SUPPORTING DOCUMENTS
NAAC AQAR: 2021-22

1.1.2	*The institution adheres to the academic calendar including for the conduct of Continuous Internal Evaluation (CIE)* *Attachment: Supporting Documents*

IMSEC
GHAZIABAD

LESSON PLAN

Department:	Computer Science & Engineering	
Subject & Code:	KCS- 401 Operating System	
Name of Faculty:	Ms. Ritika Bhajani	
Text Book:	T1: Operating Systems Concept, Silberschatz	
	T2: Operating Systems, Srbsankar Halder.	

Lecture No.	Unit	Topics to be covered
1	1	Operating System & Functions — 11/4
2	1	Classification of OS- Batch, Interactive → 12/4
3	1	Time Sharing, Real Time System, Multiuser Systems, → 18
4	1	Multiprocessor Systems, Multithreaded Systems → 19
5	1	OS Structure - Layered Struct. — 21/4
6	1	System Components, OS Services — 25/4
7	1	Reentrant Kernels — 26/4
8	1	Monolithic & Microkernel Systems. 27/4
9	2	Concurrent Processes - Process Concept,
10	2	Principle of Concurrency, Producer/ Consumer Prob.
11	2	Mutual Exclusion, Critical Section Problem,
12	2	Dekker's Solution, Semaphores
13	2	Test & Set Operations
14	2	Classical Problems in Concurrency - Dining Philosophers
15	2	Problem
16	2	Sleeping Barber Problem.
17	2	Communication Models & Schemes,
18	2	Process Generation
19	3	CPU Scheduling : Scheduling Concepts, Performance Criteria
20	3	Process States, Process Transition Diagram
21	3	Process Control Block, Process Addr. Space
22	3	Process Identification Info.
23	3	Threads & their management, Scheduling Algo.
24	3	Multi Processor Scheduling.
25	3	Deadlock: System Model, Characterization
26	3	Prevention, Avoidance & Detection, Recovery

Odd/Even Sem. (Session - 2021-22)

LESSON PLAN

Year:	2nd	Semester: 4th	Section: 1
Reference Books	R1: An Introduction to Operating Systems, Harvey		
	R2: Notes		
	R3:		

Text Book/Ref. Book Page No./e-Sources	Date of Lecture		Remarks
	Scheduled	Held	
T, R1	11-04-22	11-04-22	
R1	12-04-22	12-04-22	
T, R1	18-04-22	18-04-22	
R2	19-04-22	19-04-22	
T, R2	21-4-22	21-4-22	
T2 R1	25-4-22	25-4-22	
T, R2	26-4-22	26-4-22	
T, R2	26-4-22	27-4-22	
T2 R1	10-5-22	13-5-22	
T2 R1	13-5-22	13-5-22	
T2 R1	23-5-22	24-5-22	
R2 R1	24-5-22	26-5-22	
T, R1	26-5-22	27-5-22	
T, R2 R1	27-5-22	30-5-22	
R1		-	
R1	30-5-22	31-5-22	
R1	31-5-22	31-5-22	
T2 R2	1-6-22	1-6-22	
R2	28-4-22	28-4-22	
T, R2	29-4-22	29-4-22	
R1	29-4-22	29-4-22	
T2 R2	2-5-22	02-5-22	
R2	5-5-22	05-5-22	
R2	6-5-22	06-5-22	
R2	9-5-22	9-5-22	
	10-5-22	10-5-22	

IMSEC
GHAZIABAD

LESSON PLAN

Department:	Computer Science & Engineering
Subject & Code:	KCS- 401 Operating System
Name of Faculty:	Ms. Ritika Dhiman
Text Book:	T1: Operating Systems Concept, Silberschatz.
	T2: Operating Systems, Dibyankar Halder.

Lecture No.	Unit	Topics to be covered
1	1	Operating System & functions — 11/4
2	1	Classification of OS- Batch, Interactive → 12/4
3	1	Time Sharing, Real Time System, Multiuser System, → 18
4	1	Multiprocess Systems, Multithreaded Systems → 19
5	1	OS Structure - Layered Struct. — 21/4
6	1	System Components, OS Services — 25/4
7	1	Reentrant Kernels — 26/4
8	1	Monolithic & Microkernel Systems. 27/4
9	2	Concurrent Processes - Process Concept,
10	2	Principle of Concurrency, Producer/ Consumer Prob.
11	2	Mutual Exclusion, Critical Section Problem,
12	2	Dekker's Solution, Semaphores
13	2	Test & Set Operations
14	2	Classical Problems in Concurrency - Dining Philosophers
15	2	Problem
16	2	Sleeping Barber Problem.
17	2	Communication Models & Schemes,
18	2	Process Generation
19	3	CPU Scheduling: Scheduling Concepts, Performance Criteria
20	3	Process States, Process Transition Diagram
21	3	Process Control Block, Process Addr. Space
22	3	Process Identification Info.
23	3	Threads & their management, Scheduling Algo.
24	3	Multiprocessor Scheduling.
25	3	Deadlock: System Model, Characterization
26	3	Prevention, Avoidance & Detection, Recovery

Odd/Even Sem. (Session - 2021-22)

LESSON PLAN

Year:	2nd	Semester: 4th	Section: 1
Reference Books	R1: An Introduction to Operating Systems, Harvey.		
	R2: Notes		
	R3:		

Text Book/Ref. Book Page No./e-Sources	Date of Lecture Scheduled	Date of Lecture Held	Remarks
T, R1	11-04-22	11-04-22	
R1	12-04-22	12-04-22	
T, R1	18-04-22	18-04-22	
R2	19-04-22	19-04-22	
T, R2	21-4-22	21-4-22	
T2 R1	25-4-22	25-4-22	
T, R2	26-4-22	26-4-22	
T, R2	26-4-22	27-4-22	
T2 R1	10-5-22	13-5-22	
T2, R1	13-5-22	13-5-22	
T2 R1	23-5-22	24-5-22	
T2 R1	24-5-22	26-5-22	
T, R1	26-5-22	27-5-22	
T, R2 R1	27-5-22	30-5-22	
R1		-	
R1	30-5-22	31-5-22	
R1	31-5-22	31-5-22	
T2 R2	1-6-22	1-6-22	
R2	28-4-22	28-4-22	
T, R2	29-4-22	29-4-22	
R1	29-4-22	29-4-22	
T2 R2	2-5-22	02-5-22	
R2	5-5-22	05-5-22	
R2	6-5-22	06-5-22	
R2	9-5-22	9-5-22	
	10-5-22	10-5-22	

Signature of Subject T

IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

Course File

S. No	Particulars
1	Quality Policy (on left inside cover of Course File)
2	Institute Mission and Vision
3	Departmental Mission and Vision
4	Program Educational Objectives (PEO) and Program Specific Outcomes (PSO)
5	Program Outcomes (PO)
6	Academic Calendar, University Academic Calendar
7	Class Time Table / Individual Time Table
8	Student List
9	University Evaluation Scheme
10	Syllabus (Theory)
11	Course Outcome, Mapping with PO/PSO
12	Syllabus (Practical) with Experiment List mapped with Course Outcomes
13	Topics beyond Syllabus
14	Quiz/Assignment/Tutorial Records
15	CT Question Paper (mapped with CO)
16	Sessional Marks Analysis
17	CO Attainment
18	CO Survey Record
19	Lecture Notes / PPT / MCQs
20	Question Bank
21	Attendance Register

Name and Signature of Course Instructor	Signature of HoD
RITIKA DHYANI	Space for Internal Auditor's Use

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, UTTAR PRADESH
Jankipuram Vistar, Sector-11 , Sitapur Road, Lucknow, 226031

ACADEMIC CALANDER

FOR B. TECH./B.PHARM./B. ARCH/B.H.M.C.T./BFAD/B VOC/MBA/MBATM/MBA(I)/ MCA/MCA(I)/BFA/M. TECH/M. PHARM/M ARCH. & other Courses

ACADEMIC SESSION 2021-22 (proposed)

S. No.	Particulars	Dates	
		Odd Semester	Even Semester
01	Commencement of Classes session 2021-22	Sep 14, 2021 for III, V, VII & IX Semester students	Feb 01, 2022 for VI, VIII& X Semester students
		Oct 01, 2021 for I, III Semester (Lateral Entry students	Feb 15, 2022 for II, IV Semester students
02	Last date of fresh admission.	Oct 15, 2021	---
03	Last date of submitting admission list of students to University (for newly admitted student)	Nov 15, 2021	—
04	Last date of submitting Enrollment form /Exam Form for regular & carry over exams.	Nov 30, 2021	—
05	Last date of Submitting Examination fee for both semesters and examination/carry over examination fee	Nov 30, 2021	—
06	Last date of submitting sessional marks of Theory & Practical to University.	Dec 31, 2021	May 31, 2022
07	End Semester Theory Examination	Jan 04, 2022 to Jan 30, 2022	June 01, 2022 to June 20, 2022
08	End Semester Practical Examination (PE)	Feb 01, 2022, to Feb 10, 2022	June 21, 2022 to June 26, 2022
09	Last date for Submission of PE Marks.	Jan 15, 2022	July 31, 2022
10	Evaluation of Answer sheets	Feb 01, 2022 to Feb 25, 2022	July 01, 2022 to July 20, 2022
11.	Summer Training/ Internship		July 01, 2022 to July 31, 2022
12.	Winter Vacations/ Summer Vacation		July 01, 2022 to July 31, 2022
13.	Commencement of Classes session 2022-23	For I, III, V, VII & IX Semester Aug 01,2022	

Note:

1. The institute shall ensure minimum teaching hours as prescribed in the University ordinances for each semester. If required the Director/Principal shall arrange extra classes on weekends/holidays.
2. The Institute should ensure that at least two class tests are conducted after completing 1/3rd & 2/3rd syllabus respectively. All students will be required to appear in both first and second class tests. If, for any reason beyond the control of students such as illness, tragic incident in family, the student fails to appear in any test, it will be the responsibility of the Principle/Director of the Institute to arrange make up class test for such students. If the student fails to appear in first class test, his makeup class test will be conducted before second class test and in case of second class test at leastone month before the start of end semester theory examination. The duration of class test will be minimum one hour for each class test. 70% attendance at 1st test and 75% attendance at second class test are required. In case attendance is short, parents are be informed accordingly on monthly basis.
3. The Director/Principal of Institute shall ensure the submission of attendance of students regularly through Attendance Monitoring System (AMS) of the University and shall ensure that no student is allowed to appear in the examinations who has not attained the minimum required attendance as per norms prescribed in relevant ordinances. It will be obligatory on the part of the Director/Principal of the Institute to detain such students and their admit cards will not be issued to them. A list of students detained from appearing in University Examination(s) be submitted to University and their Examination centre before the commencement of the theory examination.
4. The teachers who are assigned evaluation duty during vacation shall be entitled for earned leave as per rules and duty leave for other examination related works assigned by the University.
5. Summer training/internship for 1st year B Tech students shall also be held between July 01, 2022 to July 31, 2022.

