	OPEN	-	-	1	4	5	-	-	1	2	3	
68	2019202492	SHEWALE YOGESH RATILAL	Male	SC	-	-	0	0	0	-	-	1	2	3	
69	2019202505	AGHAV RUTUJA BABASAHEB	Female	NT-D	-	-	0	0	0	-	-	1	2	3	
70	2019202514	GAJARMAL VIVEK VISHAL	Male	SC	-	-	1	4	5	-	-	1	2	3	
71	2019202587	SALUNKE ARYAN RAMCHANDRA	Male	OPEN	-	-	1	4	5	-	-	1	2	3	
72	2019202626	GAIKWAD AKSHAY SANJAY	Male	SC	-	-	1	1.5	2.5	-	-	1	2	3	
73	2019202764	SONKAMBLE ADESH SUNIL	Male	SC	-	-	1	1.5	2.5	-	-	1	2	3	
74	2019202782	TAKALE ARYAN DATTATRAYA	Male	OPEN	-	-	0	0	0	-	-	1	2	3	
75	2019202793	PINJARI SHOYAB GULAB	Male	OBC	-	-	1	4	5	-	-	1	2	3	
76	2019202825	THAKARE TUSHAR SANJAY	Male	OBC	-	-	0	0	0	-	-	1	2	3	
77	2019202872	PATHAN SOHEL PASHA	Male	OPEN	-	-	1	1.5	2.5	-	-	1	2	3	
78	2019203070	ZINJE GANESH DADA	Male	NT-C	-	-	1	4	5	-	-	1	2	3	
79	2019203144	JAGDHANE VIDYA RAMESH	Female	SC	-	-	1	4	5	-	-	1	2	3	
80	2019203327	KHADE ASHWINI SHIVAJI	Female	NT-D	-	-	0	0	0	-	-	1	2	3	
81	2019203412	NAVASARE KSHITIJIA SATISH	Female	OBC	-	-	0	0	0	-	-	1	2	3	
82	2019203435	DATE PRADEEP LAXMAN	Male	ST	-	-	1	1.5	2.5	-	-	1	2	3	
83	2019203545	KAMBLE KOMAL MAROTI	Female	SC	-	-	1	4	5	-	-	1	2	3	
84	2019203600	GAIKWAD MANSI SANDESH	Female	SC	-	-	1	1.5	2.5	-	-	1	2	3	
85	2019203634	PATIL SHRADDHA VISHWANATH	Female	OPEN	-	-	1	4	5	-	-	1	2	3	
86	2020214554	ALURKAR ANJALI MALLAPPA	Female	SC	-	-	1	1.5	2.5	-	-	1	2	3	
87	2020215043	SURYAVANSHI VISHAL BABASAHEB	Male	SC	-	-	1	1.5	2.5	-	-	1	2	3	
88	2020215134	BHAMARE HARSHAL RAVINDRA	Male	OBC	-	-	1	4	5	-	-	1	2	3	
89	2020215700	BIBAVE SNEHAL GANPAT	Female	OPEN	-	-	0	0	0	-	-	1	2	3	
90	2021226563	NIKAM YUKTA PRAMOD	Female	OBC	-	-	1	4	5	-	-	1	2	3	
91	2021227001	VIDEKAR YOGITA GOVIND	Female	VJ-A	-	-	0	0	0	-	-	1	2	3	
92	2021227205	SONAWANE PANKAJ DEVIDAS	Male	SC	-	-	1	4	5	-	-	1	2	3	
93	2021227234	KAMBLE SAURABH SARJERAO	Male	SC	-	-	0	0	0	-	-	1	2	3	
							0.67	2.09	2.68			1.00	2	3.00	
					CO1	CO2	CO3	CO4			CO1	CO2	CO3	CO4	

	CO1	CO2	CO3	CO4
Target	60%	60%	60%	60%
Class Average	-	-	1.00	2.00
No. of Students above class average	0	0	91	91
Attainment Percentage	0.00	0.00	97.85	97.85



=AVERAGE(H11:H103)

Represents the calculations based on the basis 60% attainment of average marks of class (for eg. 132 students scoring more than class avg)

Target	Attainment level
if >=40% of students securing above average	3
if 30% -39% of students securing above average	2
if 20% - 29% of students securing above average	1

=(F110/A103)*100

Name of the College: Baburaoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:	Data Science			
Year:	Third	Subject Credit:	2	Subject Code:	CS354	

Class Test-CA2 Tutorial

Course Name:	Data Science	Course Code:	CS354	SEM	VI
Class:	B.Sc. Computer Science	Division	A	Subject Credit	2
Date:	27/10/2021	Time:	9.25 AM to 10.15 PM	Maximum Marks:	15

CO 2 and CO 3

CS-354 Foundations of Data Science

PDEA's
BABURAOJI GHOLAP COLLEGE SANGVI, Pune 27
Department of Computer Science
Class: T.Y.B.Sc (Computer Science)

Tutorial -1

Chapter 1: Statistical Data Analysis

CS-354 Foundations of Data Science

Salary (Rs.)	3500	4000	4200	4300
Frequency	5	8	5	2

- What is meant by parameter estimation? Differentiate between a point estimate and interval estimate.
- The amount spent by the group of 10 students in the school canteen is as follows:
110,117,129,197,190,100,100,178,255,790
Find the range and the co-efficient of the range.
- What is mean by descriptive statistics? Explain types of descriptive statistics.
- What are measures of central tendency? Explain each in detail.
- Find the mean, median, mode, and range for the following list of values:
13,18,13,14,13,16,14,21,13.
- How to measure data similarity and dissimilarity? Explain in detail. Describe data matrix versus dissimilarity matrix.
- What is outlier? List types of outliers. Also explain methods for outlier detection.
- Explain t-test and z-test with example.
- What is dispersion? Explain range and interquartile range. Also compare them.
- What is standard deviation and variance?
- Find the mean of the following distribution:

X	4	6	9	10	15
f	5	10	10	7	8

- The following table indicates the data on the number of patients visiting a hospital in a month. Find the average number of patients visiting the hospital in a day.

Number of Patients	Number of Days Visiting Hospital
0-10	2
10-20	6
20-30	9
30-40	7
40-50	4
50-60	2



Q.1] Short Answer Questions:

- Define statistical data analysis?
- Define descriptive statistics.
- What is meant by central tendency of data?
- Define geometric mean.
- What is meant by mode?
- Define outlier.
- What is inferential statistics?
- What is mean by range?
- Define standard deviation?
- Define hypothesis testing.
- What is binary attribute and ordinal attribute.
- Define variance.
- Define interquartile range.
- Give parameter estimation methods.

Q.2] Long Answer Questions:

- What is statistical data analysis? Plain its role in detail.
- Explain any two methods of dispersion for a series of data values and write the python code for the same.
- How is the interquartile range used as a measure of position? Find the interquartile range for the data values: 23,18,19,27,22,31,38,24,11,16,20.
- What is meant by dispersion? If the standard deviation of a given dataset is equal to zero, what can we say about the data values included in the given dataset? The frequency table of the monthly salaries of 20 people is shown below. Find the range, standard deviation, and variance of the given data.



Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	2021-22		
Course:	B.Sc. Computer Science	Division:			
Branch:	Computer Science	Subject:			
Year:	Third	Subject Credit			

Class Test-CA2 Tutorial

Roll No.	Enrollment No.	Name of Students	Gender	Category	Q.1	Q.2	Q.3	Total	CO1	CO2	CO3	CO4	CO-TOTAL
					CO3	CO2	CO2		CO1	CO2	CO3	CO4	
1	20192045	PALANGE AKANSHA RAKESH	Female	SC	2	2	1	5	-	2	1	-	3
2	20192089	SURYAWANSHI RUTUJA VIKAS	Female	SC	1	1	1	3	-	2	1	-	3
3	20192093	BHAWARI MAHESH SITARAM	Male	ST	2	2	1	5	-	2	1	-	3
4	201920145	JAGTAP NIKITA SHAILENDRA	Female	OBC	2	2	1	5	-	2	1	-	3
5	201920224	DUSANE YUKTA JAYRAJ	Female	OBC	2	2	1	5	-	2	1	-	3
6	201920234	KSHIRSAGAR KAJAL BIRAPPA	Female	OBC	1	1	1	3	-	2	1	-	3
7	201920242	BHANGALE HARSHADA ASHOK	Female	OBC	2	2	1	5	-	2	1	-	3
8	201920267	MANE AKASH SATISH	Male	VJ-A	1	1	1	3	-	2	1	-	3
9	201920268	PAWAR ROHIT SANJAY	Male	OPEN	2	2	1	5	-	2	1	-	3
10	201920295	NALAWADE SIDDHI SANJAY	Female	VJ-A	1	1	1	3	-	2	1	-	3
11	201920350	LUNGARE ABHISHEK SANJAY	Male	OBC	0	0	0	0	-	2	1	-	3
12	201920356	YANNEWAR DHANANJAY DINESH	Male	OBC	2	2	1	5	-	2	1	-	3
13	201920425	SHINDE ANIKET ANIL	Male	OPEN	1	1	1	3	-	2	1	-	3
14	201920466	SHEDGE PRATHMESH MARUTI	Male	OPEN	2	2	1	5	-	2	1	-	3
15	201920481	JADHAV VAIBHAV VARSHBHAN	Male	OPEN	2	2	1	5	-	2	1	-	3
16	201920482	SHINDE SANTOSHI SHIVAJI	Male	OPEN	0	0	0	0	-	2	1	-	3
17	201920499	KULKARNI APURVA DNYANESHWAR	Female	OPEN	2	2	1	5	-	2	1	-	3
18	201920524	GAIKWAD ROHAN RAJESH	Male	OPEN	0	0	1	1	-	2	1	-	3
19	201920537	KADAM SHWETA SANTOSH	Male	SC	2	2	1	5	-	2	1	-	3
20	201920618	JADHAV RUTURAJ SATISH	Male	OPEN	2	2	1	5	-	2	1	-	3
21	201920642	MARATHE PRASAD ANIL	Male	OPEN	2	2	1	5	-	2	1	-	3
22	201920643	PATIL MINAKSHI DATTATRAY	Female	OPEN	2	2	1	5	-	2	1	-	3
23	201920656	DESHMUKH KRANTI ABASAHEB	Female	OPEN	2	2	1	5	-	2	1	-	3
24	201920706	JADHAV PURVA VIKAS	Female	OPEN	0	0	0	0	-	2	1	-	3
25	201920715	BHOSLE MAITHILI SHAILENDRA	Female	SC	2	2	1	5	-	2	1	-	3
26	201920716	INGAWALE SUMIT ARUN	Male	OPEN	2	2	1	5	-	2	1	-	3
27	201920804	BHANDARI SHREYAS SUNIL	Male	OBC	2	2	1	5	-	2	1	-	3
28	201920810	BHOSALE SAIRAJ BHAUSAHEB	Male	OPEN	2	2	1	5	-	2	1	-	3
29	201920861	PATIL SAMARTH MAHADEV	Male	OPEN	0	0	0	0	-	2	1	-	3
30	201920867	MISAL YUVRAJ GANESH	Male	OBC	2	2	1	5	-	2	1	-	3
31	201920877	DHORE VAISHNAVI SANJAY	Female	OPEN	2	2	1	5	-	2	1	-	3
32	201920879	VARMA NEHA RAJESH	Female	OBC	2	2	1	5	-	2	1	-	3
33	201920894	YERME SHIVAM NAGESH	Male	OBC	2	2	1	5	-	2	1	-	3
34	201920924	GAIKWAD YASH RAHUL	Male	SC	2	2	1	5	-	2	1	-	3
35	201920932	PANDIT DISHANT VISHWANATHRAO	Male	SC	2	2	1	5	-	2	1	-	3
36	201920948	MAMIDWAR NUPUR RAKESH	Female	NT-B	0	0	0	0	-	2	1	-	3
37	2019201016	KALAMKAR RUPAM MADHUKAR	Male	OBC	2	2	1	5	-	2	1	-	3
38	2019201033	RASKAR PRATIKSHA SUDAM	Female	OBC	2	2	1	5	-	2	1	-	3
39	2019201046	SONAWANE TRICHARAN SHARAD	Male	SC	1	1	1	3	-	2	1	-	3
40	2019201095	KULKARNI PRATHAMESH PRAVEEN	Male	OPEN	2	2	1	5	-	2	1	-	3
41	2019201120	RANVIR ANJALI GOPICHAND	Female	SC	2	2	1	5	-	2	1	-	3
42	2019201124	INGOLE RUTUJA SAMBHAJI	Female	OPEN	2	2	1	5	-	2	1	-	3
43	2019201142	RAJPUROHIT VAISHNAVI MEGHSINGH	Female	OPEN	1	1	1	3	-	2	1	-	3
44	2019201165	SONAWANE DIVYANSHU MADAN	Male	SC	0	0	0	0	-	2	1	-	3

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	2021-22		
Course:	B.Sc. Computer Science	Division:			
Branch:	Computer Science	Subject:			
Year:	Third	Subject Credit	CS354		

