

AISSMS INSTITUTE OF INFORMATION TECHNOLOGY (IDIT)



ADDING VALUE TO ENGINEERING

An Autonomous Institute Affiliated to Savitribai Phule Pune University Approved by AICTE, New Delhi and Recognised by Govt. of Maharashtra Accredited by NAAC with "A+" Grade | NBA - 5 UG Programmes

ACADEMIC COURSE STRUCTURE

AND

DETAILED SYLLABUS OF

SECOND YEAR

INFORMATION TECHNOLOGY

B.TECH 4 YEAR UG COURSE (Applicable for the batches admitted from 2022-2023)

AISSMS INSTITUTE OF INFORMATION TECHNOLOGY Kennedy Road, Near RTO, Pune – 411 001, Maharashtra State, India Email: principal@aissmsioit.org, Website: CHAIRMAN https://www.aissmsioit.org BOS-INFORMATION TECHNOLOGY

Institute Vision & Mission

Vision

To be recognized amongst top 10 private engineering colleges in Maharashtra by the year 2026 by rendering value added education through academic excellence, research, entrepreneurial attitude, and global exposure.

Mission

- To enable placement of 150 plus students in the 7 lacs plus category & ensure 100% placement of all final year students.
- To connect with 10 plus international universities, professional bodies, and organizations to provide global exposure students.
- To create conducive environment for career growth. prosperity, and happiness of 100% staff.
- To be amongst top 5 private colleges in Pune in terms of admission cut off.

Quality Policy

We commit ourselves to provide quality education & enhance our students quality through continuous improvement in our teaching and learning processes.

Department Vision & Mission

Vision

To be a leader in preparing technically competent and skilful IT Graduates to address the needs of industry and society.

Mission

- To prepare students for employment/entrepreneurship/higher studies through curricular, extracurricular and extension activities.
- To promote research and professional activities through industry involvement and professional bodies
- To instil professional ethics and lifelong learning skills with concern for the society.

Program Educational Objectives (PEOs)

Graduates will

- Excel in diverse career paths with core professional skills.
- Engage in multi domain research/professional activities.
- Cater to the needs of society with IT solutions/applications.

CHAIRMAN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PULLE 4.

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Program Outcomes(POs)

- 1. Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. [Engineering knowledge]
- 2. Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. [Problem analysis]
- 3. Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. [Design/development of solutions]
- 4. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. [Conduct investigations of complex problems]
- 5. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations. [Modern tool usage]
- Apply reasoning informed by the contextual knowledge to assess societal, health, 6. safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. [The engineer and society]
- 7. Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. [Environment and sustainability]
- 8. Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. [Ethics]
- 9. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. [Individual and team work]
- 10. Communicate effectively on complex engineering, activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation. make effective presentations, and give and receive clear instructions. [Communication]
- 11. Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. [Project management and finance]
- 12. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. [Life-long learning]

Program Specific Outcomes (PSOs)

Graduates will be able to

- 1. Use database, networking and programming technologies AISSMS ЮІТ (AUTONOMOUS) problems.
- 2. Develop applications in the field of computing, networking, security and analytics.1.

A. Definition of Credit:

1 Hr. Lecture (L) per week	1 credit	19
1 Hr. Tutorial (T) per week	1 credit	
1 Hr. Practical (P) per week	0.5 credits	
2 Hours Practical (Lab)/week	1 credit	2

B. Range of credits -

A range of credits from 160 to 176 for a student to be eligible to get Undergraduate degree in Engineering. A student will be eligible to get Undergraduate degree with Honors or additional Minor Engineering if he/she completes an additional 20 credits.

C. Credit for Undergraduate Degree in Information Technology

Sr. No.	Year	Semester	Credits
1	Einst Wasn	I	19
2	First Year	II	21
3	Second Veen	III	22
4	Second rear	.V	24
5	Third Voor	V	23
6	Tillu Teal	VI and	25
7	Einal Vaar	VII	12
8	r mar rear	VIII	14
	Total Credits		160

D. Structure of Undergraduate Engineering program

Sr. no.	Domains	Code	Credits	NEP Suggested
1	Basic Science courses	BSC	16	14-18
2	Engineering Science courses	ESC	16	12-16
3	Programme Core Courses	PCC	58	44-56
4	Programme Elective courses	PEC	18	20
5	Open Elective other than particular Programme	OEC	06	08
6	Vocational and Skill Enhancement Course	VSE	08	08
7	Humanities Social Science and Management	HSM	12	14
8	Experiential Learning Courses	ELC	22	22
9	Liberal Learning Courses	LLC	04	04
	Total		160	160-176

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E. Semester wise credit details for Undergraduate Lngineering program

							(Cred	its		
Sr. no.	Code				Sem	ester	s		10 gr	Tadal	NED auggosted
		Ι	П	III	IV	V	VI	VII	VIII	Total	NEP suggesteu
1	BSC	8	8	-		-	-	- A.	-	16	14-18
2	ESC	10	6	-		-		-	-	16	16-12
3	PCC	-	-	16	16	12	12	2	-	58	44-56
4	PEC	-	-	- - -	-	5	5	8	-	18	20
5	OEC	-	-	3	-	3	-	-		06	08
6	VSE	-	2	-	3	-	3	-		08	08
7	HSM	-	-	3	3	3	3		-	12	14
8	ELC	3	3	-	-	-	-	2	14	22	22
9	LLC	-	-		2	-	2	-	-	04	04
Tota	l Credits	21	19	22	24	23	25	12	14	160	160-176
Exa	nm Total	650	650	725	725	725	725	600	600	5400	-
Total Workin	g Hours per Week	27	26	26	26	26	29	16	28	204	-