(Nand Lal Singh)
Registrar

Department Of Computer Science & Engineering

Individual Time Table - RITIKA DHYANI

DAY/TIME	Period-1	Period-2	Period-3	Period-4	Period-5	Period-6	Period-7	Period-8	Period-9
	8:50-09:50	09:50-10:40	10:40-11:30	11:30-12:20	12:20-01:10	01:10-02:00	02:00-02:50	02:50-03:40	03:40-04:30
MON	KCS401 (L) RD 2CS-1		KCS401 (L) RD 2CSE-1				KCS451 (OS Lab) CSE II-1 B1 RD LAB 6		
TUE			KCS401 (L) RD 2CSE-1	KCS451 (OS Lab) CS II-1 B1 RD LAB 5					
WED	KCS451 (OS Lab) CSE II-1 B2 RD LAB 7				KCS401 (L) RD 2CS-1				
THU		KCS401 (L) RD 2CS-1		KCS401 (L) RD 2CSE-1					
FRI			KCS401 (L) RD 2CSE-1		KCS401 (L) RD 2CS-1		KCS451 (OS Lab) CS II-1 B2 RD LAB 5		

IMS Engineering College, Ghaziabad
Department of Computer Science Engineering
List of Students 2nd Year CSE1 (Even Semester) 2021-22

S.No.	Admission ID	Roll No.	Batch	Name	Father Name	PHONE (Student)	Mobile(Parent)	EMAIL
1	A2020CSE7431	2001430100001	B1	AADHYA GUPTA	AJAY KUMAR GUPTA	8527896505	9650995158	aadhyagupta06@gmail.com
2	A2020CSE7052	2001430100002	B1	AASTHA AGARWAL	MANOJ KUMAR AGARWAL	9149127006	9927390761	aasthaagarwal168@gmail.com
3	A2020CSE7402	2001430100003	B1	AASTHA TIWARI	MANOJ TIWARI	9718248784	8851341171	AASTHA2TIWARI@GMAIL.COM
4	A2020CSE7129	2001430100004	B1	AAYUSHI CHAUHAN	HARVANSH SINGH	7817835245	7817835245	ayurana87@gmail.com
5	A2020CSE7349	2001430100005	B1	ABHI JAISWAL	RAJENDRA JAISWAL	9369179545	9415509273	jaiswalkamni109@gmail.com
6	A2020CSE7056	2001430100006	B1	ABHINAV BALIYAN	VIPIN BALIYAN	9354445458	9354506079	abhinavbaliyan14587@gmail.com
7	A2020CS7159	2001430100007	B1	ABHINAV CHAUHAN	SHARVAN KUMAR	9760348489	7906704885	abhinavc2003@gmail.com
8	A2020CSE7322	2001430100008	B1	ABHINAV KUMAR	OMKAR SINGH	6396564460	9639292099	abhi72486511@gmail.com
9	A2020IT7112	2001430100009	B1	ABHINAV SAXENA	NAGESH KUMAR	8958337368	9927100356	sajalsaxenass01@gmail.com
10	A2020CSE7351	2001430100010	B1	ABHINAY PATEL	ARVIND KUMAR	8439803606	9756602585	abhi2003.bly@gmail.com
11	A2020CSE7500	2001430100011	B1	ABHISHEK .	HARI DATT SHARMA	8445227311		appandey328@gmail.com
12	A2020CSE7044	2001430100012	B1	ABHISHEK .	VINAY KUMAR	8766379793	8506035751	ABHISHEKJACOB93@GMAIL.COM
13	A2020CSE7193	2001430100013	B1	ABHISHEK CHATRUVEDI	AJAY CHATRUVEDI	8604917582	9935725668	abhishekchatruvedi291@gmail.com
14	A2020CSE7356	2001430100014	B1	ABHISHEK KUMAR YADAV	DIWAKAR YADAV	8874493174		abhishekyadav0312@gmail.com
15	A2020CSE7382	2001430100015	B1	ABHISHEK KUMAR SINGH	KHARAK BAHADUR SINGH	7275585174	8917726813	starkop688@gmail.com
16	A2020CSE7408	2001430100016	B1	ABHISHEK PARAS	MAHENDERPAL	9758211350	9758156047	abhishekparas@imsec.ac.in
17	A2020CSE7443	2001430100017	B1	ABHISHEK SINGH	SHIVANANAD SINGH	7068180830	7068180830	yashsingh1729@gmail.com
18	A2020CSE7341	2001430100018	B1	ADITYA KUMAR	GOPAL PRASAD	9097876646		adityaraj3536@gmail.com
19	A2020CSE7392	2001430100019	B1	ADITYA KUMAR	VANI SINGH	9899523321	8527633325	adityasingh.singh504@gmail.com
20	A2020CSE7425	2001430100020	B1	ADITYA KUMAR YADAV	VINOD KUMAR YADAV	8887900896	7388938338	ay81792@gmail.com
21	A2020CSE7225	2001430100021	B1	ADITYA MAHESHWARI	NEELOTPAL MAHESHWARI	9027125144	9719238250	aditya.mah33@gmail.com
22	A2020CSE7301	2001430100022	B1	ADITYA PRATAP MALL	DEVENDRA KUMAR MALL	9118110426	9450473510	malladityapratap2002@gmail.com
23	A2020CSE7370	2001430100023	B1	ADITYA PRATAP SINGH	SANTOSH KUMAR SINGH	9598906705	7457929907	adityapsingh980@gmail.com
24	A2020CSE7241	2001430100024	B1	ADITYA RAJPOOT	LALIT HARI RAJPOOT	8840183337	8931937565	adityarajpoot681@gmail.com
25	A2020CSE7235	2001430100025	B1	ADITYA SINGH	ANOOP SINGH	9005104222	9695178406	adityasingh09123@gmail.com
26	A2020CSE7306	2001430100026	B1	ADITYA SINGH	DINESH SINGH	7014614310	9838035503	adityasinghnjms15@gmail.com
27	A2020CS7552	2001430100027	B1	ADITYA VERMA	PRAVEEN KUMAR	9958466556	9958466556	ADITYAGOLD02@GMAIL.COM
28	A2020CSE7036	2001430100028	B1	AJAY	SUBHASH BABU	7302611273	9411901590	ajaysaxena20032003@gmail.com
29	A2020CSE7131	2001430100029	B1	AKASH GUPTA	SHASHIKANT GUPTA	9118283887	8115400980	ARYANAKSHARYAN@GMAIL.COM
30	A2020CSE7028	2001430100030	B1	AKASH KUMAR KUSHWAH	KASHINATH KUSHWAHA	9931669668	8235958782	KUMAR01012001AKASH@GMAIL.COM
31	A2020CSE7439	2001430100031	B1	AKASH PATHAK	RATNESH KUMAR PATHAK	9454390950	9454390950	akkupathak200@gmail.com
32	A2020CSE7046	2001430100032	B1	AKSHAT AGARWAL	SURENDRA KUMAR AGARWAL	9917168996	9837215417	akshatagarwal32@gmail.com
33	A2020CSE7391	2001430100033	B1	AKSHIT SEHWAG	RAJEEV SEHWAG	8171428803	9719878803	sehwagyashvander@gmail.com
34	A2020CSE7354	2001430100034	B2	AMANKANT PATHAK	SHRIKANT PATHAK	9045868660	9997599310	amankantpathak6@gmail.com
35	A2020CSE7057	2001430100035	B2	AMAN KUMAR	RAJU KUMAR	8802079522	9811654275	AMANKUMARMICRO@GMAIL.COM
36	A2020CSE7071	2001430100037	B2	AMAN KUMAR SHUKLA	SANJAY KUMAR SHUKLA	9389992972	8802194118	AMANSHUKLA826852@GMAIL.COM
37	A2020CSE7214	2001430100038	B2	AMAN UPADHYAY	PANKAJ KUMAR UPADHYAY	7985998196	9415260715	AMANUPADHYAY2000@GMAIL.COM
38	A2020CSE7122	2001430100039	B2	AMARDEEP KUMAR	SUNIL KUMAR	8757807474	7979776717	AMARDEEPRITU875780@GMAIL.COM