Class Test-CA2 Tutorial

Roll No.	Enrollment No.	Name of Students	Gender	Category	Q.1	Q.2	Q.3	Total	CO1	CO2	CO3	CO4	CO-TOTAL
					CO3	CO2	CO2		CO1	CO2	CO3	CO4	
					2	2	1	5	-	2	1	-	3
45	2019201199	MORE PRATHMESH TATYASAHEB	Male	SC	0	0	0	0	-	2	1	-	3
46	2019201292	VANJARE YESHUDAS BABASAHEB	Male	SC	2	2	1	5	-	2	1	-	3
47	2019201302	YADAV ABHISHEK DILIP	Male	SC	2	2	1	5	-	2	1	-	3
48	2019201325	GAWANDE ASHUTOSH VINOD	Male	OPEN	2	2	1	5	-	2	1	-	3
49	2019201333	MORE JYOTI SANJAY	Female	ST	0	0	0	0	-	2	1	-	3
50	2019201375	RAKSHE VIRAJ PANDURANG	Male	OBC	2	2	1	5	-	2	1	-	3
51	2019201437	BHOIR OMKAR SUNIL	Male	ST	1	1	1	3	-	2	1	-	3
52	2019201469	TALWARE SANDHYA RAJENDRA	Female	SC	1	1	1	3	-	2	1	-	3
53	2019201515	KOLI BHAGIRATHI HANUMANTA	Female	SBC	1	1	1	3	-	2	1	-	3
54	2019201517	JADHAV SWATI SATISH	Female	OPEN	1	1	1	3	-	2	1	-	3
55	2019201557	WAGHMARE SHUBHANGI	Female	SC	2	2	1	5	-	2	1	-	3
56	2019201572	BHOSALE NILKAMAL BABASAHEB	Male	SC	0	0	0	0	-	2	1	-	3
57	2019201575	MORE YASH RAJENDRA	Male	OPEN	0	0	1	1	-	2	1	-	3
58	2019201586	VALSE ONKAR CHANDRAKANT	Male	OPEN	1	1	1	3	-	2	1	-	3
59	2019201594	MATRE RAVIKUMAR SHIVAJI	Male	SC	0	0	0	0	-	2	1	-	3
60	2019201654	PUND SUDEEP DEEPAK	Male	OBC	2	2	1	5	-	2	1	-	3
61	2019201700	AMBRE KUNAL SANDEEP	Male	OPEN	1	1	1	3	-	2	1	-	3
62	2019201810	NAIDU CHAITRALI RAJENDRA	Female	OPEN	2	2	1	5	-	2	1	-	3
63	2019201922	GULMIRE GAURI VINOD	Female	OPEN	2	2	1	5	-	2	1	-	3
64	2019201938	SHINDE VRUSHALI BHAGWAN	Female	SC	1	1	1	3	-	2	1	-	3
65	2019201971	DHAWASE SNEHA SATYAKUMAR	Female	SC	2	2	1	5	-	2	1	-	3
66	2019202001	SHETTY AKSHITA SHEKHAR	Female	OPEN	2	2	1	5	-	2	1	-	3
67	2019202335	NAIKWADI ADINATH BHIMRAO	Male	OPEN	2	2	1	5	-	2	1	-	3
68	2019202492	SHEWALE YOGESH RATILAL	Male	SC	0	0	0	0	-	2	1	-	3
69	2019202505	AGHAV RUTUJA BABASAHEB	Female	NT-D	2	2	1	5	-	2	1	-	3
70	2019202514	GAJARMAL VIVEK VISHAL	Male	SC	2	2	1	5	-	2	1	-	3
71	2019202587	SALUNKE ARYAN RAMCHANDRA	Male	OPEN	2	2	1	5	-	2	1	-	3
72	2019202626	GAIKWAD AKSHAY SANJAY	Male	SC	2	2	1	5	-	2	1	-	3
73	2019202764	SONKAMBLE ADESH SUNIL	Male	SC	2	2	1	5	-	2	1	-	3
74	2019202782	TAKALE ARYAN DATTATRAYA	Male	OPEN	2	2	1	5	-	2	1	-	3
75	2019202793	PINJARI SHOYAB GULAB	Male	OBC	2	2	1	5	-	2	1	-	3
76	2019202825	THAKARE TUSHAR SANJAY	Male	OBC	2	2	1	5	-	2	1	-	3
77	2019202872	PATHAN SOHEL PASHA	Male	OPEN	2	2	1	5	-	2	1	-	3
78	2019203070	ZINJE GANESH DADA	Male	NT-C	2	2	1	5	-	2	1	-	3
79	2019203144	JAGDHANE VIDYA RAMESH	Female	SC	2	2	1	5	-	2	1	-	3
80	2019203327	KHADE ASHWINI SHIVAJI	Female	NT-D	2	2	1	5	-	2	1	-	3
81	2019203412	NAVASARE KSHITIJA SATISH	Female	OBC	2	2	1	5	-	2	1	-	3
82	2019203435	DATE PRADEEP LAXMAN	Male	ST	1	1	1	3	-	2	1	-	3
83	2019203545	KAMBLE KOMAL MAROTI	Female	SC	2	2	1	5	-	2	1	-	3
84	2019203600	GAIKWAD MANSI SANDESH	Female	SC	2	2	1	5	-	2	1	-	3
85	2019203634	PATIL SHRADDHA VISHWANATH	Female	OPEN	2	2	1	5	-	2	1	-	3
86	2020214554	ALURKAR ANJALI MALLAPPA	Female	SC	1	1	1	3	-	2	1	-	3
87	2020215043	SURYAVANSHI VISHAL BABASAHEB	Male	SC	2	2	1	5	-	2	1	-	3
88	2020215134	BHAMARE HARSHAL RAVINDRA	Male	OBC	0	0	0	0	-	2	1	-	3
89	2020215700	BIBAVE SNEHAL GANPAT	Female	OPEN	2	2	1	5	-	2	1	-	3
90	2021226563	NIKAM YUKTA PRAMOD	Female	OBC	2	2	1	3	-	2	1	-	3
91	2021227001	VIDEKAR YOGITA GOVIND	Female	VJ-A	1	1	1	3	-	-	-	-	0
92	2021227205	SONAWANE PANKAJ DEVIDAS	Male	SC	0	0	0	0	-	2	1	-	3
93	2021227234	KAMBLE SAURABH SARJERAO	Male	SC	2	2	1	5	-	2	1	-	3
					1.49	1.49	0.86	3.83	-	2.00	1.00	-	2.97
					CO3	CO2	CO2		CO1	CO2	CO3	CO4	

	CO1	CO2	CO3	CO4
Target	60%	60%	60%	60%
Class Average	-	2.00	1.00	-
No. of Students above class average	0	92	92	0
Attainment Percentage	0.00	98.92	98.92	0.00



=AVERAGE(F10:F102)

Represents the calculations based on the basis 60% attainment percentage marks of class (for eg. 132 students scoring more than class avg)

Target	level
if >=40% of students securing above average	3
if 30% -39% of students securing above average	2
if 20% - 29% of students securing above average	1

=(E109/A102)*100

Name of the College: Baburaoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A	Data Science		
Branch:	Computer Science	Subject:				
Year:	Third	Subject Credit:	2	Subject Code:	CS354	

Mid Sem Question Paper

Course Name:	Data Science	Course Code:	CS354	SEM	VI
Class:	B.Sc. Computer Science	Division	A	Subject Credit	2
CO 1 to Co 4					
Date:	27/09/2021	Time:	9.25 AM to 10.15 PM	Maximum Marks:15	

P.D.E.A's
Baburaoji Gholap College, Sangvi Pune - 27
T.Y.B.Sc.(CS) Internal Exam Jan. 2021-22

Name → Answer Sheet No.

Seat No. →	Supervisor's Sign →	Marks Obtained →	Examiner's Sign →
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SUB: Foundation of Data Science (CS-354)
Time: 40 minutes Total Marks: 10

Q.1) Multiple choice questions & fill in the blank. (1/2 * 8 = 4M)

- _____ is the task of scrutinizing and processing raw data to reach meaningful information?
A. Data Science B. Data Processing C. Statistics Analysis D. Data Analysis
- Data science related to huge data and involves concepts like,_____
A. Data collection and preparation B. Data managing and storing
D. Data cleaning and visualization E. All of the mentioned
- The 3V's in data science is _____
A. Volume(amount of data) B. Velocity(speed of data)
C. Variety (different types of data) D. All of the mentioned
- _____ entries typically mean that we don't have particular piece of information.
A. Statistical B. Predictive C. Predictive D. Descriptive
- _____ Data analysis allows the execution of statistical operations using quantitative approaches.
A. Statistical B. Predictive C. Predictive D. Descriptive
- _____ Statistics are used to draw conclusions about a population based on data observed in a sample?
A. Descriptive B. inferential C. Both A and B D. None of the Mentioned
- _____ Range is calculated by finding the difference between the third quartile and the first quartile.
A. Interquartile B. middle quartile C. mean quartile D. mode quartile
- _____ Test is a statistical method to determine if two categorical variables have a significant correlation between them?
A. T-test B. Chi-square C. Z-test D. ANOVA

Q.2) State true or false. (1/2 * 4= 2M)

- Processing data includes sub setting, formatting and merging only. _____
- Temperature is an example of Nominal attribute. _____

- A binary attribute is asymmetric if both of its states are equally valuable and carry same weight. _____
- The first step in Data science life cycle is data preparation. _____

Q.3) Answer in one line. (1 * 4 = 4M)



- What is role of data science?

- Write python code to find mean, median, for the following list of values: 3, 18,13,14,13,16,14,21,13.

- List tools for data scientist.

- What is one hot encoding?



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Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year		
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Branch:	Computer Science	Subject:	#REF!		Subject Code:	
Year:	Third	Subject Credit:	2			