F. Honors Degree : Cyber Security

Sr.	Course Code	Courses Name	Se m.	H	ours pe week	er	Cr edi	I say	Exami	nation S	cheme		Tota l
10.	Cour	Tume		L	Т	P	t	ISE	ESE	TW	PR	OR	
1	ITHDT511	Information Security and Audit	v	3	-		3	40#	60*		-	-	100
		Monitoring	1.1					and the second s					
2	ITHDT512	Information Security and Audit Monitoring	V	-	-	4	2			25		25	50
3	ITHDT613	Lab Database Security	VI	3	-	-	3	40#	60*		-		100
4	ITHDT614	Database Security Lab	VI	-	-	2	1	-	_97 -27 - 41		25	-	. 25
5	ITHDT707	Cloud Security	VII	3	-	-	3	40#	60*		-	-	100
6	ITHDT708	Cloud Security Lab	VII	-	-	2	1	* 4 1	-	-	25	-	25
7	ITHDT803	Cyber Crime Investigation and Digital Forensics	VIII	3	-		3	40#	60*				100
8	ITHDT804	Cyber Crime Investigation	VIII	-	-	4	2		-	25	25	-	50
		and Digital Forensics									CH		N
		Lab	<u> </u>	12		16	18	160	240	OS-WF	ORHA'	1025TE	CHEOL
		<u>1 0121</u>		14	1	10	10	100	1 210	AIŠŠM	S IOIT PU	AUTON	IOMOUS

1			B.7	Tech (H	Ionor	s with	Resea	rch)	12	3 A 1			
Sr. No.	Course Code	Courses Name	Se m.	H	ours p week	er	Cr edi t		Examiı	nation S	Scheme	8	Tota I
				L	T	P		ISE	ESE	TW	PR	OR	
1	ITHDR708	Research Methodology	VII	3	-	-	3	40#	60*	-	-		100
- 2	ITHDR709	Mathematica I Modeling	VII	3	-	-	3	40#	60*	-	-	، (100
3	ITHDR710	Dissertation Phase I	VII	-	-	4	2	-	-	25		25	50
4	ITHDR804	Research Publication and Ethics	VIII	2	-	-	2	20#	30#		-	-	50
5	ITHDR805	Paper Publication	VIII	-	-	4	2	-		50	-	_	50
6	ITHDR806	Dissertation Phase II	VIII	-	-	12	6	-	-	100	-	50	150
	1	Fotal		8		20	18	100	150	175	12	75	500

H. Major Courses : Information Technology

Sr. No.	Course Code	Courses Name	Sem.		Hours per wee	k	Cre dit		Examin	ation S	cheme		Total
				L	Τ	P		ISE	ESE	TW	PR	OR	
1	ITPCC302	Discrete Mathematics	III	3	-	-	3	40#	60*	-	-	-	100
2	ITPCC303	Digital Electronics & Computer Organization	III	3	-	-	3	40#	60*	-	-		100
3	ITPCC304	Data Structure and Algorithms	Ш	3	-	-	3	40#	60**	-	-	-	100
4	ITPCC305	Data Base Manageme nt System	III	3	-	-	3	40#	60*	-	-		100
6	ITPCC307	Digital Electronics & Computer Organization Lab	ш	-		2	1			25	25	-	50
7	ITPCC308	Data Structure and Algorithms Lab	III	-		4	2	-		25		25	50
8	ITPCC309	Data Base Management System Lab	III		-	2	1	-	-	25	25	-	50
9	ITPCC402	Probability and Statistics	IV	3	-	-	3	40#	60*	-	-	-	100
10	ITPCC403	Object Oriented Programming	IV	3	-	-	3	40#	60**	14 H . 14 D. 1	-	-	100
11	ITPCC404	Processor Architecture and Interfacing	IV	3	-	-	3	40#	60*	-	-	-	100
12	ITPCC405	Computer Graphics and	IV	3	-	-	3	40#	60*	BO	S-IÑFO	RMATIC	ON TECHN

1		Automation						1						
4	ITPCC407	Animation Object Oriented	IV			1	2			25		25	50	
14		Programming	ĨV		- 	4	2			23				
15	ITPCC408	Processor	IV	-	-	2	1	- 1	-	25	25		50	
		Architecture	n stat	2 B		1 2 2								
	na dia filipi Ny INSEE dia mampina Ny INSEE dia mampina ma	and Interfacing		5										
16	ITPCC409	Computer ·	IV			2	1		_	25	25	_	50	
10	111 CC+07	Graphics and	1.	1		2		St. Mark		20	20			
1	ITDOOSOO	Animation Lab		2		- 10 - 12 		104	(0*			N	100	
17	TTPCC502	Data Communication and Computer Network	V	3	8 - . 1 8 - 1	-	3	40#	60*			-	100	
18	ITPCC503	Theory of Computation	V	3			3	40#	60*	-	-	-	100	
10	ITPCC504	Software	V	3	_		3	40#	60*		-		100	
19	111 00304	Engineering & Project Management		5			,	10/	00					
20	ITPEC505	Elective-I	V	3	-		3	40#	60**	-	-		100	
21	ITPCC507	Data	V	²	-	2	1			25	j ≓'×	25	50	
		Communication and Computer Network Lab												
22	ITPCC508	Software	V	-	-	2	1	- 1	. -	25	25	-	50	
		Engineering &	r A								9 8			
		Project Management Lab		е 5 2		507 - 1 56 1		n nama						
23	ITPEC509	Software Lab-I	V		-	4	2	-	<u>_</u>	25	- 1	25	50	
24	ITPCC602	Artificial	VI	3	-	-	3	40#	60*	-	-	2 <u>1</u> 2	100	
~ '		Intelligence and Machine Learning												
25	ITPCC603	Operating System	VI	3		-	3	40#	60*	-	-	₽	100	
26	ITPCC604	Cloud Computing	VI	3	-	-	3	40#	60*	-	-	-	100	
27	ITPEC605	Elective-II	VI	3			3	40#	60**	. r hei	- <u>-</u> -	- 2,3	100	
29	ITPCC607	Operating System Lab	VI	-	-	4	2		-	25	25		50	
30	ITPCC608	Cloud Computing Lab	VI	-	-	2	1		-	25	25		50	
21	ITPECKOO	Software Lab_II	VI			1			_	25		25	50	
31	TTEC009	Soltware Lau-II	V I		-	1	2					2.5		
32	ITPCC701	Distributed Computing	VII	2	-	-	2	40#	60*	-	-		100	
33	ITPEC702	Elective - III	VII	3	-	· -	3	40#	60*	-	-	-	100	
34	ITPEC703	Elective - IV	VII	3	-	_	3	40#	60*	-	(÷ 1	-	100	
35	ITPEC704	Software Lab-	VII	-	-	2	1	-	-	25	50	_	75	
26	ITDEC705	III Software Lab	VII		8									2,
36	IIPEC/05	IV	VII	- 1	-	2	1	-R _{ei}	-	25	50	-	75	
37	ITELC706	Project Stage I	VII	-	-	4	2	-	-	100	-	50	150	
38	ITELC801	Internship/ 2MOOCs/											N	1
		Entrepreneurshi	VIII			24	10			200		100	300	
		p/	VIII		-	24	12	_				CHA	RMAN	
		Research						an and the		BC	S-INF	ORMAT	ION TEC	HN
	2 10 - 21	ID									· · · · · · · · · · · · · · · · · · ·	strends in the strends where the	And the second of the second sec	· · · · · · · · · · · · · · · · · · ·