39	A2020CSE7501	2001430100040	B2	AMARTYA RAI	GIRISH CHAND RAI	7985661170		ammu.amartya.rai@gmail.com
40	A2020CSE7242	2001430100041	B2	ANAGH SHARMA	VIJAY PANDIT	6397185461	9411951150	sharmaanagh13@gmail.com
41	A2020IT7105	2001430100042	B2	ANANYA GUPTA	SANJAY KUMAR GUPTA	7906938304	9350474710	SANJY_GUPTA112000@YAHOO.COM
42	A2020CSE7377	2001430100043	B2	ANKIT YADAV	HARISH CHANDRA YADAV	9112588137	9935218137	ankytyadav@gmail.com
43	A2020CSE7574	2001430100044	B2	ANKITA SINGH	RAMESH SINGH	9599635223	9839115311	ankitasinghrajput0711@gmail.com
44	A2020CSE7278	2001430100045	B2	ANKUR YADAV	RAM VISHAL YADAV	7836960810		ay424686@gmail.com
45	A2020CSE7250	2001430100046	B2	ANMOL MISHRA	ASHOK MISHRA	9140805823	7392838029	anmolmishra287@gmail.com
46	A2020CSE7332	2001430100047	B2	ANSH SHARMA	SURENDRA KUMAR SHARMA	7355942435	9451756604	anshsharma51111@gmail.com
47	A2020CSE7512	2001430100048	B2	ANSHIKA SAINI	SANJAY SAINI	7900438517		sanjayrada12@gmail.com
48	A2020CSE7065	2001430100049	B2	ANSHU SHARMA	BRIJESH SHARMA	9069628494	9891761389	anshush0609@gmail.com
49	A2020CSE7506	2001430100050	B2	ANUBHAV KUMAR	SANJAY SINGH	9560136135	9560136135	kumaranubhav832@gmail.com
50	A2020CSE7229	2001430100051	B2	ANUBHAV KUMAR SRIVAS	ASHOK KUMAR SRIVASTAVA	8318037790	9919394922	ANUBHAVSRIVASTAVA192000@GMAIL.COM
51	A2020CSE7361	2001430100052	B2	ANUBHAV SINGH CHAHAR	ASHOK KUMAR	7983159975	7983159975	asunnysingh5@gmail.com
52	A2020CSE7320	2001430100053	B2	ANUBHAV VARSHNEY	PRAMOD KUMAR VARSHNEY	7906098649	9456200340	anubhavvarshneyttt@gmail.com
53	A2020CSE7435	2001430100054	B2	ANUPRIYA YADAV	HARERAM YADAV	6386822165	6386822165	ianupriya15@gmail.com
54	A2020CSE7376	2001430100055	B2	ANURAG SRIVASTAVA	NAVIN KUMAR SRIVASTAVA	8765488173	8765638846	as187642@gmail.com
55	A2020CSE7152	2001430100056	B2	APARANA SHARMA	MANISH KUMAR SHARMA	7895115848	9837805848	aparanas138@gmail.com
56	A2020CSE7154	2001430100057	B2	ARJUN JAKHAR	ASHWINI KUMAR JAKHAR	8445204816	9719866714	185shwanikuma@gmail.com
57	A2020CSE7137	2001430100058	B2	ARPITA SINGH	SANJAY KUMAR	9354054468	9910131355	arpita8156@gmail.com
58	A2020CSE7247	2001430100059	B2	ARUN KUMAR	ANUJ KUMAR	8948245144	7905264500	iarunkumar278@gmail.com
59	A2020CSE7073	2001430100060	B2	ARYAN SINGH	SANTOSH KUMAR SINGH	7903522457	7903522457	sgh450aryansgh@gmail.com
60	A2020CSE7305	2001430100061	B2	ARYANT AGRAHARI	SANJAY AGRAHARI	7268930598	7380705646	aryantkumar84@gmail.com
61	A2021CSE7609	LATERAL ENTRY	B2	SHIKHAR AGRAHARI	RAJESH KUMAR GUPTA	9598346426	8604574269	shikharagrahari452@gmail.com
62	A2021CSE7644	LATERAL ENTRY	B2	TANU	SUDESH GUPTA	9027956063	8604574269	tanutiwari12122001@gmail.com
63	A2021CSE7677	LATERAL ENTRY	B2	PRINCE BHARDWAJ	RAJVEER SHARMA	9536851421	9402777013	PRINCEBHARDWAJP48@GMAIL.COM
64	A2021CSE7683	LATERAL ENTRY	B2	ANSHU KUMAR VERMA	ASHOK VERMA	8736868574	9770650609	ANSHUVERMA27001@GMAIL.COM
65	A2021CSE7687	LATERAL ENTRY	B2	ANUJ KUMAR SINGH	ARUN KUMAR SINGH	7607525797	7838624328	ANUJSINGH1026@GMAIL.COM

IMS Engineering College, Ghaziabad
Department of Computer Science Engineering
List of Students 2nd Year CSE1 (Even Semester) 2021-22

S.No.	Admission ID	Roll No.	Batch	Name	Father Name	PHONE (Student)	Mobile(Parent)	EMAIL
1	A2020CSE7431	2001430100001	B1	AADHYA GUPTA	AJAY KUMAR GUPTA	8527896505	9650995158	aadhyagupta06@gmail.com
2	A2020CSE7052	2001430100002	B1	AASTHA AGARWAL	MANOJ KUMAR AGARWAL	9149127006	9927390761	aasthaagarwal168@gmail.com
3	A2020CSE7402	2001430100003	B1	AASTHA TIWARI	MANOJ TIWARI	9718248784	8851341171	AASTHA2TIWARI@GMAIL.COM
4	A2020CSE7129	2001430100004	B1	AAYUSHI CHAUHAN	HARVANSH SINGH	7817835245	7817835245	ayurana87@gmail.com
5	A2020CSE7349	2001430100005	B1	ABHI JAISWAL	RAJENDRA JAISWAL	9369179545	9415509273	jaiswalkamni109@gmail.com
6	A2020CSE7056	2001430100006	B1	ABHINAV BALIYAN	VIPIN BALIYAN	9354445458	9354506079	abhinavbaliyan14587@gmail.com
7	A2020CS7159	2001430100007	B1	ABHINAV CHAUHAN	SHARVAN KUMAR	9760348489	7906704885	abhinavc2003@gmail.com
8	A2020CSE7322	2001430100008	B1	ABHINAV KUMAR	OMKAR SINGH	6396564460	9639292099	abhi72486511@gmail.com
9	A2020IT7112	2001430100009	B1	ABHINAV SAXENA	NAGESH KUMAR	8958337368	9927100356	sajalsaxenass01@gmail.com
10	A2020CSE7351	2001430100010	B1	ABHINAY PATEL	ARVIND KUMAR	8439803606	9756602585	abhi2003.bly@gmail.com
11	A2020CSE7500	2001430100011	B1	ABHISHEK .	HARI DATT SHARMA	8445227311		appandey328@gmail.com
12	A2020CSE7044	2001430100012	B1	ABHISHEK .	VINAY KUMAR	8766379793	8506035751	ABHISHEKJACOB93@GMAIL.COM
13	A2020CSE7193	2001430100013	B1	ABHISHEK CHATRUVEDI	AJAY CHATRUVEDI	8604917582	9935725668	abhishekchatruvedi291@gmail.com
14	A2020CSE7356	2001430100014	B1	ABHISHEK KUMAR YADAV	DIWAKAR YADAV	8874493174		abhishekyadav0312@gmail.com
15	A2020CSE7382	2001430100015	B1	ABHISHEK KUMAR SINGH	KHARAK BAHADUR SINGH	7275585174	8917726813	starkop688@gmail.com
16	A2020CSE7408	2001430100016	B1	ABHISHEK PARAS	MAHENDERPAL	9758211350	9758156047	abhishekparas@imsec.ac.in
17	A2020CSE7443	2001430100017	B1	ABHISHEK SINGH	SHIVANANAD SINGH	7068180830	7068180830	yashsingh1729@gmail.com
18	A2020CSE7341	2001430100018	B1	ADITYA KUMAR	GOPAL PRASAD	9097876646		adityaraj3536@gmail.com
19	A2020CSE7392	2001430100019	B1	ADITYA KUMAR	VANI SINGH	9899523321	8527633325	adityasingh.singh504@gmail.com
20	A2020CSE7425	2001430100020	B1	ADITYA KUMAR YADAV	VINOD KUMAR YADAV	8887900896	7388938338	ay81792@gmail.com
21	A2020CSE7225	2001430100021	B1	ADITYA MAHESHWARI	NEELOTPAL MAHESHWARI	9027125144	9719238250	aditya.mah33@gmail.com
22	A2020CSE7301	2001430100022	B1	ADITYA PRATAP MALL	DEVENDRA KUMAR MALL	9118110426	9450473510	malladityapratap2002@gmail.com
23	A2020CSE7370	2001430100023	B1	ADITYA PRATAP SINGH	SANTOSH KUMAR SINGH	9598906705	7457929907	adityapsingh980@gmail.com
24	A2020CSE7241	2001430100024	B1	ADITYA RAJPOOT	LALIT HARI RAJPOOT	8840183337	8931937565	adityarajpoot681@gmail.com
25	A2020CSE7235	2001430100025	B1	ADITYA SINGH	ANOOP SINGH	9005104222	9695178406	adityasingh09123@gmail.com
26	A2020CSE7306	2001430100026	B1	ADITYA SINGH	DINESH SINGH	7014614310	9838035503	adityasinghnjms15@gmail.com
27	A2020CS7552	2001430100027	B1	ADITYA VERMA	PRAVEEN KUMAR	9958466556	9958466556	ADITYAGOLD02@GMAIL.COM
28	A2020CSE7036	2001430100028	B1	AJAY	SUBHASH BABU	7302611273	9411901590	ajaysaxena20032003@gmail.com
29	A2020CSE7131	2001430100029	B1	AKASH GUPTA	SHASHIKANT GUPTA	9118283887	8115400980	ARYANAKSHARYAN@GMAIL.COM
30	A2020CSE7028	2001430100030	B1	AKASH KUMAR KUSHWAH	KASHINATH KUSHWAHA	9931669668	8235958782	KUMAR01012001AKASH@GMAIL.COM
31	A2020CSE7439	2001430100031	B1	AKASH PATHAK	RATNESH KUMAR PATHAK	9454390950	9454390950	akkupathak200@gmail.com
32	A2020CSE7046	2001430100032	B1	AKSHAT AGARWAL	SURENDRA KUMAR AGARWAL	9917168996	9837215417	akshatagarwal32@gmail.com
33	A2020CSE7391	2001430100033	B1	AKSHIT SEHWAG	RAJEEV SEHWAG	8171428803	9719878803	sehwagyashvander@gmail.com
34	A2020CSE7354	2001430100034	B2	AMANKANT PATHAK	SHRIKANT PATHAK	9045868660	9997599310	amankantpathak6@gmail.com
35	A2020CSE7057	2001430100035	B2	AMAN KUMAR	RAJU KUMAR	8802079522	9811654275	AMANKUMARMICRO@GMAIL.COM
36	A2020CSE7071	2001430100037	B2	AMAN KUMAR SHUKLA	SANJAY KUMAR SHUKLA	9389992972	8802194118	AMANSHUKLA826852@GMAIL.COM
37	A2020CSE7214	2001430100038	B2	AMAN UPADHYAY	PANKAJ KUMAR UPADHYAY	7985998196	9415260715	AMANUPADHYAY2000@GMAIL.COM
38	A2020CSE7122	2001430100039	B2	AMARDEEP KUMAR	SUNIL KUMAR	8757807474	7979776717	AMARDEEPRITU875780@GMAIL.COM