Mid Sem Assessment

Roll No.	Enrollment No.	Name of Students	Gender	Category	CO1	CO2	CO3	CO4	Total
					1.5	4	2.5	2	10
1	20192045	PALANGE AKANSHA RAKESH	Female	SC	1	3	2	2	8
2	20192089	SURYAWANSHI RUTUJA VIKAS	Female	SC	1	2	1	1	5
3	20192093	BHAWARI MAHESH SITARAM	Male	ST	1	3	2	1	7
4	201920145	JAGTAP NIKITA SHAILENDRA	Female	OBC	1	2	1	1	5
5	201920224	DUSANE YUKTA JAYRAJ	Female	OBC	1.5	2	2.5	2	8
6	201920234	KSHIRSAGAR KAJAL BIRAPPA	Female	OBC	1	2	1	1	5
7	201920242	BHANGALE HARSHADA ASHOK	Female	OBC	1	3	1	2	7
8	201920267	MANE AKASH SATISH	Male	VJ-A	1.5	3.5	2	1	8
9	201920268	PAWAR ROHIT SANJAY	Male	OPEN	1.5	3.5	1	1	7
10	201920295	NALAWADE SIDDHI SANJAY	Female	VJ-A	1.5	4	2.5	2	10
11	201920350	LUNGARE ABHISHEK SANJAY	Male	OBC	1	3.5	2.5	1	8
12	201920356	YANNEWAR DHANANJAY DINESH	Male	OBC	1	3	2	0	6
13	201920425	SHINDE ANIKET ANIL	Male	OPEN	1.5	4	0.5	2	8
14	201920466	SHEDGE PRATHMESH MARUTI	Male	OPEN	1	3	2	1	7
15	201920481	JADHAV VAIBHAV VARSHBHAN	Male	OPEN	1	3	2	2	8
16	201920482	SHINDE SANTOSHI SHIVAJI	Male	OPEN	0	3	2	0	4
17	201920499	KULKARNI APURVA DNYANESHWAR	Female	OPEN	1	2.5	2.5	1	7
18	201920524	GAIKWAD ROHAN RAJESH	Male	OPEN	1	2	1.5	1.5	6
19	201920537	KADAM SHWETA SANTOSH	Male	SC	1	4	0.5	1.5	7
20	201920618	JADHAV RUTURAJ SATISH	Male	OPEN	1	2	2	2	7
21	201920642	MARATHE PRASAD ANIL	Male	OPEN	1	4	2	1	8
22	201920643	PATIL MINAKSHI DATTATRAY	Female	OPEN	1.5	3.5	2	2	9
23	201920656	DESHMUKH KRANTI ABASAHEB	Female	OPEN	0.5	1.5	1	1	4
24	201920706	JADHAV PURVA VIKAS	Female	OPEN	0.5	4	1.5	1	7
25	201920715	BHOSLE MAITHILI SHAILENDRA	Female	SC	0.5	3.5	0.5	1.5	6
26	201920716	INGAWALE SUMIT ARUN	Male	OPEN	1	0.5	1.5	2	5
27	201920804	BHANDARI SHREYAS SUNIL	Male	OBC	1	3	2	1	7
28	201920810	BHOSALE SAIRAJ BHAUSAHEB	Male	OPEN	0	2	1	0	3
29	201920861	PATIL SAMARTH MAHADEV	Male	OPEN	1	3.5	1.5	1	7
30	201920867	MISAL YUVRAJ GANESH	Male	OBC	1.5	4	2.5	1	9
31	201920877	DHORE VAISHNAVI SANJAY	Female	OPEN	0	4	2	2	8
32	201920879	VARMA NEHA RAJESH	Female	OBC	1	4	2	2	9
33	201920894	YERME SHIVAM NAGESH	Male	OBC	1	4	2	2	8
34	201920924	GAIKWAD YASH RAHUL	Male	SC	1	4	2	2	9
35	201920932	PANDIT DISHANT VISHWANATHRAO	Male	SC	1	2.5	0.5	0	4
36	201920948	MAMIDWAR NUPUR RAKESH	Female	NT-B	1	3	1	1	6
37	2019201016	KALAMKAR RUPAM MADHUKAR	Male	OBC	1.5	0.5	1	0	3
38	2019201033	RASKAR PRATIKSHA SUDAM	Female	OBC	1.5	1.5	1	1	5
39	2019201046	SONAWANE TRICHARAN SHARAD	Male	SC	1.5	4	2.5	2	10
40	2019201095	KULKARNI PRATHAMESH PRAVEEN	Male	OPEN	1.5	4	2.5	0	8
41	2019201120	RANVIR ANJALI GOPICHAND	Female	SC	2	3.5	1	0.5	7
42	2019201124	INGOLE RUTUJA SAMBHAJI	Female	OPEN	1.5	3.5	2	1	8
43	2019201142	RAJPUROHIT VAISHNAVI MEGHSINGH	Female	OPEN	1.5	4	2.5	2	10
44	2019201165	SONAWANE DIVYANSHU MADAN	Male	SC	0	3	0	0	3
45	2019201199	MORE PRATHMESH TATYASAHEB	Male	SC	1	3	1	1	6
46	2019201292	VANJARE YESHUDAS BABASAHEB	Male	SC	0.5	3.5	2	1	7
47	2019201302	YADAV ABHISHEK DILIP	Male	SC	0.5	3.5	0	0	4
48	2019201325	GAWANDE ASHUTOSH VINOD	Male	OPEN	1.5	2.5	1	2	7



Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year		
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:	#REF!		Subject Code:	
Year:	Third	Subject Credit:	2			

Mid Sem Assessment

Roll No.	Enrollment No.	Name of Students	Gender	Category	CO1	CO2	CO3	CO4	Total
					1.5	4	2.5	2	10
49	2019201333	MORE JYOTI SANJAY	Female	ST	1.5	2.5	1.5	0.5	6
50	2019201375	RAKSHE VIRAJ PANDURANG	Male	OBC	1	4	2	2	9
51	2019201437	BHOIR OMKAR SUNIL	Male	ST	1.5	3.5	0.5	0.5	6
52	2019201469	TALWARE SANDHYA RAJENDRA	Female	SC	1	3.5	2.5	2	9
53	2019201515	KOLI BHAGIRATHI HANUMANTA	Female	SBC	0	3	1	1	5
54	2019201517	JADHAV SWATI SATISH	Female	OPEN	1.5	3.5	1	2	8
55	2019201557	WAGHMARE SHUBHANGI SOMNNATH	Female	SC	1.5	0.5	0	0	2
56	2019201572	BHOSALE NILKAMAL BABASAHEB	Male	SC	0	3	0	1	4
57	2019201575	MORE YASH RAJENDRA	Male	OPEN	0.5	3	1	1.5	6
58	2019201586	VALSE ONKAR CHANDRAKANT	Male	OPEN	0	3	1	1	5
59	2019201594	MATRE RAVIKUMAR SHIVAJI	Male	SC	0.5	3	1.5	1	6
60	2019201654	PUND SUDEEP DEEPAK	Male	OBC	1	4	2	2	9
61	2019201700	AMBRE KUNAL SANDEEP	Male	OPEN	1	1	1	1	4
62	2019201810	NAIDU CHAITRALI RAJENDRA	Female	OPEN	1.5	4	2.5	2	10
63	2019201922	GULMIRE GAURI VINOD	Female	OPEN	1	0	0	0	1
64	2019201938	SHINDE VRUSHALI BHAGWAN	Female	SC	1.5	2	2.5	2	8
65	2019201971	DHAWASE SNEHA SATYAKUMAR	Female	SC	1	3	1	2	7
66	2019202001	SHETTY AKSHITA SHEKHAR	Female	OPEN	1.5	3.5	1	2	8
67	2019202335	NAIKWADI ADINATH BHIMRAO	Male	OPEN	0	0	1	0	1
68	2019202492	SHEWALE YOGESH RATILAL	Male	SC	1.5	2.5	2	2	8
69	2019202505	AGHAV RUTUJA BABASAHEB	Female	NT-D	1.5	4	2.5	2	10
70	2019202514	GAJARMAL VIVEK VISHAL	Male	SC	1.5	3	1.5	2	8
71	2019202587	SALUNKE ARYAN RAMCHANDRA	Male	OPEN	1.5	3	2.5	0	7
72	2019202626	GAIKWAD AKSHAY SANJAY	Male	SC	1.5	3.5	1	2	8
73	2019202764	SONKAMBLE ADESH SUNIL	Male	SC	0	3	2	0	5
74	2019202782	TAKALE ARYAN DATTATRAYA	Male	OPEN	1.5	4	2.5	2	10
75	2019202793	PINJARI SHOYAB GULAB	Male	OBC	0	3	0	1	4
76	2019202825	THAKARE TUSHAR SANJAY	Male	OBC	1.5	3.5	2.5	1.5	9
77	2019202872	PATHAN SOHEL PASHA	Male	OPEN	1.5	4	2.5	2	10
78	2019203070	ZINJE GANESH DADA	Male	NT-C	1.5	4	1.5	2	9
79	2019203144	JAGDHANE VIDYA RAMESH	Female	SC	0	1	1	1	3
80	2019203327	KHADE ASHWINI SHIVAJI	Female	NT-D	1	3	2	0	6
81	2019203412	NAVASARE KSHITIJIA SATISH	Female	OBC	1.5	4	2.5	2	10
82	2019203435	DATE PRADEEP LAXMAN	Male	ST	1.5	3.5	2.5	2	10
83	2019203545	KAMBLE KOMAL MAROTI	Female	SC	1.5	3.5	1	2	8
84	2019203600	GAIKWAD MANSI SANDESH	Female	SC	1.5	4	1.5	2	9
85	2019203634	PATIL SHRADDHA VISHWANATH	Female	OPEN	1.5	2	1.5	1	6
86	2020214554	ALURKAR ANJALI MALLAPPA	Female	SC	1.5	4	1	1.5	8
87	2020215043	SURYAVANSHI VISHAL BABASAHEB	Male	SC	1.5	4	1	1.5	8
88	2020215134	BHAMARE HARSHAL RAVINDRA	Male	OBC	0	3	1	1	5
89	2020215700	BIBAVE SNEHAL GANPAT	Female	OPEN	1.5	4	2.5	2	10
90	2021226563	NIKAM YUKTA PRAMOD	Female	OBC	1.5	0	1.5	1	4
91	2021227001	VIDEKAR YOGITA GOVIND	Female	VJ-A	1.5	4	2.5	2	10
92	2021227205	SONAWANE PANKAJ DEVIDAS	Male	SC	1.5	1.5	1	1	5
93	2021227234	KAMBLE SAURABH SARJERAO	Male	SC	1.5	0	1.5	1	4
					1.07	2.95	1.53	1.27	6.81
					CO1	CO2	CO3	CO4	Total