		University Certification Course											
39	ITELC802	Project stage II	VIII	-	-	4	2		-	200		100	300
			Total	56	-	70	92	760	1140	200	275	375	3500

I. Minor Degree: Software Development Technologies

Sr. No	Course Code	Courses Name	Sem.	Н	lours p week	er	Credit	Exan	nination	Scheme
110.	Cour			L	Т	P		ESE	TW	Total
1	ITMNR301	Data Structure and Algorithms	III	3	-	-	3	75	-	75
2	ITMNR302	Data Structure and Algorithms Lab	III		-	2	1		25	25
3	ITMNR401	Object Oriented Programming	IV	3	-	-	3	75		75
4	ITMNR402	Object Oriented Programming Lab	IV	-	-	2	1	-	25	25
5	ITMNR501	Software Engineering & Project Management	V	3	-	-	3	75	- 	75
6	ITMNR502	Software Engineering & Project Management Lab	V		-	2	1		25	25
7	ITMNR601	Operating System	VI	3	-	-	3	75		75
8	ITMNR602	Operating System Lab	VI		-	2	1	-	25	25
			Total	12		8	16	300	100	400

J. Open Elective Courses

Sr.	Course	Courses Name	Sem.	Hou	rs per v	week	Cr		Exami	nation S	Schem	e	Tot
No.	code			L	T	P	e dit	ISE	ESE	TW	PR	OR	al
1	ITOEC306	Human Computer Interaction [MOOCs]	III	3		-	3	40\$	60\$\$		- -	-	100
2	ITOEC506	Cryptography [MOOCs]	V	3	-	-	3	40\$	60\$\$	-	-		100
2 C			Total	6	1	-	6	80	120	-	-	- - 55	200

K. Vocational and Skill Enhancement Courses

Sr.	Course	Courses Name	Sem.	Hou	rs per	week	Cre		Exami	nation S	Scheme	e .	Total
No.	Code			L	Τ	P	dit	ISE	ESE	TW	PR	OR	
1	ITVSC406	Web Development	IV	1	-	4	3	-	-	50	50	1	100
2	ITVSC606	Software Testing	VI	1		4	3	-	-	50	50		100
			Total	2	-	8	6	-	-	100	100	-0	200

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Sr.	Course	Courses Name	Sem.	Hour	s per v	veek	Cre		Exami	nation S	Schem	e	Tot
No.	code			L	T	P	dit	ISE	ESE	TW	PR	OR	al
1	ITHSM301	Democracy, Election and Governance	III	2	-	-	2	-		25	-	25	50
2	ITHSM310	Audit course Vedic Mathematics	III	1	-		1	-	-	25	-	-	25
3	ITHSM401	Management Information System	IV	1	1		2	-		25	I Par	25	50
4	ITHSM410	Audit course- Sustainable Development goals	IV	1		-	1	-		25		-	25
5	ITHSM501	Intellectual Property Rights	V	2	-		2	-	-	25		25	50
6	ITHSM510	Audit course- Foreign Language Level-I (German/Japanese	V	1						25			25
7	ITHSM601	Seminar and Technical Paper Writing	VI	1		2	2	-	-	50	-		50
8	ITHSM610	Audit course- Foreign Language Level-II (German/Japanese	VI	1	-	-	1			25		-	25
		<u>v</u>	Total	10	1	2	12	-	-	225	-	75	300

M. Experiential Learning Courses

Sr. No.	Course Code	Courses Name	Se m.	He	ours pe week	r	Cre di:	Examination Scheme			e	Total	
		· · · · · · · · · · · · · · · · · · ·		L	Τ	Р	1	ISE	ESE	TW	PR	OR	
1	ITELC706	Project Stage I	VII	-	-	4	2	-	· _	100		50	150
2	ITELC801	Internship/ 2MOOCs/ Entrepreneurship/ Research Project/ Foreign University Certification Course	VIII			24	12	-		200 @		100	300
3	ITELC802	Project Stage II	VIII	· . · -	-	4	2	1990 <u>-</u> 1997	-	200	-	100	300
			Total		-	32	16	-	-	500	-	250	750

N. Liberal Learning Courses

Sr.	Course	Courses Name Se	Sem.	Hou	rs per v	week	Cre		Examin	nation	Schem	e	Total
No.	Code		1	L	Т	P	dit	ISE	ESE	TW	PR	OR	
1	ITLLC411	Lifelong Learning Skills -I	IV	-	- H	-	1	-	-	BO	S-INFO	CHAIR RMATIO	MAN N TECHNOLO(
2	ITLLC412	Lifelong Learning Skills - II	IV	-	-	-	1	-1	-	- /	AISSMS	IOIT- (AL PUNE	JTOROMOUS), -1.
3	ITLLC611	Lifelong	VI		-	-	1		-	-			a) ·

4	ITLLC612	Learning Skills - III Lifelong Learning Skills - IV	VI	-	-	-	1	-	-	-	-		@
			Total	-	-	-	4	1 - 1	-	-	-	-	-

Lifelong Learning Skills courses I, II, III, IV courses introduced in 4th and 6th sem. where all the students are required to acquire 2 credits in each semester, one each from **Extracurricular** Activities and Co-curricular Activities respectively which will have grades as below. Activity Certificate obtained during SY and TY B- Tech will be considered in 4th and 6th semester respectively.