39	A2020CSE7501	2001430100040	B2	AMARTYA RAI	GIRISH CHAND RAI	7985661170		ammu.amartya.rai@gmail.com
40	A2020CSE7242	2001430100041	B2	ANAGH SHARMA	VIJAY PANDIT	6397185461	9411951150	sharmaanagh13@gmail.com
41	A2020IT7105	2001430100042	B2	ANANYA GUPTA	SANJAY KUMAR GUPTA	7906938304	9350474710	SANJY_GUPTA112000@YAHOO.COM
42	A2020CSE7377	2001430100043	B2	ANKIT YADAV	HARISH CHANDRA YADAV	9112588137	9935218137	ankytyadav@gmail.com
43	A2020CSE7574	2001430100044	B2	ANKITA SINGH	RAMESH SINGH	9599635223	9839115311	ankitasinghrajput0711@gmail.com
44	A2020CSE7278	2001430100045	B2	ANKUR YADAV	RAM VISHAL YADAV	7836960810		ay424686@gmail.com
45	A2020CSE7250	2001430100046	B2	ANMOL MISHRA	ASHOK MISHRA	9140805823	7392838029	anmolmishra287@gmail.com
46	A2020CSE7332	2001430100047	B2	ANSH SHARMA	SURENDRA KUMAR SHARMA	7355942435	9451756604	anshsharma51111@gmail.com
47	A2020CSE7512	2001430100048	B2	ANSHIKA SAINI	SANJAY SAINI	7900438517		sanjayrada12@gmail.com
48	A2020CSE7065	2001430100049	B2	ANSHU SHARMA	BRIJESH SHARMA	9069628494	9891761389	anshush0609@gmail.com
49	A2020CSE7506	2001430100050	B2	ANUBHAV KUMAR	SANJAY SINGH	9560136135	9560136135	kumaranubhav832@gmail.com
50	A2020CSE7229	2001430100051	B2	ANUBHAV KUMAR SRIVAS	ASHOK KUMAR SRIVASTAVA	8318037790	9919394922	ANUBHAVSRIVASTAVA192000@GMAIL.COM
51	A2020CSE7361	2001430100052	B2	ANUBHAV SINGH CHAHAR	ASHOK KUMAR	7983159975	7983159975	asunnysingh5@gmail.com
52	A2020CSE7320	2001430100053	B2	ANUBHAV VARSHNEY	PRAMOD KUMAR VARSHNEY	7906098649	9456200340	anubhavvarshneyttt@gmail.com
53	A2020CSE7435	2001430100054	B2	ANUPRIYA YADAV	HARERAM YADAV	6386822165	6386822165	ianupriya15@gmail.com
54	A2020CSE7376	2001430100055	B2	ANURAG SRIVASTAVA	NAVIN KUMAR SRIVASTAVA	8765488173	8765638846	as187642@gmail.com
55	A2020CSE7152	2001430100056	B2	APARANA SHARMA	MANISH KUMAR SHARMA	7895115848	9837805848	aparanas138@gmail.com
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57	A2020CSE7137	2001430100058	B2	ARPITA SINGH	SANJAY KUMAR	9354054468	9910131355	arpita8156@gmail.com
58	A2020CSE7247	2001430100059	B2	ARUN KUMAR	ANUJ KUMAR	8948245144	7905264500	iarunkumar278@gmail.com
59	A2020CSE7073	2001430100060	B2	ARYAN SINGH	SANTOSH KUMAR SINGH	7903522457	7903522457	sgh450aryansgh@gmail.com
60	A2020CSE7305	2001430100061	B2	ARYANT AGRAHARI	SANJAY AGRAHARI	7268930598	7380705646	aryantkumar84@gmail.com
61	A2021CSE7609	LATERAL ENTRY	B2	SHIKHAR AGRAHARI	RAJESH KUMAR GUPTA	9598346426	8604574269	shikharagrahari452@gmail.com
62	A2021CSE7644	LATERAL ENTRY	B2	TANU	SUDESH GUPTA	9027956063	8604574269	tanutiwari12122001@gmail.com
63	A2021CSE7677	LATERAL ENTRY	B2	PRINCE BHARDWAJ	RAJVEER SHARMA	9536851421	9402777013	PRINCEBHARDWAJP48@GMAIL.COM
64	A2021CSE7683	LATERAL ENTRY	B2	ANSHU KUMAR VERMA	ASHOK VERMA	8736868574	9770650609	ANSHUVERMA27001@GMAIL.COM
65	A2021CSE7687	LATERAL ENTRY	B2	ANUJ KUMAR SINGH	ARUN KUMAR SINGH	7607525797	7838624328	ANUJSINGH1026@GMAIL.COM

B.TECH. (COMPUTER SCIENCE AND ENGINEERING)

FOURTH SEMESTER (DETAILED SYLLABUS)

Operating systems (KCS401)		
Course Outcome (CO)		Bloom's Knowledge Level (KL)
At the end of course , the student will be able to understand		
CO 1	Understand the structure and functions of OS	K_1, K_2
CO 2	Learn about Processes, Threads and Scheduling algorithms.	K_1, K_2
CO 3	Understand the principles of concurrency and Deadlocks	K_2
CO 4	Learn various memory management scheme	K_2
CO 5	Study I/O management and File systems.	K_2, K_4
DETAILED SYLLABUS		3-0-0

Unit	Topic	Proposed Lecture
I	**Introduction** : Operating system and functions, Classification of Operating systems- Batch, Interactive, Time sharing, Real Time System, Multiprocessor Systems, Multiuser Systems, Multiprocess Systems, Multithreaded Systems, Operating System Structure- Layered structure, System Components, Operating System services, Reentrant Kernels, Monolithic and Microkernel Systems.	08
II	**Concurrent Processes:** Process Concept, Principle of Concurrency, Producer / Consumer Problem, Mutual Exclusion, Critical Section Problem, Dekker's solution, Peterson's solution, Semaphores, Test and Set operation; Classical Problem in Concurrency- Dining Philosopher Problem, Sleeping Barber Problem; Inter Process Communication models and Schemes, Process generation.	08
III	**CPU Scheduling:** Scheduling Concepts, Performance Criteria, Process States, Process Transition Diagram, Schedulers, Process Control Block (PCB), Process address space, Process identification information, Threads and their management, Scheduling Algorithms, Multiprocessor Scheduling. Deadlock: System model, Deadlock characterization, Prevention, Avoidance and detection, Recovery from deadlock.	08
IV	**Memory Management:** Basic bare machine, Resident monitor, Multiprogramming with fixed partitions, Multiprogramming with variable partitions, Protection schemes, Paging, Segmentation, Paged segmentation, Virtual memory concepts, Demand paging, Performance of demand paging, Page replacement algorithms, Thrashing, Cache memory organization, Locality of reference.	08
V	**I/O Management and Disk Scheduling:** I/O devices, and I/O subsystems, I/O buffering, Disk storage and disk scheduling, RAID. File System: File concept, File organization and access mechanism, File directories, and File sharing, File system implementation issues, File system protection and security.	08

Text books:

1. Silberschatz, Galvin and Gagne, "Operating Systems Concepts", Wiley
2. Sibsankar Halder and Alex A Aravind, "Operating Systems", Pearson Education
3. Harvey M Dietel, " An Introduction to Operating System", Pearson Education
4. D M Dhamdhere, "Operating Systems : A Concept based Approach", 2nd Edition,
5. TMH 5. William Stallings, "Operating Systems: Internals and Design Principles ", 6th Edition, Pearson Education

IMS Engineering College, Ghaziabad

Sub Code	**KCS-401**
Sub. Name	**Operating System**

	COURSE OUTCOMES	Bloom's Level
CO1	Understand the structure and functions of OS	K1, K2
CO2	Learn about Processes, Threads and Scheduling algorithms.	K1, K2
CO3	Understand the principles of concurrency and Deadlocks	K2
CO4	Learn various memory management scheme	K2
CO5	Study I/O management and File systems.	K2, K4

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1											1
CO2	2	1	1									2
CO3	2	2	2	1								2
CO4	2	1	1									1
CO5	2	2	2	1								2
Avg	1.8	1.5	1.5	1								1.6

CO-PSO Matrix

COs	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	2
CO2	1	2	2	2
CO3	2	2	2	2
CO4	2	2	1	2
CO5	2	2	2	2
Avg	1.8	1.8	1.6	2.0

Operating Systems Lab (KCS451)

1. Study of hardware and software requirements of different operating systems (UNIX,LINUX,WINDOWS XP, WINDOWS7/8
2. Execute various UNIX system calls for
   i. Process management
   ii. File management
   iii. Input/output Systems calls
3. Implement CPU Scheduling Policies:
   i. SJF
   ii. Priority
   iii. FCFS
   iv. Multi-level Queue
4. Implement file storage allocation technique:
   i. Contiguous(using array)
   ii. Linked –list(using linked-list)
   iii. Indirect allocation (indexing)
5. Implementation of contiguous allocation techniques:
   i. Worst-Fit
   ii. Best- Fit
   iii. First- Fit
6. Calculation of external and internal fragmentation
   i. Free space list of blocks from system
   ii. List process file from the system
7. Implementation of compaction for the continually changing memory layout and calculate total movement of data
8. Implementation of resource allocation graph RAG)
9. Implementation of Banker"s algorithm
10. Conversion of resource allocation graph (RAG) to wait for graph (WFG) for each type of method used for storing graph.
11. Implement the solution for Bounded Buffer (producer-consumer)problem using inter process communication techniques-Semaphores
12. Implement the solutions for Readers-Writers problem using inter process communication technique -Semaphore

Microprocessor Lab (KCS452)

1. Write a program using 8085 Microprocessor for Decimal, Hexadecimal addition and subtraction of two Numbers.
2. Write a program using 8085 Microprocessor for addition and subtraction of two BCD numbers.
3. To perform multiplication and division of two 8 bit numbers using 8085.
4. To find the largest and smallest number in an array of data using 8085 instruction set.
5. To write a program to arrange an array of data in ascending and descending order.
6. To convert given Hexadecimal number into its equivalent ASCII number and vice versa using 8085 instruction set.
7. To write a program to initiate 8251 and to check the transmission and reception of character.
8. To interface 8253 programmable interval timer to 8085 and verify the operation of 8253 in six different modes.
9. To interface DAC with 8085 to demonstrate the generation of square, saw tooth and triangular wave.
10. Serial communication between two 8085 through RS-232 C port.