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year		
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:	#REF!			
Year:	Third	Subject Credit:	2	Subject Code:		

Mid Sem Assessment



Roll No.	Enrollment No.	Name of Students	Gender	Category	CO1	CO2	CO3	CO4	Total
					1.5	4	2.5	2	10
					CO1	CO2	CO3	CO4	
		Target			60%	60%	60%	60%	
		Class Average			1.07	2.95	1.53	1.27	
		No. of Students above class average			43	44	54	44	
		Attainment Percentage			46.24	47.31	58.06	47.31	

=AVERAGE(H9:H101)

Represents the calculations based on the basis 60% attainment of average marks of class (for eg. 132 students scoring more than class avg)

Target	Attainment level
if >=40% of students securing above average	3
if 30% -39% of students securing above average	2
if 20% - 29% of students securing above average	1



Name of the College: Baburaoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:	Data Science			
Year:	Third	Subject Credit:	2	Subject Code:	CS354	

End Semester Examination

Roll No.	Enrollment No.	Name of Students	Gender	Category	CA1 (5)	CA2 (5)	Activity Total (5)	Mid Sem (10)	CA+Mid Sem (15)	Unit Internal (35)
1	20192045	PALANGE AKANSHA RAKESH	Female	SC	5	5	5	8	13	25
2	20192089	SURYAWANSHI RUTUJA VIKAS	Female	SC	0	3	2	5	7	-
3	20192093	BHAWARI MAHESH SITARAM	Male	ST	2.5	5	4	7	11	26
4	201920145	JAGTAP NIKITA SHAILENDRA	Female	OBC	0	5	3	5	8	23
5	201920224	DUSANE YUKTA JAYRAJ	Female	OBC	5	5	5	8	13	29
6	201920234	KSHIRSAGAR KAJAL BIRAPPA	Female	OBC	2	3	3	5	8	25
7	201920242	BHANGALE HARSHADA ASHOK	Female	OBC	5	5	5	7	12	34
8	201920267	MANE AKASH SATISH	Male	VI-A	5	3	4	8	12	-
9	201920268	PAWAR ROHIT SANJAY	Male	OPEN	2	5	4	7	11	33
10	201920295	NALAWADE SIDDIHI SANJAY	Female	VI-A	5	3	4	10	14	27
11	201920350	LUNGARE ABHISHEK SANJAY	Male	OBC	0	0	0	8	8	25
12	201920356	YANNEWAR DHANANJAY DINESH	Male	OBC	4	5	5	6	11	34
13	201920425	SHINDE ANIKET ANIL	Male	OPEN	5	3	4	8	12	25
14	201920466	SHEDGE PRATHMESH MARUTI	Male	OPEN	2.5	5	4	7	11	28
15	201920481	JADHAV VAIBHAV VARSHABHAN	Male	OPEN	5	5	5	8	13	30
16	201920482	SHINDE SANTOSH SHIVAJI	Male	OPEN	0	0	0	7	7	24
17	201920499	KULKARNI APURVA	Female	OPEN	2.5	5	4	7	11	28
18	201920524	GAIKWAD ROHAN RAJESH	Male	OPEN	0	1	1	6	7	14
19	201920537	KADAM SHWETA SANTOSH	Male	SC	5	5	5	7	12	26
20	201920618	JADHAV RUTURAJ SATISH	Male	OPEN	5	5	5	7	12	31
21	201920642	MARATHE PRASAD ANIL	Male	OPEN	5	5	5	8	13	27
22	201920643	PATIL MINAKSHI DATTATRAY	Female	OPEN	5	5	5	9	14	31
23	201920656	DESHMUKHI KRANTI ABASAHEB	Female	OPEN	5	5	5	4	9	23
24	201920706	JADHAV PURVA VIKAS	Female	OPEN	0	0	0	7	7	29
25	201920715	BHOSLE MAITHILI SHAILENDRA	Female	SC	0	5	3	6	9	26
26	201920716	INGWALE SUMIT ARUN	Male	OPEN	0	5	3	5	8	27
27	201920804	BHANDARI SHREYAS SUNIL	Male	OBC	0	5	3	7	10	29
3	201920810	BHOSALE SAIRAJ BHAUSAHEB	Male	OPEN	2.5	5	4	3	7	29
29	201920861	PATIL SAMARTH MAHADEV	Male	OPEN	0	0	0	7	7	22
30	201920867	MISAL YUVRAJ GANESH	Male	OBC	0	5	3	9	12	24
31	201920877	DHORE VAISHNAVI SANJAY	Female	OPEN	5	5	5	8	13	34
32	201920879	VARMA NEHA RAJESH	Female	OBC	5	5	5	9	14	32
33	201920894	YERME SHIVAM NAGESH	Male	OBC	5	5	5	8	13	29
34	201920924	GAIKWAD YASH RAHUL	Male	SC	5	5	5	9	14	34
35	201920932	PANDIT DISHANT	Male	SC	5	5	5	4	9	15
36	201920948	MAMIDWAR NUPUR RAKESH	Female	NT-B	2.5	0	1	6	7	21
37	2019201016	KALAMKAR RUPAM MADHUKAR	Male	OBC	0	5	3	4	7	28
38	2019201033	RASKAR PRATIKSHA SUDAM	Female	OBC	0	5	3	3	6	20
39	2019201046	SONAWANE TRICHARAN SHARAD	Male	SC	0	3	2	10	12	20
40	2019201095	KULKARNI PRATHMESH PRAVEEN	Male	OPEN	5	5	5	8	13	31
41	2019201120	RANVIR ANJALI GOPICHAND	Female	SC	5	5	5	7	12	22
42	2019201124	INGOLE RUTUJA SAMBHAJI	Female	OPEN	5	5	5	8	13	31
43	2019201142	RAJPUROHIT VAISHNAVI	Female	OPEN	5	3	4	10	14	35
44	2019201165	SONAWANE DIVYANSHU MADAN	Male	SC	5	0	3	3	6	27

Name of the College: Babauraoji Gholap College Sangvi, Pune-411027

Faculty Name:	Ms. Seema Chowhan	SEM	VI	Academic Year:	2021-22	 
Course:	B.Sc. Computer Science	Division:	A			
Branch:	Computer Science	Subject:	Data Science			
Year:	Third	Subject Credit:	2	Subject Code:	CS354	