A. Extracurricular Activities:

Sr. No.	Activity	Level	Achievement	Grade	Achievement	Grade
1.	Sports	Inter collegiate	Participation	Р	Prize winner	C
- 1		University	Participation	С	Prize winner	В
		Zonal	Participation	В	Prize winner	B+
		State	Participation	B+	Prize winner	Α
	in the second	National	Participation	Α	Prize winner	A+
		International	Participation	A+	Prize winner	0
2.	NSS/NCC	Camp	Attended	В		
		Camp + 5 Activities	Attended	B+		
		Camp + 10 Activities	Attended	Α		
		Camp + 15 Activities	Attended	A+		
		Camp + 20 Activities	Attended	0		-
3.	Cultural	Inter collegiate	Participation	В	Prize winner	B+
		State	Participation	B+	Prize winner	A
		National	Participation	A	Prize winner	A+
		International	Participation	A+	Prize winner	0
4.	Community	Certified by	1 Activity	В		
	Engagement	NGO/Authorities with	2 Activities	B+		
		photograph	3 Activities	Α		+
		photograph	4 Activities	A+		
			5 Activities	0		

B. Co-curricular Activities:

Sr. No	Activity	Level	Achievement	Grade	Achievement	Grade
1.	Conference	National	Participation	В	Prize winner	A
		International	Participation	B+	Prize winner	A+
		International (Scopus indexing)	Participation	A+	Prize winner	0
2.	Journal Publication	Non-refereed but recognized and reputed journal/ periodical, having ISSN number.	Publication	В		
		Refereed Journal - As listed by UGC	Publication	A		Q
		Refereed Journals- As listed by Scopus	Publication	A+		Ø
		Refereed Journals - As listed by SCI/ SCIE	Publication	0	INFO	CHAIRMAN PMATION TE
3.	Hackathon		Participation	A+	Prize winner	OT LAUTON

4.	Professional	National	Membership	P	3 rd Prize	Α
	Body		Activities/participation	B	2 nd Prize	A+
		1	5 participations	B +	1 st Prize	0
5.	Internship	1 week	Completed	С		
		2 week	Completed	В		1.00
		3 week	Completed	B+	Sponsored Project	A+
		4 week	Completed	A	Job through internship	0
6.	Entrepreneurshi	Awareness camp	Attended	A	Product Developed	A+
	P				Own Startup	0
7	Project/Technic	Inter collegiate	Participation	Р	Prize winner	C
· •	al events	University	Participation	C	Prize winner	B
		Zonal	Participation	В	Prize winner	B +
		State	Participation	B+	Prize winner	A
		National	Participation	A	Prize winner	A+
		International	Participation	A+	Prize winner	0

Any activity other than listed above but having equal weightage should be considered for getting additional credit.

O. Exit Course Structure

Sr. No.	Code	Courses Name	E	lours j week	per	Cr edi t	Examination Scheme					Total
			L	Т	P		ISE	ESE	TW	PR	OR	
1. 21	le la	Exit course after F.Y :	One	year	UG C	Certifica	te in T	echnolo	gy			
1	ITEXC 101	Data Base Management System Lab	-	1997) 1997 - 1997 1997 - 1997	4	2	-	-	25	25	-	50
	ITEXC 102	Software Engineering & Project Management Lab	· · - ·	-	4	2			25	25	-	50
	ITEXC 103	Internship	-	-	8	4		-	100	2 ** - *	~	100
		Total	-	-	16	8	-	- 1 1	150	50	-	200
		Two years	UG	diplo	ma in	Techno	logy		15.4 			
2	ITEXC 201	Data Communication and Computer Network Lab	-	-	4	2	-		25		25	50
	ITEXC 202	Software Engineering & Project Management Lab	-	-	4	2			25	25	-	50
	ITEXC 203	Internship	-		8	4	-	-	100	-	21 - 13 12 2 2 1	100
		Total	-	-	16	8	-	-	150	25	25	200
1		Three years Bachelors Degr	ree ir	Noca	ation(P.Voc.)o	or B.Sc	. in Tec	hnolog	У		i di pri
3	ITEXC 301	Software Lab III			4	2	-	-	25	25	-	50
	ITEXC 302	Software Lab IV	-	- 1	4	2	-	-	25	25		50
	ITEXC 303	Internship	-	-	8	4		-	100	-	⁻	100
·		Total	-	-	16	8			150	50		200
	303	Total	-	-	16	8	-	- B0	150 150	50 CHAI	- RMAN ON TE	

- 1. J.		Informa	ation Tech	nology - Se	cond Year	(Semeste	r –III)					
Sr	Code	Course Title	Ho	ours per wo	eek	Credito		Exa	ninatio	on sch	eme	
No.	Code	Course Thie	Lecture	Tutorial	Practical	Creatis	ISE	ESE	TW	PR	OR	Total
1	ITHSM301	Democracy, Election and Governance	2		-	2	-	-	25	-	25	50
2	ITPCC302	Discrete Mathematics	3	-	-	3	40#	60*	-	-	8 1 ⁷ -10	100
3	ITPCC303	Digital Electronics & Computer Organization	3	-		3	40#	60*	-	-	-	100
4	ITPCC304	Data Structure and Algorithms	3			3	40#	60**	-	_		100
5	ITPCC305	Database Management System	3		_	3	40#	60*			-	100
6	ITOEC306	Human Computer Interaction [MOOCs]	3			3	40\$	60\$\$	-	-	-	100
7	ITPCC307	Digital Electronics & Computer Organization Lab			2	3		-	25	25		50
8	ITPCC308	Data Structure and Algorithms Lab	-	-	4	2	-	2 - 2 2 - 2 2 - 2	25		25	50
9	ITPCC309	Database Management System Lab	-	-	2	1	-	-	25	25		50
10	ITHSM310	Audit course - Vedic Mathematics	1	-	-	1		-	25	-	-	25
	Tot	al	18	00	08	22	200	300	125	50	50	725

^k End Semester Examination (ESE) based on subjective questions.