Operating Systems Lab (KCS451)

1. Study of hardware and software requirements of different operating systems (UNIX,LINUX,WINDOWS XP, WINDOWS7/8
2. Execute various UNIX system calls for
   i. Process management
   ii. File management
   iii. Input/output Systems calls
3. Implement CPU Scheduling Policies:
   i. SJF
   ii. Priority
   iii. FCFS
   iv. Multi-level Queue
4. Implement file storage allocation technique:
   i. Contiguous(using array)
   ii. Linked –list(using linked-list)
   iii. Indirect allocation (indexing)
5. Implementation of contiguous allocation techniques:
   i. Worst-Fit
   ii. Best- Fit
   iii. First- Fit
6. Calculation of external and internal fragmentation
   i. Free space list of blocks from system
   ii. List process file from the system
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9. To interface DAC with 8085 to demonstrate the generation of square, saw tooth and triangular wave.
10. Serial communication between two 8085 through RS-232 C port.

Department of Computer Science & Engineering
IMS Engineering College

Year: 2ND **Semester: 4TH**

Subject: Operating Systems Lab **Subject Code: KCS451**

	Course Outcome
CO1	Understand the structure, types and functions of different Operating Systems.
CO2	Able to understand the file handling, process managing in UNIX and interpret various CPU scheduling algorithm.
CO3	Students will be able to develop contiguous and non-contiguous memory allocation and implement programs for banker's algorithm.
CO4	Students will be able to apply and analyze different page replacement algorithms and resource allocation graphs
CO5	Able to develop producer-consumer problem and semaphores.

LIST OF EXPERIMENT

S no.	Experiment	Mapping with CO
1.	Study of hardware and software requirements of different operating systems (UNIX,LINUX,WINDOWS XP, WINDOWS7/8	1
2.	Execute various UNIX system calls for i. Process management ii. File management iii. Input/output Systems calls	1,2
3.	Implement CPU Scheduling Policies: i. SJF ii. Priority iii. FCFS iv. Multi-level Queue	2
4.	Implement file storage allocation technique: i. Contiguous(using array) ii. Linked –list(using linked-list) iii. Indirect allocation (indexing)	1,3
5.	Implementation of contiguous allocation techniques: i. Worst-Fit ii. Best- Fit iii. First- Fit	1,3
6.	Calculation of external and internal fragmentation i. Free space list of blocks from system ii. List process file from the system	1,3
7.	Implementation of compaction for the continually changing memory layout and calculate total movement of data.	3
8.	Implementation of resource allocation graph (RAG)	1,4
9.	Implementation of Banker's algorithm.	1,3
10.	Conversion of resource allocation graph (RAG) to wait for graph (WFG) for each type of method used for storing graph.	1,4
11.	Implement the solution for Bounded Buffer (producer-consumer)problem using inter process communication techniques-Semaphores.	1,5
12.	Implement the solutions for Readers-Writers problem using inter process communication technique –Semaphore.	1,5

ADDITIONAL LIST OF EXPERIMENT(Beyond Syllabus)

1.	Basic LINUX commands and its Use.	1
2.	Detail study of File Access Permission in LINUX.	1
3.	Detail study of LINUX Shell Programming.	1
4.	Program for FIFO, LRU, and OPTIMAL page replacement algorithm.	4
5.	Dining-Philosopher's Problem	5
6.	Simulate all File Organization Techniques. i. Single level directory ii. Two level directory.	2
7.	Write a C program to simulate disk scheduling algorithms. i. FCFS ii. SCAN iii. C-SCAN.	2
8.	Study of editors in LINUX.	1
9..	Write a script to find the greatest of three numbers.	1
10.	Write a script to calculate the sum of digits of the given number.	1
11.	Write a script to calculate the average of n numbers.	1
12.	Write a script to check whether the given number is prime or not.	1

Subject Faculty Members:

1. Dr. Amit Chugh
2. Mr. Ashish Kumar
3. Ms.RitikaDhyani
4. Mr. Aditya Sam Koshy

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IMS Engineering College,

Ghaziabad

Department of Computer Science and Engineering

CO-PSO Matrix				
CO1	PSO1	PSO2	PSO3	PSO4
CO1	3	1		1
CO2	2	2	2	1
CO3	1	2	1	1
CO4	2	2	2	1
CO5	2	1	2	1
Avg	2	1.6	1.75	1

IMS Engineering College,

Ghaziabad

Department of Computer Science and Engineering

Sub Code	KCS-451
Sub. Name	Operating Systems Lab

	COURSE OUTCOMES	Bloom's Level
CO1	Understand the structure, types and functions of different Operating Systems..	K2
CO2	Able to understand the file handling, process management in UNIX and interpret various CPU scheduling algorithms.	K2, K4
CO3	Students will be able to develop contiguous and non-contiguous memory allocation and implementation of programs for banker's algorithm.	K4
CO4	Students will be able to apply and analyze different page replacement algorithms and resource allocation graphs.	K2,K3
CO5	Able to develop producer-consumer problems and semaphores.	K2,K3

CO-PO Matrix

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	2						1			1
CO2	1	2	2	1					1			1
CO3	1	2	2	2					1			1
CO4	1	2	2						1			1
CO5	1	2	2	1					1			2
Avg	1	2	2	1.3					1			1.2

IMS Engineering College,

Ghaziabad

Department of Computer Science and Engineering

CO-PSO Matrix				
COs	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	3	1		1
CO2	2	2	2	1
CO3	1	2	1	1
CO4	2	2	2	1
CO5	2	1	2	1
Avg	**2**	**1.6**	**1.75**	**1**

IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

SubjectName: Operating Systems	**SubjectCode**	KCS-401
DateofHandover:	**MaxMarks**	
DateofSubmission:		

ASSIGNMENT NO. -1

Q.no	Question	Mapped CO
a.	What is batch system?	CO1
b.	Define real time system?	CO1
c.	Differentiate between with one suitable example. 1. Interactive and Batch processing system.	CO1

IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

SubjectName: Operating Systems	**SubjectCode**	KCS – 401
DateofHandover:	**MaxMarks**	
DateofSubmission:		

ASSIGNMENT NO. -2

Q.no	Question	Mapped CO
a.	What are the advantages and disadvantages of Layered approach?	CO1
b.	Differentiate between Monolitic and Microkernel with examples.	CO1
c.	Explain the services provided by OS	CO1

IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

SubjectName: Operating Systems	**SubjectCode**	KCS – 401
DateofHandover:	**MaxMarks**	
DateofSubmission:		

ASSIGNMENT NO. -3

Q.no	Question	Mapped CO
a.	Write a short note on Producer/Consumer Problem.	CO2
b.	Discuss principle of concurrency.	CO2
c.	What is Multithreading Programming? Explain its benefits.	CO1

IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

SubjectName: Operating Systems	**SubjectCode**	KCS – 401
DateofHandover:	**MaxMarks**	
DateofSubmission:		

ASSIGNMENT NO. -4

Q.no	Question	Mapped CO
a.	Define Process. What is the Process Control Block?	CO3
b.	What is the Process State? Explain with diagram.	CO3
c.	What is Multithreading Programming? Explain its benefits.	CO3

IMS Engineering College, Ghaziabad

Department of Computer Science and Engineering

SubjectName: Operating Systems	SubjectCode	KCS – 401
DateofHandover:	MaxMarks	
DateofSubmission:		

ASSIGNMENT NO. -5

Q.no	Question	Mapped CO
a.	Explain the different conditions of deadlock.	CO3
b.	Write down the methods for deadlock prevention.	CO3
c.	Describe the necessary conditions for deadlock to occur.	CO3

Roll No. | | | | | | | | | | |

IMS ENGINEERING COLLEGE
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CT-II

AY 2021-22 (Even Semester)

Course	:	**B.Tech**	**Date**	: **13/06/2022**
Semester	:	**IV**	**Subject Code**	: **KCS-401**
Subject	:	**Operating Systems**	**Max. Marks**	: **30**
Time	:	**1.5 Hrs.**		

COURSE OUTCOMES	
CO1	Understand the structure & functions of OS.
CO2	Learn about Processes, Threads and Scheduling algorithms
CO3	Understand the principles of concurrency and Deadlocks
CO4	Learn various memory management scheme
CO5	Study I/O management and File systems.

Q. No.	Questions	CO
	PART- A: Attempt All Questions (5x1 = 5Marks)	
1.	What do you mean by Race Condition?	3
2.	What are the limitations of the Dekkers' Algorithm?	3
3.	Discuss the term "Busy Waiting".	3
4.	Name various Deadlock Recovery Mechanism.	3
5.	Define Cooperative Processes.	3
	PART-B: Attempt ANY THREE Questions (3x5 = 15Marks)	
6.	State the Producer Consumer Problem & give the solution for it.	3
7.	Write and explain the Petersons' Algorithm for Critical Section Problem.	3
8.	What do you mean by Critical Section Problem? Mention necessary conditions to the Critical Section problem.	3
9.	Discuss Mutual Exclusion implementation with the help of Test & Set Machine Instruction.	3
	PART-C: Attempt ANY ONE Question (1x10 = 10Marks)	
10.	a) Define Message Passing & Shared Memory Inter Process Communication	3
9.	b) Consider the following process	3

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

(i) What is the content of the matrix need?

(ii) Is the system in a safe state?