End Semester Examination

Roll No.	Enrollment No.	Name of Students	Gender	Category	CA1 (5)	CA2 (5)	Activity Total (5)	Mid Sem (10)	CA+Mid Sem (15)	Unit Internal (35)
45	2019201199	MORE PRATHMESH TATYASAHEB	Male	SC	0	0	0	6	6	20
46	2019201292	VANJIARE YESHUDAS BABASAHEB	Male	SC	0	5	3	7	10	22
47	2019201302	YADAV ABHISHEK DILIP	Male	SC	2.5	5	4	3	7	27
48	2019201325	GAWANDE ASHUTOSH VINOD	Male	OPEN	0	5	3	7	10	27
49	2019201333	MORE JYOTI SANJAY	Female	ST	1.5	0	1	5	6	25
50	2019201375	RAKSHI VIRAJ PANDURANG	Male	OBC	0	5	3	9	12	29
51	2019201437	BHOIR OMAR SUNIL	Male	ST	5	3	4	6	10	29
52	2019201469	TALWARE SANDHYA RAJENDRA	Female	SC	2.5	3	3	9	12	25
53	2019201515	KOLI BHAGIRATHI HANUMANTA	Female	SBC	5	3	4	5	9	16
54	2019201517	JADHAV SWATI SATISH	Female	OPEN	2.5	3	3	8	11	20
55	2019201557	WAGHMARE SHUBHANGI	Female	SC	2.5	5	4	2	6	27
56	2019201572	BHOSALE NILKAMAL BABASAHEB	Male	SC	5	0	3	4	7	20
57	2019201575	MORE YASH RAJENDRA	Male	OPEN	0	1	1	6	7	26
58	2019201586	VALSE ONKAR CHANDRAKANT	Male	OPEN	0	3	2	5	7	31
59	2019201594	MATRE RAVIKUMAR SHIVAJI	Male	SC	0	0	0	6	6	23
60	2019201654	PUND SUDEEP DEEPAK	Male	OBC	0	5	3	9	12	31
61	2019201700	AMBRE KUNAL SANDEEP	Male	OPEN	5	3	4	4	8	30
62	2019201810	NAIDU CHAITRALI RAJENDRA	Female	OPEN	0	5	3	10	13	25
63	2019201922	GULMIRE GAURI VINOD	Female	OPEN	5	5	5	1	6	19
64	2019201938	SHINDE VRUSHALI BHAGWAN	Female	SC	2	3	3	10	13	29
65	2019201971	DHAWASE SNEHA SATYAKUMAR	Female	SC	5	5	5	8	13	25
66	2019202001	SHETTY AKSHITA SHEKHAR	Female	OPEN	5	5	5	1	13	31
67	2019202335	NAIKWADI ADINATH BHIMRAO	Male	OPEN	5	5	5	1	6	24
68	2019202492	SHEWALE YOGESH RATILAL	Male	SC	0	0	0	8	8	25
69	2019202505	AGHAV RUTUJA BABASAHEB	Female	NT-D	2	5	4	10	14	29
70	2019202514	GAJARMAL VIVEK VISHAL	Male	SC	5	5	5	8	13	-
71	2019202587	SALUNKE ARYAN RAMCHANDRA	Male	OPEN	5	5	5	7	12	31
72	2019202626	GAIKWAD AKSHAY SANJAY	Male	SC	2.5	5	4	8	12	30
73	2019202764	SONKAMBLE ADESH SUNIL	Male	SC	2.5	5	4	5	9	34
74	2019202782	TAKALE ARIYAN DATTATRAYA	Male	OPEN	2	5	4	10	14	29
75	2019202793	PINJARI SHOYAB GULAB	Male	OBC	5	5	5	4	9	-
76	2019202825	THAKARE TUSHAR SANJAY	Male	OBC	0	5	3	9	12	29
77	2019202872	PATHAN SOHEL PASHA	Male	OPEN	2.5	5	4	10	14	25
78	2019203070	ZINJE GANESH DADA	Male	NT-C	5	5	5	10	15	26
79	2019203144	JAGDHANE VIDYA RAMESH	Female	SC	5	5	5	3	8	22
80	2019203327	KHADE ASHWINI SHIVAJI	Female	NT-D	0	5	3	6	9	28
81	2019203412	NAVASARE KSHITIJ SATISH	Female	OBC	0	5	3	10	13	25
82	2019203435	DATE PRADEEP LAXMAN	Male	ST	4	4	4	10	14	32
83	2019203545	KAMBLE KOMAL MAROTI	Female	SC	5	5	5	9	14	22
84	2019203600	GAIKWAD MANSI SANDESH	Female	SC	2.5	5	4	8	12	30
85	2019203634	PATIL SHRADDHA VISHWANATH	Female	OPEN	5	5	5	5	10	29
86	2020214554	ALURKAR ANJALI MALLAPPA	Female	SC	2.5	3	3	8	11	27
87	2020215043	SURYAVANSHI VISHAL BABASAHEB	Male	SC	2.5	5	4	8	12	27
88	2020215134	BHAMARE HARSHAL RAVINDRA	Male	OBC	5	0	3	5	8	29
89	2020215700	BIBAVE SNEHAL GANPAT	Female	OPEN	0	5	3	10	13	29
90	2021226563	NIKAM YUKTA PRAMOD	Female	OBC	5	3	4	4	8	22
91	2021227001	VIDEKAR YOGITA GOVIND	Female	VJA	4	3	4	10	14	23
92	2021227205	SONAWANE PANKAJ DEVIDAS	Male	SC	5	0	3	5	8	25
93	2021227234	KAMBLE SAURABH SARJERAO	Male	SC	0	5	3	4	7	27
93							3.83		10	26.62

Target	C01	C01
60%	10.16	26.62
Class Average	53	49
No. of Students above class average	56.99	52.69
Attainment Percentage		

Represents the calculations based on the basis 60% attainment of average marks of class (for eg. 132 students scoring more than class avg)

Target	Attainment level
if >=40% of students securing above average	3
if 30% -39% of students securing above average	2
if 20% -29% of students securing above average	1

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME:

Ms. Seema Chowhan

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

COURSE EXIT SURVEY RESPONSES

NOTE: This survey is obtained through google Forms

Ranking		0 (Not to all)	1 (Fair)	2 (Very Fair)	3 (Good)	4 (Very Good)	5 (Excellent)		
Sr. No.	Timestamp	Name of the Student	Enrollment No.	Do you understand 'Exploratory Data Analysis'?	Can you detects and diagnoses common data issues, such as missing values, special values, outliers,	Do you think we can use data science in daily life.	How the quality of the data and the means of data collection may affect conclusions.		
COURSE OUTCOMES ----->				CO:1	CO:2	CO:3	CO:4		
1	2:33:20 PM GMT+5:30	Kulkarni Prathmesh	2019201095	5 (Excellent)	5 (Excellent)	5 (Excellent)	4 (Very Good)		
2	10:35:13 AM GMT+5:30	Rajpurohit Vaishnavi	2019201142	5 (Excellent)	3 (Good)	4 (Very Good)	5 (Excellent)		
3	2:35:41 PM GMT+5:30	Gawande Ashutosh	2019201325	3 (Good)	5 (Excellent)	4 (Very Good)	4 (Very Good)		
4	2:35:41 PM GMT+5:30	Gaikwad Yash	201920924	4 (Very Good)	3 (Good)	5 (Excellent)	5 (Excellent)		
5	4:37:19 PM GMT+5:30	Rakshe Viraj	2019201375	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)		
6	3:39:19 PM GMT+5:30	Bhoir Omkar	2019201437	5 (Excellent)	5 (Excellent)	5 (Excellent)	4 (Very Good)		
7	9:42:05 PM GMT+5:30	Talware Sandhya	2019201469	5 (Excellent)	5 (Excellent)	5 (Excellent)	4 (Very Good)		
8	2:43:43 PM GMT+5:30	Pathan Soheli	2019202872	4 (Very Good)	5 (Excellent)	5 (Excellent)	5 (Excellent)		
No. of graded "0"				0	0	0	0	0	0
No. of graded "1"				0	0	0	0	0	0
No. of graded "2"				0	0	0	0	0	0
No. of graded "3"				1	2	0	0	0	0
No. of graded "4"				2	0	2	4	0	0
No. of graded "5"				5	6	6	4	0	0