** Practical or Activity based Evaluation.

In Semester Evaluation(ISE) based on Presentation/Group Discussion/Laboratory Work/Course Project/Home Assignment/Comprehensive Viva Voce/Blog Writing/Case Study/Survey/Multiple-Choice Question (MCQ) examination/Subjective Examination

For MOOCs: Assignments marks will be converted on the scale of 40 marks.

\$\$ For MOOCs: Score of examination conducted by the respective authority of MOOC or Score of ESE Conducted by Institute will be converted on the scale of 60 GHARMAN BOS-INFORMATION TECHNOLOGY

MOOC: Design & Implementation of Human-Computer Inter Aless 12 weeks) NOMOUS

https://onlinecourses.nptel.ac.in/noc22 cs125/preview

AISSMS Institute of Information Technology, Pune

Sr.			Hours p	er week		Cred	Exam	ination s	schem	e		
No	Code	Course Title	Lectur e	Tutor ial	Practi cal	11.5	ISE	ESE	T W	PR	OR	Tot al
1	ITHSM401	Management Information System	1	1	-	2	-	-	25	- -	25	50
2	ITPCC402	Probability and Statistics	3	4	-	3	40#	60*	-	-	-	100
3	ITPCC403	Object Oriented Programming	3		-	3	40#	60**	-	-	-	100
4	ITPCC404	Processor Architecture and Interfacing	3			3	40#	60*	-	-	-	100
5	ITPCC405	Computer Graphics and Animation	3	-		3	40#	60*			-	100
6	ITVSE406	Web Development	1	-	4	3		-	•50	50		100
7	ITPCC407	Object Oriented Programming Lab			4	2			25	-	25	50
8	ITPCC408	Processor Architecture and Interfacing Lab			2	1	-	-	25	25		50
9	ITPCC409	Computer Graphics and Animation Lab	-	-	2	1	-	-	25	25	-	50
	ITLLC410	Audit course- Sustainable Development Goals	1		-	1	-		25	-		25
10	ITHSM411	Lifelong Learning Skills -I	-	-	-	1	-	-	-	-	-	@
11	ITLLC412	Lifelong Learning Skills -II		-	-	1	-	-	-	-	-	@

- * End Semester Examination (ESE) based on subjective questions.
- ** Practical or Activity based Evaluation.
- In Semester Evaluation(ISE) based on Presentation/Group Discussion/Laboratory/ Work/Course Project/Home Assignment/Comprehensive Viva Voce/Bloga Writing/Case Study/Survey/Multiple-Choice Question (MCQ) examination/Subjective Examination.
 Defen Sub based in a ULL if change Learning Still survey for and a MISSMS IOIT (AUTONCMOUS).
- ⓐ Refer Sub heading H Lifelong Learning Skill courses for grades.

AISSMS Institute of Information Technology, Pune

13

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Siece	Democracy, Election and Governance							
Course Code:	ITHSM301	Credit	2					
Contact Hours:	2 Hrs/week (L)	Type of Course:	Lecture					
Examination	Term-work	Oral						
Scheme	25 marks	25 marks						

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/	Marks
		" Internal	
1.	Term-work	Internal	25
2.	Oral	Internal	25

Course Objectives

To introduce the students meaning of democracy and the role of the governance. To help the understand the various approaches to the study of democracy and governance

Course Outcomes : Stuc

301.1 Know the meaning of democracy and the role of the governance in life.301.2 Understand the various approaches to the democracy and governance

Topics covered:

UNIT-I: DEMOCRACY-FOUNDATIONANDDIMENSIONS (5 hrs.)

- a. Constitution of India
- b. Evolution of Democracy-Different Models
- c. Dimensions of Democracy-Social, Economic, and Political

UNIT-II: DECENTRALIZATION (5 hrs.)

- a. Indian tradition of decentralization
 - b. History of panchayatRaj institution in the lost independence period
 - c. 73rdand74thamendments
 - d. Challenges of caste, gender, class, democracy and ethnicity

UNIT-III: GOVERNANCE (5 hrs.)

- a. Meaning and concepts
 - b. Government and governance
 - c. Inclusion and exclusion

Text books:

- 1. Banerjee-Dube, I. (2014). A history of modern India. Cambridge University Press.
- 2. Basu, D. D. (1982). Introduction to the Constitution of India. Prentice Hall of pintur.
- 3. Bhargava, R. (2008). Political theory: An introduction. Pearson Education India, TECHNOLOG
- 4. Bhargava, R., Vanaik, A. (2010) Understanding Contemporary India: Criticat MOUS, Perspective. New Delhi: Orient Blackswan.

- 5. Chandhoke., N., Proyadardhi.P, (ed) (2009), 'Contemporary India: Economy, Society, Politics', Pearson India Education Services Pvt. Ltd, ISBN 978-81- 317-1929-9.
- 6. Chandra, B. (1999). Essays on contemporary India. Har-Anand Publications.
- 7. Chaterjee, P. (1997). State and Politics in India.
- 8. Dasgupta. S., (ed) (2011), 'Political Sociology', Dorling Kindersley (India) Pvt. Ltd., Licensees of Pearson Education in south Asia. ISBN: 978-317-6027-7.
- 9. Deshpande, S. (2003). Contemporary India: A Sociological View, New Delhi: Viking Publication.
- 10. Guha, R. (2007). India After Gandhi: The History of the World's Largest. Democracy, HarperCollins Publishers, New York.
- 11. Guha, R. (2013). Gandhi before India. Penguin UK.
- 12. Jayal. N.G. (2001). Democracy in India.New Delhi: Oxford University Press.
- 13. Kohli, A. (1990). Democracy and discontent: India's growing crisis of governability. Cambridge University Press.
- 14. Kohli, A., Breman, J., & Hawthorn, G. P. (Eds.). (2001). The success of India's democracy (Vol. 6). Cambridge University Press.
- 15. Kothari, R. (1989). State against democracy: In search of humane governance. Apex Pr.
- 16. Kothari, R. (1970). Politics in India. New Delhi: Orient Blackswan.
- 17. Kothari, R. (1995). Caste in Indian politics. Orient Blackswan.
- 18. Sarkar, S. (2001). Indian democracy: the historical inheritance. the Success of India's Democracy, 23-46.