(iii) If a request from process P1 arrives for (0,4,2,0), can the request be granted immediately?

11.	a) Discuss Dining Philosophers' Problem.	3
	b) What is Semaphore? Define the Primitive Operations involved in Semaphore Mechanism.	3

9/6/22

IMS ENGINEERING COLLEGE

Roll No.

IMS ENGINEERING COLLEGE
Department of CSE/CS/IT

CT-III
AY 2021-22 (Even Semester)

Course : B.Tech
Semester : IV
Subject : Operating Systems
Time : 9:30AM – 11:00 AM

Date : 08/07/2022
Subject Code : KCS-401
Max. Marks : 30

COURSE OUTCOMES	
CO-1	Understand the structure & functions of OS.
CO-2	Learn about Processes, Threads and Scheduling algorithms
CO-3	Understand the principles of concurrency and Deadlocks
CO-4	Learn various memory management scheme
CO-5	Study I/O management and File systems.

Q. No.	Questions	CO
	PART- A: Attempt All Questions (5x1 = 5Marks)	
1 (a)	Explain Bare Machine & Resident Monitors.	4
1 (b)	Differentiate between Paging & Segmentation.	4
1 (c)	Define the term "Thrashing".	4
1 (d)	Discuss the need of an I/O Buffer.	5
1 (e)	Name different Disk Scheduling Algorithms.	5
	PART-B: Attempt ANY THREE Questions (3x5 = 15Marks)	
2 (a)	Differentiate between Internal & External Fragmentation with example.	4
2 (b)	Consider the following reference string 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. How many page faults will occur for if the Page Replacement algorithm employed is: i) FIFO ii) LRU Assume there are 3 frames in the Physical Address Space.	4
2 (c)	Explain different methods of disk space allocation.	5
2 (d)	Discuss various level of RAID.	5
	PART-C: Attempt ANY ONE Question (1x10 = 10Marks)	
3	a) Explain the process of Demand Paging. Discuss its advantages & disadvantages.	4
	b) Consider a Demand Paged System. The Paged Tables are held in Registers. It takes 8 milliseconds to service a page fault if an empty page is available or the replaced page is not modified, & 20 milliseconds if the page is modified. Memory access time is 100 nanoseconds. Assume that the page to be replaced is modified 70% of the time. What is the maximum acceptable page fault rate for an effective access time of not more than 200 nanoseconds.	4
4	a) Explain the concept of File Sharing with file protection and security methods.	5
	b) Suppose the moving head disk with 200 tracks is currently serving a request for track 143 & has just finished a request for track 125. If the queue of request is kept in FIFO order 86, 147, 91, 177, 94, 150. What is the total head movement for the following scheduling: i) FCFS ii) SSTF iii) C-SCAN	5

28/6/22
(Pawan Sharma)
HOD
IT Department
IMS Engineering college
Ghaziabad

IMS Engineering college

DEPARTMENT: COMPUTER SCIENCE & ENGINEERING

Session: 2021-22

Sub.Name	Operating System
Sub. Code	KCS 401
Section	CSE 1
Faculty Name	Ritika Dhyani

CO Calculation for: CT 1

S.No.	RollNo	Student Name	Status (P/ A/ D)	Question No.	1	2	3	4	5	6	7	8	9	10a	10b	11a	11b	Total Marks
				CO Mapped	CO1	CO1	CO1	CO2	CO2	CO1	CO1	CO3	CO2	CO1	CO1	CO2	CO2	
				Assigned Marks	1	1	1	1	1	5	5	5	5	5	5	5	5	30
				Marks Obtained														M.O.
1	2001430100001	AADHYA GUPTA	P			1	1	1	0.5			4				5		12.5
2	2001430100002	AASTHA AGARWAL	D															D
3	2001430100003	AASTHA TIWARI	D															D
4	2001430100004	AAYUSHI CHAUHAN	P		0.5	1	1	1	1	5		5	4.5			2.5	5	26.5
5	2001430100005	ABHI JAISWAL	D															D
6	2001430100006	ABHINAV BALIYAN	D															D
7	2001430100007	ABHINAV CHAUHAN	P		1	1	1	1		4	2.5	2		5				17.5
8	2001430100008	ABHINAV KUMAR	D															D
9	2001430100009	ABHINAV SAXENA	P		0.5	1	1	0.5			5	1.5		1	4			14.5
10	2001430100010	ABHINAY PATEL	D															D
11	2001430100011	ABHISHEK	P		0.5	1	1	0.5				5				3	4.5	15.5
12	2001430100012	ABHISHEK	P		0.5	1		0.5			5	5						12
13	2001430100013	ABHISHEK CHATRUVEDI	P		0.5	1	1	1	1		5	4.5	5	5	4			28
14	2001430100014	ABHISHEK KUMAR YADAV	P		0.5	1	1	1	1		5	3	4	3	5			24.5
15	2001430100015	ABHISHEK KUMAR SINGH	P		1	1	1	1	1	4	2	3		3	5			22
16	2001430100016	ABHISHEK PARAS	D															D
17	2001430100017	ABHISHEK SINGH	P		1	1	1		1		5	5	5	5				24
18	2001430100018	ADITYA KUMAR	D															D
19	2001430100019	ADITYA KUMAR	P		1	1	1	1	1		2.5	4.5					5	17
20	2001430100020	ADITYA KUMAR YADAV	D															D
21	2001430100021	ADITYA MAHESHWARI	P			1	1	1	1		5	4.5		5	4			22.5
24	2001430100022	ADITYA PRATAP MALL	P			1	1	1	1	5	3	3		5	1			21
22	2001430100023	ADITYA PRATAP SINGH	D															D
23	2001430100024	ADITYA RAJPOOT	P			1	1		1	5		5	4			1	5	23
25	2001430100025	ADITYA SINGH	P		0.5	1	1	1	1		5	5	4			2.5	4	25
26	2001430100026	ADITYA SINGH	D															D
27	2001430100027	ADITYA VERMA	P			1	1	1	1	5		5	4	4.5	5			27.5
28	2001430100028	AJAY	P		1	1	1	1	1	5		4.5	5	4	5			28.5
29	2001430100029	AKASH GUPTA	P			1	1	0.5			3	3	3.5				5	17
30	2001430100030	AKASH KUMAR KUSHWAHA	D															D
31	2001430100031	AKASH PATHAK	D															D
32	2001430100032	AKSHAT AGARWAL	D															D
33	2001430100033	AKSHIT SEHWAG	D															D
34	2001430100034	AMANKANT PATHAK	P		1	1	1	1	1		5	4.5	3	4	5			26.5
35	2001430100035	AMAN KUMAR	P		1	1	1	1	1	5		4	5			5	5	29
36	2001430100037	AMAN KUMAR SHUKLA	D															D

CO WEIGHTAGE

CO1		CO2		CO3		Total Att
Total Marks	Obt. Marks	Total Marks	Obt. Marks	Total Marks	Obt. Marks	
CO attained Marks						
2	2	7	6.5	5	4	
0	0	0	0	0	0	
0	0	0	0	0	0	
8	7.5	17	14	5	5	
0	0	0	0	0	0	
0	0	0	0	0	0	
18	14.5	1	1	5	2	
0	0	0	0	0	0	
18	12.5	1	0.5	5	1.5	
0	0	0	0	0	0	
3	2.5	11	8	5	5	
7	6.5	1	0.5	5	5	
18	16.5	7	7	5	4.5	
18	15.5	7	6	5	3	
23	17	2	2	5	3	
0	0	0	0	0	0	
13	13	6	6	5	5	
0	0	0	0	0	0	
8	5.5	7	7	5	4.5	
0	0	0	0	0	0	
17	16	2	2	5	4.5	
22	16	2	2	5	3	
0	0	0	0	0	0	
7	7	16	11	5	5	
8	7.5	17	12.5	5	5	
0	0	0	0	0	0	
17	16.5	7	6	5	5	
18	17	7	7	5	4.5	
7	5	11	9	5	3	
0	0	0	0	0	0	
0	0	0	0	0	0	
0	0	0	0	0	0	
0	0	0	0	0	0	
18	17	7	5	5	4.5	
8	8	17	17	5	4	
0	0	0	0	0	0	

37	2001430100038	AMAN UPADHYAY	D														D	0	0	0	0	0	0		0
38	2001430100039	AMARDEEP KUMAR	A														A	0	0	0	0	0	0		0
39	2001430100040	AMARTYA RAI	D														D	0	0	0	0	0	0		0
40	2001430100041	ANAGH SHARMA	P	0.5	1	0.5	1	1		3	2.5	2	2	2			15.5	18	9	7	4	5	2.5		25
41	2001430100042	ANANYA GUPTA	P	1	1	1	1	1		5	4.5	5	4	5			28.5	18	17	7	7	5	4.5		25
42	2001430100043	ANKIT YADAV	P	1	1	1		1		4	3	1	3	2.5			17.5	18	12.5	6	2	5	3		24
43	2001430100044	ANKITA SINGH	P	1	1	1	1	1		5	5	5	3.5	4.5			28	18	16	7	7	5	5		25
44	2001430100045	ANKUR YADAV	D														D	0	0	0	0	0	0		0
45	2001430100046	ANMOL MISHRA	P	1	1	1	1			5	5	4	5	4.5			27.5	18	17.5	6	5	5	5		24
46	2001430100047	ANSH SHARMA	D														D	0	0	0	0	0	0		0
47	2001430100048	ANSHIKA SAINI	P	0.5	1	0.5	1	1		5	3	3.5			1	5	21.5	8	7	17	11.5	5	3		25
48	2001430100049	ANSHU SHARMA	P	1	1	1	1	1	5		4.5	3			2	5	24.5	8	8	17	12	5	4.5		25
49	2001430100050	ANUBHAV KUMAR	P	1	1	1	1	1	5		5	5			1	5	26	8	8	17	13	5	5		25
50	2001430100051	ANUBHAV KUMAR	D														D	0	0	0	0	0	0		0
51	2001430100052	ANUBHAV SINGH CHAHAR	D														D	0	0	0	0	0	0		0
52	2001430100053	ANUBHAV VARSHNEY	D														D	0	0	0	0	0	0		0
53	2001430100054	ANUPRIYA YADAV	P		1	1	1	1		5	0.5			5			14.5	12	12	2	2	5	0.5		14
54	2001430100055	ANURAG SRIVASTAVA	P	1	1	1	1	1	5	5	5		5	5			30	23	23	2	2	5	5		25
55	2001430100056	APARANA SHARMA	P	1	1	1	1	1	3	5	5		5	4			27	23	20	2	2	5	5		25
56	2001430100057	ARJUN JAKHAR	P		1	1	1	0.5		5	5	5	5	5			28.5	17	17	7	6.5	5	5		24
57	2001430100058	ARPITA SINGH	P	0.5	1	1	1		5	5			5		2		20.5	18	17.5	6	3	0	0		24
58	2001430100059	ARUN KUMAR	D														D	0	0	0	0	0	0		0
59	2001430100060	ARYAN SINGH	D														D	0	0	0	0	0	0		0
60	2001430100061	ARYANT AGRAHARI	D														D	0	0	0	0	0	0		0
61	2101430109008	SHIKHAR AGRAHARI (LE)	P	1	1	1	0.5	1		4.5	1				2		12	8	7.5	7	3.5	5	1		15
62	2101430109010	TANU (LE)	P	0.5	1	0.5				2	2	1.5				5	12.5	8	4	10	6.5	5	2		18
63	2101430109007	PRINCE BHARDWAJ (LE)	D														D	0	0	0	0	0	0		0
64	2101430109003	ANSHU KUMAR VERMA (LE)	P	1	1		1	1		4	2	2.5			2	1	15.5	7	6	17	7.5	5	2		24
65	2101430109005	ANUJ KUMAR SINGH (LE)	D														D								0
																									0