Baburaoji Gholap College Sangvi-411027

Course Exit Feedback Form
Class: TYBSc(CS)
SEM: VI
Subject: Data Science
Subject Teacher: Dr. Seema Chowhan Professor and HOD Department of Computer science

As per the guidelines of National Council of Assessment and Accreditation Bangalore and for overall development of the college, after learning each subject, this feedback is about the extent to which the students have understood that subject and students should use their conscience to record this feedback.

agropmpteresidenc2@gmail.com [Switch account](#)

Not shared

* Indicates required question

Surname**

survearbit

First Name*

Your answer

Baburaoji Gholap College Sangvi-411027

Course Exit Feedback Form
Class: TYBSc(CS)
SEM: IV
Subject: Data Science
Subject Teacher: Dr. Seema Chowhan Professor and HOD Department of Computer Science

As per the guidelines of National Council of Assessment and Accreditation Bangalore and for overall development of the college, after learning each subject, this feedback is about the extent to which the students have understood that subject and students should use their conscience to record this feedback.

agropmpteresidenc2@gmail.com [Switch account](#)

Not shared

* Indicates required question

Q0: Describe Exploratory and statistical Data Analysis with a variety of statistical methods and models.

Q0: Do you understand Exploratory Data Analysis?

0 (Not to all)

1 (Fair)

2 (Very Fair)

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME:

Ms. Seema Chowhan

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

COURSE EXIT SURVEY RESPONSES (Mapping)

NOTE: This survey is obtained through google Forms

CO No.	CO description	Course Exit Survey Questions	No. of students given the ratings						Total Responses	Weighted Average	CO Max. Count	%age CO attainment
			0	1	2	3	4	5				
CO:1	Describe Exploratory and statistical Data Analysis with a variety of statistical methods and	Do you understand 'Exploratory Data Analysis'?	0	0	0	1	2	5	8	3.00	5	60.00
CO:2	Discus detects and diagnoses common data issues, such as missing values, special values, outliers, inconsistencies, and localization.	Can you detects and diagnoses common data issues, such as missing values, special values, outliers, inconsistencies, and localization.	0	0	0	2	0	6	8	3.00	5	60.00
CO:3	Classify and obtain, clean/process, transform data and demonstrate proficiency with statistical analysis of data and present results using data visualization techniques.	Do you think we can use data science in daily life.	0	0	0	0	2	6	8	3.17	5	63.33
CO:4	Evaluate how the quality of the data and the means of data collection may affect conclusions.	How the quality of the data and the means of data collection may affect conclusions.	0	0	0	0	4	4	8	3.00	5	60.00

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME: **Ms. Seema Chowhan**

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

Computation of CO Attainment

Computation of CO Attainment

Assessment Plan for Internal Assessment						Class Average in Internal Assessment						Attainment of CO using Direct Method					Computation of Total CO Attainment					
Course No.	Course Outcome No.	CA1	CA2	CA3	MIDSEM	Course No.	Course Outcome No.	CA1	CA2	Average of CA1+CA2	MIDSEM	Internal Assessment class average %tage	Course No.	Course Outcome No.	Internal Assessment (IA) class average %tage	External Assessment (ESE)	Direct CO Attainment (30% of IA + 70% ESE)	Course No.	Course Outcome No.	Direct CO Attainment (30% of IA + 70% ESE)	Indirect CO Attainment (obtained from Course Exit Survey) % age	Total Co Attainment (70% of Direct Attainment + 30 % of exit survey)
	Marks	5	5	0	20			5	5	5	10	15			15	35						
CS354	CO:1	60	60		60	CS354	CO:1	-	-	-	47.31	47.31	CS354	CO:1	47.31	52.69	51.08	CS354	CO:1	51	60	54
	CO:2	60			60		CO:2	-	-	-	47.31	47.31		CO:2	47.31	52.69	51.08		CO:2	51	60	54
	CO:3	60	60		60		CO:3	97.58	98.92	98.25	58.06	78.16		CO:3	78.16	52.69	60.33		CO:3	60	63	61
	CO:4	60	60		60		CO:4	97.85	98.92	98.39	47.31	72.85		CO:4	72.85	52.69	58.74		CO:4	59	60	59
	CO:5						CO:5							CO:5					CO:5			
	CO:6						CO:6							CO:6					CO:6			

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME:

Ms. Seema Chowhan

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

CO Attainment Gap

Course No.	Course	Total CO	CO Target	CO Attainment Gap(Attainment -
CS354	CO:1	54	60	-6
	CO:2	54	60	-6
	CO:3	61	60	1
	CO:4	59	60	-1

Closure of Quality loop

Course No.	Course	Target	Actual	Action proposed to bridge the gap	CO
CS354	CO:1	60	54	Remedial teaching has to be conducted for statistics concepts	-6
	CO:2	60	54	More practical session needs to be conducted for cleaning data.	-6
	CO:3	60	61	More practical sessions for algorithm practice	1
	CO:4	60	59	More practical session on data set for visualizing clean data	-1

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME:

Ms. Seema Chowhan

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

CO-PO & PSO MATRIX

CO PO MAPPING	Knowl dge Acquisition	Problem solving	Languag e and Tools	Real life problem	Develop emnet	Methods	Principle s	Apply Basics	Programm ing	Create	Ethics	Knowlege and Sills			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	3	-	1	-	-	3	-	-	-	-	-
CO2	1	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO3	-	3	-	-	2	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	-	1	3	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WT. AVG	2.00	3.00			2.67	3.00	1.00		1.00	3.00					
Overall Mapping of Subject												2.24			

Course	Course	Total CO
C201	CO:1	54
	CO:2	54
	CO:3	61
	CO:4	59
		56.96

PO & PSO Attainment

CO PO MAPPING	Knowl dge Acquisition	Problem solving	Languag e and Tools	Real life problem	Develop emnet	Methods	Principle s	Apply Basics	Programm ing	Create	Ethics	Knowlege and Sills			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
WT. AVG	2.00	3.00			2.67	3.00	1.00		1.00	3.00					
Attainme	37.98	56.96	#VALUE!	#VALUE!	50.63	56.96	18.99	#VALUE!	18.99	56.96	#VALUE!	#VALUE!	-	-	-

FACULTY NAME:		Ms. Seema Chowhan				
BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22	
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI	
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354	