मराठी संदर्भ ग्रंथ:

- १. राही श्रुती गणेश., आवटे श्रीरंजन, (२०१९),*'आपलं आयकार्ड*', सुहास पळशीकर द युनिक अकॅडमी पब्लिकेशनप्रा.लि...
- २. व्होरा राजेंद्र., पळशीकर, सुहास.(२०१४). भारतीय लोकशाही अर्थ आणि व्यवहार. पुणे : डायमंड प्रकाशन.
- ३. सुमंत, यशवंत.(२०१८). *प्रा. यशवंत सुमंत यांची तीन भाषणे*. पुणे : युनिक अँकँडमी पब्लिकेशन्स प्रा.लि
- ४. भोळे. भा.ल. (२०१५). *भारतीय गणराज्याचे शासन आणि राजकारण*. नागपूर: पिंपळापुरे वक प्रकाशन
- ५. कसबे. रावसाहेब. (२०१०)डॉ. आंबेडकर आणि भारतीय राज्यघटना. पुणे: सुगावा प्रकाशन

Note: The assessment for the subject shall be based on presentation and report submission.

CHAIRN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTOHOMOUS), PUNE-

AISSMS Institute of Information Technology, Pune

Second Vear Information Technitopy (2022 Course) Discrete Mathematics			
Course Code:	ITPCC302	Credit	3
Contact Hours:	3 Hrs/week (L)	Type of Course:	Lecture
Examination Scheme	In-sem. Evaluation 40 Marks	End-sem. Examination 60 Marks	

Pre-requisites:

- Engineering Mathematics-I
- Engineering Mathematics-II

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	»External/ Internal	Marks	
1.	In-Sem. Evaluation	Internal	40	
2.	End Semester Examination	External	60	
Course ()bjectives			
1	To gain sound knowledge to formulate an	nd solve problems with sets	and Sequences.	
2	To solve counting problems by applying	elementary counting techni	iques to solve	
	problems of discrete probability.	n nool life mahlama		
3	To apply Graph and Tree terminologies I	and solve problems with re	elations and	
4	functions.	und solve procionic min r		
5	To describe basics of number theory and	its applications.		
6	To describe the various types' algebraic s	structures and its applicatio	ns.	
Course (Dutcomes: Students will be able to			
302.1	Use set theory to solve mathematical p	roblems.		
302.2	Apply the probability theory to solve combinatorial problems.			
302.3	Apply tree and graph theory to devise mathematical models.			
302.4	Apply relations and functions to provid	le solution to computationa	l problems.	
302.5	Use techniques of number theory and i	ts application.		
302.6	Explain algebraic structure.	and the second		
Topics of	overed:		A CONTRACTOR OF THE	
UNIT I:	SET THEORY (6 hrs.)	ant Charl Ann ant Fraund ant	Equivalent set	
Power se	t, Universal set, Subset, Cardinality of set	s, Cartesian Product, Prope	rties of Sets,	
Venn dla	gram, Set Operations, Vector Implementa	tions of Sets, Applications	of Set Theory.	
UNIT II Combine	COMBINATORICS AND DISCRET	tations Combinations INC.	OPHATION TECHNO	
Discrata	Probability: Probability Discrete Probability	vility Conditional Praises	SUCHAUTONOMO	
Thorner	Ambiantions of Combinatorias and Disa	rete Probability	PUNE-1.	
meorem	, Applications of Comonatorics and Disc	100 1100 a0111 (y.	นายระชาติ การกระบบการกระดู สามารถกระบบการกระบบการกระบบการกระบบการกระบบการกระบบการกระบบการกระบบการกระบบการกระบบ	

UNIT III: TREES AND GRAPH THEORY(6 hrs.)

Tree:- Introduction to Trees, Tree Terminology, Types of Trees, Minimum Spanning Tree, MST using Kruskal and Prims approach.

Graph: Introduction to Graphs, Graph Terminology, Types of Graphs, Representing graphs, Graph Isomorphism, Connectivity, Eulers and Hamilton paths, Planar Graph, Graph Coloring.

UNIT IV: RELATION AND FUNCTION (6 hrs.)

Relations: Binary Relations, Representation of Binary Relations, Properties of Relations, Operations on Relations, Composition of Relations, Closures of Relations, Equivalence Relations, partial order relation, total order

Function: Functions as relation, Injection, Surjection, Bijection, Inverse function, Composition of Functions, counting function, Pigeonhole Principle

UNIT V-INTRODUCTION TO NUMBER THEORY (6 hrs.)

Properties of Divisibility, Division Algorithm, Greatest Common Divisor, GCD and its Properties, Euclidean Algorithm, Extended Euclidean Algorithm, Prime Factorization Theorem, Modular Arithmetic, Congruence Relation, Chinese Remainder Theorem., Fermat's Little Theorem

UNIT VI-ALGEBRAIC STRUCTURES (6 hrs.)

Algebraic Structure, Groups, Semigroups, Monoids. Rings, and Fields.

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(*if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit):* GATE: All units

Text Books:

- 1. C. L. Liu and D. P. Mohapatra, "Elements of Discrete Mathematics", 4th Edition, McGraw-Hill.
- 2. Kenneth H. Rosen, "Discrete Mathematics and its Applications", & 7th edition, McGraw-Hill.

Reference Books:

- 1. Bernard Kolman, Robert C. Busby, Sharon Cutler Ross, "Discrete mathematical structures", 6th edition, Prentice Hall of India.
- 2. Edgar G. Goodaire, Michael M. Parmenter, "Discrete Mathematics with Graph Theory", 3rd Edition, Pearson Education.
- 3. Tremblay J. S., "Discrete mathematical structures with application", 3rdEdition, Tata McGraw Hill.