CO1

CO2

CO3

CO4

CO5

Total students	65
No. Appeared students	36

TARGET MARKS 60%	18							
o. of Students Absent/Detained	29							
Number of Students achieved greater than 60% Marks	23		27		24		28	
Percentage of Students	63.9		75.0		66.7		77.8	
Attainment Level	1		2		1		2	

Attainment Levels	X	If X% students achieve more than target marks
1	60	if 60% students achieve more than target.
2	70	if 70% students achieve more than target.
3	80	if 80% students achieve more than target.

IMS Engineering college

DEPARTMENT: COMPUTER SCIENCE & ENGINEERING

WEAK STUDENTS IDENTIFICATION & ACTION TAKEN

CT 1

Session: 2021-22

Sub.Name	Operating System
Sub. Code	KCS 401
Section	CSE 1
Faculty Name	Ritika Dhyani

S.No.	RollNo	Student Name	Status (P/ A/ D)	CALCULATED PERCENTAGE					IDENTIFYING WEAK STUDENTS					ASSIGNMENT GIVEN TO WEAK STUDENT				
				CO1	CO2	CO3			CO1	CO2	CO3			CO1	CO2	CO3	0	0
									W = Weak Students									
				%age weightage attained					%age attainment < 60%									
1	2001430100001	AADHYA GUPTA	P	100.0%	92.9%	100.0%												
2	2001430100002	AASTHA AGARWAL	D						D	D	D							
3	2001430100003	AASTHA TIWARI	D						D	D	D							
4	2001430100004	AAYUSHI CHAUHAN	P	93.8%	82.4%	100.0%												
5	2001430100005	ABHI JAISWAL	D						D	D	D							
6	2001430100006	ABHINAV BALIYAN	D						D	D	D							
7	2001430100007	ABHINAV CHAUHAN	P	80.6%	100.0%	100.0%												
8	2001430100008	ABHINAV KUMAR	D						D	D	D							
9	2001430100009	ABHINAV SAXENA	P	69.4%	50.0%	100.0%				W	W				Y	Y		
10	2001430100010	ABHINAY PATEL	D						D	D	D							
11	2001430100011	ABHISHEK	P	83.3%	72.7%	100.0%												
12	2001430100012	ABHISHEK	P	92.9%	50.0%	100.0%				W	W				Y	Y		
13	2001430100013	ABHISHEK CHATRUVEDI	P	91.7%	100.0%	100.0%												
14	2001430100014	ABHISHEK KUMAR YADAV	P	86.1%	85.7%	100.0%												
15	2001430100015	ABHISHEK KUMAR SINGH	P	73.9%	100.0%	100.0%												
16	2001430100016	ABHISHEK PARAS	D						D	D	D							
17	2001430100017	ABHISHEK SINGH	P	100.0%	100.0%	100.0%												
18	2001430100018	ADITYA KUMAR	D						D	D	D							
19	2001430100019	ADITYA KUMAR	P	68.8%	100.0%	100.0%												
20	2001430100020	ADITYA KUMAR YADAV	D						D	D	D							
21	2001430100021	ADITYA MAHESHWARI	P	94.1%	100.0%	100.0%												
24	2001430100022	ADITYA PRATAP MALL	P	72.7%	100.0%	100.0%												
22	2001430100023	ADITYA PRATAP SINGH	D						D	D	D							
23	2001430100024	ADITYA RAJPOOT	P	100.0%	68.8%	100.0%												
25	2001430100025	ADITYA SINGH	P	93.8%	73.5%	100.0%												

26	2001430100026	ADITYA SINGH	D							D	D	D									
27	2001430100027	ADITYA VERMA	P	97.1%	85.7%	100.0%															
28	2001430100028	AJAY	P	94.4%	100.0%	100.0%															
29	2001430100029	AKASH GUPTA	P	71.4%	81.8%	100.0%															
30	2001430100030	AKASH KUMAR KUSHWAHA	D							D	D	D									
31	2001430100031	AKASH PATHAK	D							D	D	D									
32	2001430100032	AKSHAT AGARWAL	D							D	D	D									
33	2001430100033	AKSHIT SEHWAG	D							D	D	D									
34	2001430100034	AMANKANT PATHAK	P	94.4%	71.4%	100.0%															
35	2001430100035	AMAN KUMAR	P	100.0%	100.0%	100.0%															
36	2001430100037	AMAN KUMAR SHUKLA	D							D	D	D									
37	2001430100038	AMAN UPADHYAY	D							D	D	D									
38	2001430100039	AMARDEEP KUMAR	A							A	A	A			Y	Y	Y				
39	2001430100040	AMARTYA RAI	D							D	D	D									
40	2001430100041	ANAGH SHARMA	P	50.0%	57.1%	100.0%				W	W	W			Y	Y	Y				
41	2001430100042	ANANYA GUPTA	P	94.4%	100.0%	100.0%															
42	2001430100043	ANKIT YADAV	P	69.4%	33.3%	100.0%					W	W				Y	Y				
43	2001430100044	ANKITA SINGH	P	88.9%	100.0%	100.0%															
44	2001430100045	ANKUR YADAV	D							D	D	D									
45	2001430100046	ANMOL MISHRA	P	97.2%	83.3%	100.0%															
46	2001430100047	ANSH SHARMA	D							D	D	D									
47	2001430100048	ANSHIKA SAINI	P	87.5%	67.6%	100.0%															
48	2001430100049	ANSHU SHARMA	P	100.0%	70.6%	100.0%															
49	2001430100050	ANUBHAV KUMAR	P	100.0%	76.5%	100.0%															
50	2001430100051	ANUBHAV KUMAR SRIVASTAVA	D							D	D	D									
51	2001430100052	ANUBHAV SINGH CHAHAR	D							D	D	D									
52	2001430100053	ANUBHAV VARSHNEY	D							D	D	D									
53	2001430100054	ANUPRIYA YADAV	P	100.0%	100.0%	100.0%															
54	2001430100055	ANURAG SRIVASTAVA	P	100.0%	100.0%	100.0%															
55	2001430100056	APARANA SHARMA	P	87.0%	100.0%	100.0%															
56	2001430100057	ARJUN JAKHAR	P	100.0%	92.9%	100.0%															
57	2001430100058	ARPITA SINGH	P	97.2%	50.0%						W	W				Y	Y				
58	2001430100059	ARUN KUMAR	D							D	D	D									

59	2001430100060	ARYAN SINGH	D							D	D	D								
60	2001430100061	ARYANT AGRAHARI	D							D	D	D								
61	2101430109008	SHIKHAR AGRAHARI (LE)	P	93.8%	50.0%	100.0%					W	W				Y	Y			
62	2101430109010	TANU (LE)	P	50.0%	65.0%	100.0%				W					Y					
63	2101430109007	PRINCE BHARDWAJ (LE)	D							D	D	D								
64	2101430109003	ANSHU KUMAR VERMA (LE)	P	85.7%	44.1%	100.0%					W	W				Y	Y			
65	2101430109005	ANUJ KUMAR SINGH (LE)	D							D	D									
0	0	0	0																	

IMS Engineering college

DEPARTMENT: COMPUTER SCIENCE & ENGINEERING

COMBINED SHEET OF CO ATTAINMENT THROUGH SESSIONAL + PUT EXAM

Sub.Name	Operating System
Sub. Code	KCS 401
Section	CSE 1
Faculty Name	Ritika Dhyani