PROGRAM EXIT SURVEY RESPONSES NOTE: This survey is obtained through google Forms

Ranking	0 (Not to all)	1 (Fair)	2 (Very Fair)	3 (Good)	4 (Very Good)	5 (Excellent)														
Sr. No.	Timestamp	Name of the Student	Enrollment No.	Does basic theory on Computer Science and Information Technology with good foundation on theory, systems and collaborative tools?	Can you apply problem solving techniques in IT tasks, both individually and collaboratively?	Can we achieve knowledge of different programming languages, development tools?	Is results of real-life computing problems affects on future developments?	Can we develop system for specific applications using computational	Do you have knowledge about problem-solving methodologies?	fundamental principles important for computer science and allied	mathematics, logic, and statistics to the design, development,	Can you use programming languages and tools for system solutions?	formulate and validate applications by constructively and methodically	ethical ethos in personal, professional and social dealings in life?	will rate your self to Demonstrate competence in accordance with challenges of	PSO:1	PSO:2	PSO:3		
COURSE OUTCOMES ----->				PO:1	PO:2	PO:3	PO:4	PO:5	PO:6	PO:7	PO:8	PO:9	PO:10	PO:11	PO:12					
1	T+5:30/2019 9:36:33	Valse Onkar	2019201586	5 (Excellent)	5 (Excellent)	5 (Excellent)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)					
2	0:50:52 AM GMT+5:30	Ambre Kunal	2019201700	4 (Very Good)	3 (Good)	4 (Very Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)					
3	3:53:07 PM GMT+5:30	Naidu Chaitrali	2019201810	3 (Good)	5 (Excellent)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)					
4	3:56:26 PM GMT+5:30	Bhangale Harshad	201920242	5 (Excellent)	3 (Good)	5 (Excellent)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)					
5	3:58:09 PM GMT+5:30	Deshmukh Kranti	201920656	5 (Excellent)	5 (Excellent)	3 (Good)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)					
6	3:59:21 PM GMT+5:30	Jadhav Purva	201920706	4 (Very Good)	4 (Very Good)	5 (Excellent)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)					
7	4:00:27 PM GMT+5:30	Yerme Shivam	201920894	5 (Excellent)	4 (Very Good)	5 (Excellent)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)					
8	5:01:48 PM GMT+5:30	onawane Trichara	2019201046	4 (Very Good)	5 (Excellent)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)	3 (Good)					
9	4:03:58 PM GMT+5:30	ASonkamble Adest	2019202764	5 (Excellent)	4 (Very Good)	5 (Excellent)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)					
10	4:05:50 PM GMT+5:30	Date Pradip	2019203435	3 (Good)	3 (Good)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)					
11	2:05:50 PM GMT+5:30	Shedge Prathmesh	201920466	5 (Excellent)	5 (Excellent)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)	4 (Very Good)					
12	4:15:50 PM GMT+5:30	Marathe Prasad	201920642	5 (Excellent)	4 (Very Good)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)	5 (Excellent)					
		No. of graded "0"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		No. of graded "1"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		No. of graded "2"		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		No. of graded "3"		2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		No. of graded "4"		3	4	3	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		No. of graded "5"		7	5	7	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Baburaoji Gholap College, Sangvi 411027

Baburaoji Gholap College Sangvi 411027
Course Exit Feedback Form
Class: 1 YB.Sc(CS)
SEM: VI
Subject:

CS354 Subject Teacher: Dr. Seema S. Chowhan, Professor and HOD Department of Computer Science. As per the guidelines of National Council of Assessment and Accreditation Bangalore and for overall development of the college, after learning each subject, this feedback is about the extent to which the students have understood that subject and students should use their conscience to record this feedback.

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Not shared

* Indicates required question

Surname *

Your answer

First Name *

Your answer

Baburaoji Gholap College, Sangvi 411027

Baburaoji Gholap College Sangvi 411027
Course Exit Feedback Form
Class: 1 YB.Sc(CS)
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Not shared

* Indicates required question

PO1: Basics (Understand the basic theory of Computer Science and Information Technology with good foundation on theory, systems and applications such as algorithms, data structures, data handling, data communication and computation.
Ques: Does basic theory of Computer Science and Information Technology with good foundation on theory, systems and applications such as algorithms, data structures, data handling, data communication and computation?

0 (Not to all)

1 (Fair)

2 (Very Fair)

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME:

Ms. Seema Chowhan

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

PROGRAM EXIT SURVEY RESPONSES (Mapping)

NOTE: This survey is obtained through google Forms

PO No.	PO description	Program Exit Survey Questions	No. of students given the ratings						Total Responses	Weighted Average	CO Max. Count	%age CO attainment
			0	1	2	3	4	5				
PO:1	Knowledge Acquisition	Does basic theory of Computer Science and Information Technology with good foundation on theory, systems and applications such as algorithms, data structures, etc.	0	0	0	2	3	7	12	4.42	5	88.33
PO:2	Skill Development	Can you apply problem solving techniques in IT tasks, both individually and collaboratively?	0	0	0	3	4	5	12	4.17	5	83.33
PO:3	Legal Awareness:	Can we achieve knowledge of different programming languages, development tools and simulation tools, the concepts in software engineering and testing?	0	0	0	2	3	7	12	4.42	5	88.33
PO:4	Professional Accounting Practices	Is results of real-life computing problems affects on future developments?	0	0	0	3	6	3	12	4.00	5	80.00
PO:5	Communication and leadership skills	Can we Develop system for specific applications using computational tools and techniques?	0	0	0	3	6	3	12	4.00	5	80.00
PO:6	Analytical Skills	Do you have knowledge about problem-solving methodologies?	0	0	0	3	6	3	12	4.00	5	80.00
PO:7	Use of Tools and Technology	Are the fundamental principles important for computer science and allied subjects?	0	0	0	3	6	3	12	4.00	5	80.00
PO:8	Environment and Sustainability	can we apply mathematics, logic, and statistics to the design, development, and analysis of software systems?	0	0	0	3	3	3	9	3.00	5	60.00
PO:9	Ethics	Can you use programming languages and tools for system solutions?	0	0	0	3	6	3	12	4.00	5	80.00
PO:10	Lifelong Learning and Collaborative Skills	Can you formulate and validate applications by constructively and methodically exploring ideas and theories in data science?	0	0	0	3	0	3	6	2.00	5	40.00
PO:11	#REF!	Can we use ethical ethos in personal, professional and social dealings in life?	0	0	0	3	6	3	12	4.00	5	80.00
PO:12	#REF!	How much you will rate your self to Demonstrate competence in accordance with challenges of emerging times?	0	0	0	3	6	3	12	4.00	5	80.00
PSO:1			0	0	0	0	0	0	0	0.00	5	0.00
PSO:2			0	0	0	0	0	0	0	0.00	5	0.00
PSO:3			0	0	0	0	0	0	0	0.00	5	0.00

Baburaoji Gholap College angvi Pune-411027



FACULTY NAME:

Ms. Seema Chowhan

BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

Overall/Final PO and PSO Attainment by Avg

Computation of Total PO and PSO Attainment

Course No.	Course Outcome No.	Direct PO and PSO Attainment	Indirect PO and PSO Attainment (obtained from Program Exit Survey) %	Total PO and PSO Attainment (70% of Direct Attainment + 30 % of exit survey)
CS354	PO1	38	88	53
	PO2	57	83	65
	PO3	#VALUE!	88	#VALUE!
	PO4	#VALUE!	80	#VALUE!
	PO5	51	80	59
	PO6	57	80	64
	PO7	19	80	37
	PO8	#VALUE!	60	#VALUE!
	PO9	19	80	37
	PO10	57	40	52
	PO11	#VALUE!	80	#VALUE!
	PO12	#VALUE!	80	#VALUE!

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FACULTY NAME:	Ms. Seema Chowhan				
BRANCH:	Computer Science	SUBJECT CREDIT:	2	Academic Year:	2021-22
COURSE:	B.Sc. Computer Science	YEAR:	2021-22	SEMESTER:	VI
SUBJECT:	Data Science	DIVISION:	A	SUBJECT CODE:	CS354

PO Attainment Gap

Course No.	Programme Outcome No.	Total PO and PSO Attainment %age	PO and PSO Target % age	PO and PSO Attainment Gap(Attainment - Target)
CS354	PO:1	53	40	13
	PO:2	65	40	25
	PO:3	#VALUE!	40	#VALUE!
	PO:4	#VALUE!	40	#VALUE!
	PO:5	59	40	19
	PO:6	64	40	24
	PO:7	37	40	-3
	PO:8	#VALUE!	40	#VALUE!
	PO:9	37	40	-3
	PO:10	52	40	12
	PO:11	#VALUE!	40	#VALUE!
	PO:12	#VALUE!	40	#VALUE!

Closure of Quality loop

Course No.	Course Outcome No.	Target achieved	Action proposed to bridge the gap	PO Attainment Gap(Attainment - Target)
CS354	PO:1	53		13
	PO:2	65		25
	PO:3	#VALUE!		#VALUE!
	PO:4	#VALUE!		#VALUE!
	PO:5	59		19
	PO:6	64		24
	PO:7	37	More knowledge about computer science principles.	-3
	PO:8	#VALUE!		#VALUE!
	PO:9	37	More practice on social and professional deal.	-3
	PO:10	52		12
	PO:11	24		#VALUE!
	PO:12	#VALUE!		#VALUE!



Pune District Education Association's
Baburaoji Gholap College
Sangvi, Pune 411027 (NAAC Accredited B+ Grade)