E- Books / E- Learning References:

- 1. https://discrete.openmathbooks.org/pdfs/dmoi3-tablet.pdf
- 2. https://home.iitk.ac.in/~arlal/book/mth202.pdf
- 3. https://mathworld.wolfram.com/topics/CalculusandAnalysis.html
- 4. https://www.javatpoint.com/discrete-mathematics-tutorial
- 5. https://www.tutorialspoint.com/discrete mathematics/index.htm

CHAIRMAN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

AISSMS Institute of Information Technology, Pune

Digital Electronics & Computer Organization			
Course Code:	ITPCC303	Credit	3
Contact Hours:	3 Hrs./week (L)	Type of Course:	Lecture
Examination Scheme	In-sem. Evaluation 40 Marks	End-sem. Examination 60 Marks	

Pre-requisites:

Basic Electronics Engineering •

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	. External/	Marks
		Internal	
1.	In-Sem. Evaluation	Internal	40
2.	End Semester Examination	External	* 60

Course Objectives

1	To explain the basics of digital circuits.
2	To provide the design of a combinational circuit.
3	To explain the design of a sequential circuit.
4	To describe the basic structure of a computer.
5	To explain the central processing unit and instruction set.
6	To make students understand the register transfer process and micro operations.

Course Outcomes: Students will be able to

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				And the second s	the second s

303.2 Draw logical diagram for given combinational circuit.

303.3 Draw logical diagram for given sequential circuit.

- 303.4 Compare Von Neumann and Harvard architecture and draw different bus structures.
- 303.5 Describe the instruction format and its addressing mode

303.6 Explain the micro-operations using the bus and memory transfer concepts

Topics covered:

UNIT-I: INTRODUCTION TO DIGITAL ELECTRONICS (6 hrs.)

Introduction, Number System, Boolean Algebra, Universal gates, Standard Representation of logic function, K-map reduction technique upto 4-variable, Quine Mc-Clusky minimization technique.

UNIT-II: COMBINATIONAL CIRCUITS (6 hrs.)

Introduction, Multiplexer, Demultiplexer, Decoder, Adder circuits: Half adder, Full adder, BCD adder, Half subtractor, Full subtractor, Code converters, Parity generator and HARRAN BOS-INFORMATION TECHNOLOGY Comparator. AISSMS IOIT (AUTOHOMOUS),

UNIT-III: SEQUENTIAL CIRCUITS (6 hrs.)

Introduction, Flip flops: Types and conversion of flip flops, Application of FlipUNbs! Registers-Types, Ring counter, Twisted ring counter, Counters-Ripple counters, Synchronous counters, MOD N counter.

AISSMS Institute of Information Technology, Pune

UNIT-IV: BASIC STRUCTURE OF COMPUTERS (6 hrs.)

History of the development of the digital computer, Recent trends computers with processing & memory capacities, Von Neumann Architecture, Harvard Architecture, Basic Operational Concepts, Bus Structures, Performance – Processor Clock, Basic Performance Equation, Clock Rate, Performance Measurement.

UNIT-V: CENTRAL PROCESSING UNIT(6 hrs.)

Introduction, General Register Organization, Stack Organization, Instruction format. Addressing Modes, Data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC).

UNIT-VI: REGISTER TRANSFER AND MICRO-OPERATIONS (6hrs.)

Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-Operations, Logic Micro-Operations, Shift Micro-Operations, Arithmetic logic shift unit.

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(*if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit):* GATE: All units

Text Books:

- 1. Modern Digital Electronics by R.P.Jain, Fourth Edition, Tata McGraw-Hill Education.
- 2. Computer Organization: By Stallings.

Reference Books:

- 1. M. Moris Mano (2006), Computer System Architecture, 3rd edition, Pearson/PHI, India
- 2. Digital Fundamentals by Morris and Mano, PHI Publication
- 3. Fundamental of digital circuits by A.Anandkumar PHI Publication
- 4. Fundamentals of Logic Design by Charles H. Roth Thomson
- 5. Structured Computer Organization: By Tanenbaum.

E- Books / E- Learning References:

- 1. https://de-iitr.vlabs.ac.in/
- 2. https://nptel.ac.in/courses/108105132
- 3. http://vlabs.iitkgp.ernet.in/coa/
- 4. https://nptel.ac.in/courses/106105163

ECHNOLO BOS-INFORMA AISSMS IDIT (AUTONOMOUS PUNE-1.

AISSMS Institute of Information Technology, Pune

Second Year Information Technology (2022 Course) Data Structure and Algorithms			
Course Code:	ITPCC304	Credit	3
Contact Hours:	3 Hrs/week(L)	Type of Course:	Lecture
Examination Scheme	In-sem. Evaluation 40 Marks	Practical/Activity based Evaluation 60 Marks	

Pre-requisites:

- Programming and Problem Solving I •
- Programming and Problem Solving II

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/	Marks
1.	In-sem. Evaluation	Internal	40
2.	Practical or Activity Based Evaluation	External	60

Course Objectives

1	To explain basics of data structures and algorithms
2	To explain basic data structures like 1-D arrays .2-D arrays and Strings
3	To describe Linked lists and its types
4	To explain different searching and sorting techniques.
5	To explain Stack data structure and its application
6	To describe Queue Data structures and it's applications

Course Outcomes:

30.1.1	
	Describe the types and complexity analysis of data structures
304.2	Use arrays and strings to perform various operations
304.3	Apply searching and sorting algorithm on given data
304.4	Solve problems using linked lists data structure
304.5	Solve interconversion of expressions using stack data structure
304.6	Describe the queue data structure and perform its operations for given problem

Topics covered:

• UNIT-I: INTRODUCTION TO DATA STRUCTURES AND ALGORITHMS (6 Hrs.) Introduction to Data Structures: Concept of data, Data object, Data structure, Concept of Primitive and non-primitive, linear and Nonlinear, static and dynamic, persistent and ephemeral data structures; Definition of ADT

Analysis of algorithm: Frequency count and its importance in analysis of an algorithm. Time complexity & Space complexity of an algorithm Big 'O', ' Ω ' and ' Θ ' notations, Modular programming: Function definition, Function call and Function INFORMATION TECHNOLOGY access using pointers(addresses/reference), Recursive functions (Demonstrate OMOUS examples, like factorial, summation of integers etc)

UNIT-II: BASIC DATA STRUCTURS (6 Hrs.)