Session: 2021-22

S.No.	RollNo	Student Name	CO1	CO2	CO3	CO4	CO5
1	2001430100001	AADHYA GUPTA	100.00%	92.86%		#DIV/0!	
2	2001430100002	AASTHA AGARWAL			95.00%	93.65%	70.59%
3	2001430100003	AASTHA TIWARI			91.67%	95.83%	100.00%
4	2001430100004	AAYUSHI CHAUHAN	93.75%	82.35%		91.30%	100.00%
5	2001430100005	ABHI JAISWAL			83.33%	91.67%	50.00%
6	2001430100006	ABHINAV BALIYAN			69.57%	73.12%	70.00%
7	2001430100007	ABHINAV CHAUHAN	80.56%	100.00%	98.28%	99.14%	71.43%
8	2001430100008	ABHINAV KUMAR			63.64%	81.82%	
9	2001430100009	ABHINAV SAXENA	69.44%	50.00%	64.71%	82.35%	65.63%
10	2001430100010	ABHINAY PATEL			85.71%	79.22%	79.17%
11	2001430100011	ABHISHEK	83.33%	72.73%	92.86%	92.86%	
12	2001430100012	ABHISHEK	92.86%	50.00%	92.86%	96.43%	100.00%
13	2001430100013	ABHISHEK CHATRUVEDI	91.67%	100.00%	93.33%	93.33%	
14	2001430100014	ABHISHEK KUMAR YADAV	86.11%	85.71%		#DIV/0!	
15	2001430100015	ABHISHEK KUMAR SINGH	73.91%	100.00%		44.44%	100.00%
16	2001430100016	ABHISHEK PARAS			89.13%	87.42%	77.27%
17	2001430100017	ABHISHEK SINGH	100.00%	100.00%		92.31%	83.33%
18	2001430100018	ADITYA KUMAR			77.59%	81.65%	63.64%
19	2001430100019	ADITYA KUMAR	68.75%	100.00%		88.46%	91.67%
20	2001430100020	ADITYA KUMAR YADAV			82.61%	76.72%	45.83%
21	2001430100021	ADITYA MAHESHWARI	94.12%	100.00%		92.31%	79.17%
24	2001430100022	ADITYA PRATAP MALL	72.73%	100.00%	93.48%	96.74%	81.25%
22	2001430100023	ADITYA PRATAP SINGH			78.85%	89.42%	77.27%
23	2001430100024	ADITYA RAJPOOT	100.00%	68.75%	90.00%	90.00%	
25	2001430100025	ADITYA SINGH	93.75%	73.53%		95.65%	100.00%
26	2001430100026	ADITYA SINGH				100.00%	100.00%
27	2001430100027	ADITYA VERMA	97.06%	85.71%		100.00%	100.00%
28	2001430100028	AJAY	94.44%	100.00%		100.00%	60.00%
29	2001430100029	AKASH GUPTA	71.43%	81.82%	85.42%	85.42%	
30	2001430100030	AKASH KUMAR KUSHWAHA				80.00%	20.00%
31	2001430100031	AKASH PATHAK				73.08%	87.50%
32	2001430100032	AKSHAT AGARWAL			89.29%	85.03%	73.53%
33	2001430100033	AKSHIT SEHWAG				0.00%	0.00%
34	2001430100034	AMANKANT PATHAK	94.44%	71.43%		96.15%	100.00%
35	2001430100035	AMAN KUMAR	100.00%	100.00%	89.66%	94.83%	82.35%
36	2001430100037	AMAN KUMAR SHUKLA			86.21%	93.10%	91.18%
37	2001430100038	AMAN UPADHYAY				86.36%	58.82%
38	2001430100039	AMARDEEP KUMAR				92.31%	45.83%
39	2001430100040	AMARTYA RAI			85.71%	89.29%	80.00%

40	2001430100041	ANAGH SHARMA	50.00%	57.14%	83.33%	82.58%	100.00%
41	2001430100042	ANANYA GUPTA	94.44%	100.00%	80.00%	78.04%	64.29%
42	2001430100043	ANKIT YADAV	69.44%	33.33%		100.00%	100.00%
43	2001430100044	ANKITA SINGH	88.89%	100.00%		81.82%	80.00%
44	2001430100045	ANKUR YADAV			25.00%	58.33%	100.00%
45	2001430100046	ANMOL MISHRA	97.22%	83.33%		88.46%	84.38%
46	2001430100047	ANSH SHARMA			84.62%	75.64%	59.38%
47	2001430100048	ANSHIKA SAINI	87.50%	67.65%	79.55%	89.77%	92.86%
48	2001430100049	ANSHU SHARMA	100.00%	70.59%	81.03%	81.03%	
49	2001430100050	ANUBHAV KUMAR	100.00%	76.47%	76.92%	76.92%	
50	2001430100051	ANUBHAV KUMAR SRIVASTAVA				50.00%	53.33%
51	2001430100052	ANUBHAV SINGH CHAHAR				91.67%	100.00%
52	2001430100053	ANUBHAV VARSHNEY			93.33%	96.67%	100.00%
53	2001430100054	ANUPRIYA YADAV	100.00%	100.00%	81.03%	90.52%	54.17%
54	2001430100055	ANURAG SRIVASTAVA	100.00%	100.00%	98.33%	87.63%	82.35%
55	2001430100056	APARANA SHARMA	86.96%	100.00%		96.15%	87.50%
56	2001430100057	ARJUN JAKHAR	100.00%	92.86%	88.33%	94.17%	75.00%
57	2001430100058	ARPITA SINGH	97.22%	50.00%		79.17%	66.67%
58	2001430100059	ARUN KUMAR			20.83%	20.83%	33.33%
59	2001430100060	ARYAN SINGH			65.22%	82.61%	100.00%
60	2001430100061	ARYANT AGRAHARI			52.17%	56.09%	43.33%
61	2101430109008	SHIKHAR AGRAHARI (LE)	93.75%	50.00%	95.45%	92.05%	50.00%
62	2101430109010	TANU (LE)	50.00%	65.00%		95.83%	82.35%
63	2101430109007	PRINCE BHARDWAJ (LE)			100.00%	90.38%	61.76%
64	2101430109003	ANSHU KUMAR VERMA (LE)	85.71%	44.12%	87.50%	87.50%	
65	2101430109005	ANJJ KUMAR SINGH (LE)			68.97%	79.48%	70.00%

No. of Students having more than 60% marks	34	29	37	57	43
% of students having more than 60% marks	94.44	80.56	92.50	90.48	78.18
CO Attainment Level	3	3	3	3	2

Attainment Levels	X	If X% students achieve more than target marks
1	60	if 60% students achieve more than target.
2	70	if 70% students achieve more than target.
3	80	if 80% students achieve more than target.

41	2001430100042	ANANYA GUPTA	20	20	20	20	20
42	2001430100043	ANKIT YADAV	20	20	20	20	20
43	2001430100044	ANKITA SINGH	20	20	20	20	20
44	2001430100045	ANKUR YADAV	20	20	20	20	20
45	2001430100046	ANMOL MISHRA	20	20	20	20	20
46	2001430100047	ANSH SHARMA	20	20	20	20	20
47	2001430100048	ANSHIKA SAINI	20	20	20	20	20
48	2001430100049	ANSHU SHARMA	20	20	20	20	20
49	2001430100050	ANUBHAV KUMAR	20	20	20	20	20
50	2001430100051	ANUBHAV KUMAR SRIVASTAVA	20	20	20	20	20
51	2001430100052	ANUBHAV SINGH CHAHAR	20	20	20	20	20
52	2001430100053	ANUBHAV VARSHNEY	20	20	20	20	20
53	2001430100054	ANUPRIYA YADAV	20	20	20	20	20
54	2001430100055	ANURAG SRIVASTAVA	20	20	20	20	20
55	2001430100056	APARANA SHARMA	20	20	20	20	20
56	2001430100057	ARJUN JAKHAR	20	20	20	20	20
57	2001430100058	ARPITA SINGH	20	20	20	20	20
58	2001430100059	ARUN KUMAR	20	20	20	20	20
59	2001430100060	ARYAN SINGH	20	20	20	20	20
60	2001430100061	ARYANT AGRAHARI	20	20	20	20	20
61	2101430109008	SHIKHAR AGRAHARI (LE)	20	20	20	20	20
62	2101430109010	TANU (LE)	20	20	20	20	20
63	2101430109007	PRINCE BHARDWAJ (LE)	20	20	20	20	20
64	2101430109003	ANSHU KUMAR VERMA (LE)	20	20	20	20	20
65	2101430109005	ANUJ KUMAR SINGH (LE)	20	20	20	20	20

Target Marks for Assignments	16				
No. of students scored more than target marks	64	63	65	65	64
% of students scored more than target marks	98.46	96.92	100.00	100.00	98.46
Attainment Level	3	3	3	3	3

Attainment Levels	X	If X% students achieve more than target marks
1	60	if 60% students achieve more than target.
2	70	if 70% students achieve more than target.
3	80	if 80% students achieve more than target.

IMS Engineering college

DEPARTMENT: COMPUTER SCIENCE & ENGINEERING

FINAL CO ATTAINMENT SHEET			
Sub.Name	Operating System	Session:	2021-22
Sub. Code	KCS 401		
Section	CSE 1		
Faculty Name	Ritika Dhyani		

FINAL CO ATTAINMENT : 0.7*UNIVERSITY EXAM + 0.2*CIA + 0.1*ASSIGNMENT				
	UNIVERSITY EXAM	SESSIONAL	ASSIGNMENT	ATTAINMENT LEVEL
CO1	0	3	3	0.9
CO2	0	3	3	0.9
CO3	0	3	3	0.9
CO4	0	3	3	0.9
CO5	0	2	3	0.7
			Average =	0.86

IMS Engineering college

DEPARTMENT: COMPUTER SCIENCE & ENGINEERING

FINAL CO ATTAINMENT SHEET			
Sub.Name	Operating System	Session:	2021-22
Sub. Code	KCS 401		
Section	CSE 1		
Faculty Name	Ritika Dhyani		

I. Course Outcome Attainment:

	CO1	CO2	CO3	CO4	CO5
SESSIONAL AVERAGE (20%)	3	3	3	3	2
ASSIGNMENT(10%)	3	3	3	3	3
EXTERNAL RESULT (70%)	0	0	0	0	0
	0.90	0.90	0.90	0.90	0.70

II. CO-PO Mapping: (Please enter 1, 2 or 3)

NBA CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
C315.1	3	3	2	2								2	3	3	2.571429
C315.2	3	3	2	2	2							2	3	3	2.5
C315.3	3	3	2	2	1							2	3	3	2.375
C315.4	2	2	1	1								1	3	3	1.857143
C315.5	3	3	3	2	2	1					2	2	3	3	2.4
C315	2.8	2.8	2	1.8	1.6666667	1	-	-	-	-	2	1.8	3	3	2.186667

H=3 M=2 L=1

III. PO Attainment:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Attainment level	0.86	0.86	0.84	0.86	0.82	0.70	-	-	-	-	0.70	0.86	0.86	0.86	0.82

Signature of Faculty (with Date)