Single, multidimensional array, address calculation. Operations on arrays Representation of polynomials using arrays, Dynamic Array, Use of arrays to represent/store strings and their manipulation (string comparison, finding a substring and reversing strings)

UNIT-III: SEARCHING AND SORTING(6Hrs.)

Need of searching and sorting, Concept of internal and external sorting, sort stability, Searching methods: Linear and binary search algorithms, Fibonacci Series.

Sorting methods: Bubble, insertion, Quick, Merge, shell and comparison of all sorting methods. Analyse Best, Worst and Average case for searching and sorting algorithms

UNIT-IV: LINKED LISTS (6 Hrs.)

Concept of linked organization, Singly Linked List, Doubly Linked List, Circular Linked List (Operations: Create, Display, Search, Insert, Delete).

UNIT-V: STACK DATA STRUCTURE AND IT'S APPLICATIONS (6Hrs.)

Concept of stack, Concept of implicit and explicit stack, stack as an ADT using sequential and linked organization, Applications of stack: Use or stack for recursive calls, converting expressions from infix to postfix or prefix form, evaluating postfix or prefix form.

UNIT VI: QUEUE DATA STRUCTURE AND IT'S APPLICATIONS (6Hrs.)

Concept of queues as ADT, Implementation of queue using array and linked organization, Concept of circular queue, double ended queue, priority queue. Applications of queue:

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit): GATE: Unit-I to Unit-VI(All)

PRACTICAL OR ACTIVITY BASED EVALUATION

- 1. Based on unit III to VI practical oriented problems will be assigned by teacher during End Sem Examination.
- 2. Three hours will be given to students for End Sem Examination.
- 3. From each unit two problems will be allotted to students and student will provide solution for any one problem per unit. Within 3 hrs. student will solve 4 problems.
- 4. Evaluation of each problem carries 15 marks where 10 marks is for successful execution and 5 marks is for QA.

Text Books

- 1. E. Horowitz, S. Sahni, D. Mehta, "Fundamentals of Data Structures in C++", Galgotia Book Source, New Delhi, 1995, ISBN 16782928
- 2. Y. Langsam, M. Augenstin, A. Tannenbaum, "Data Structures using C and C++", 2nd Edition, Prentice Hall of India, 2002, ISBN-81-203-1177-9.

Reference Books

- 1. Richard F. Gilberg, Behrouz A. Forouzau, "Data Structures: A Pseudocode Approach using C++", Cengage Learning, 5th Edition, ISBN 978-8131504925
- 2. Mark Allen Weiss, "Data structures and Algorithm Analysis in C++ ", Pearson Education India, 3 edition (2007), ISBN 978-8131714744
- 3. Hemant Jain, "Problem Solving in Data Structures & Algorithms using C++", CreateSpace Independent Publishing Platform (2017), ISBN 978-1542396479
- 4. G A V Pai, "Data Structures and Algorithms Concepts, Techniques and Applications", McGraw Hill (2017), ISBN 978-0070667266
- 5. E Balagurusamy, "Object-Oriented Programming with C++", Education; Seventh edition (2017), ISBN 978-9352607990

E- Books / E- Learning References:

- 1. https://www.geeksforgeeks.org/
- 2. https://www.tutorialspoint.com/data structures algorithms/index.htm
- 3. https://www.codechef.com/certification/data-structures-and-algorithms/prepare

AISSMS Institute of Information Technology, Pune

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BOS-INFORMATION TECHNOLOG AISSMS IOIT (AUTONOMOUS)

PUNE-1.

McG

Second Year Information Factories (2022 Course) Database Management System			
Course Code:	ITPCC305	Credit	3
Contact Hours:	3 Hrs/week(L)	Type of Course:	Lecture
Examination Scheme	In-sem. Evaluation 40 Marks	End-sem. Examination 6C Marks	

Pre-requisites:

- Data Structure and Algorithms
- **Discrete Mathematics**

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/ Internal	Marks
1.	In-Sem. Evaluation	Internal	40
2.	End Semester Examination	External	60

Course	Objectives
1	To discuss database management system concepts
2	To explain relational model and its uses.
3	To describe the use of SQL and PL-SQL.
-4	To discuss transaction management and concurrency control in databases.
5	To explain parallel and distributed database architectures
6	To describe the concept of data warehouse and mining.

Course	Outcomes: Students will be able to
305.1	Draw E-R diagram for enterprise database
305.2	Write relational algebraic queries
305.3	Solve the queries using SQL and PL/SQL on enterprise database
305.4	Illustrate the concept of transaction and concurrency control mechanism in databases
305.5	Categories different types of parallel and distributed databases
305.6	Explain the concept of datawarehouse and data mining

Topics covered:

UNIT-I: INTRODUCTION TO DBMS (6 hrs.)

Basic concept of database, Advantages of DBMS over file systems, Data abstraction, Database languages, Data independence, Components of a DBMS, Overall architectureof DBMS, Multi Basic concepts, Entity, attributes, relationships user DBMS architecture, ER Model: constraints, keys.ER and EER diagrams: Components of ER model, Conventions, Converting ER diagrams into tables

UNIT-II: RELATIONAL MODEL (6 Hrs.)

ATTECHNO Basic concepts, Attributes and Domains, Codd's rules. Relational Integrity: Nulls Operations, Selection, Algebra: Basic Referential integrities. Relational joining. Functional Dependency, Normalization: 1NF, 2NF, 3NF, BCNF.

AISSMS Institute of Information Technology, Pune

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UNIT-III: SQL -PL/SQL (6Hrs.)

Introduction to SQL: Characteristics and advantages SQL Data Types, Literals, DDL, DML, SOL Operators Tables: Creating, Modifying, Deleting, Views: Creating, Dropping, Updation using Views, Indexes, Nulls.

SELECT query and clauses, set operations, Tuple Variables, set SOL DML Queries: comparison, Ordering of Tuples, Aggregate Functions, Nested Queries, Database Modification using SQL Insert, Update, Delete Queries, Stored Procedure, Triggers.

UNIT-IV: TRANSACTIONS and CONCURRENCY CONTROL (6Hrs.)

Transaction: Basic concept of a Transaction, Transaction Management, Properties of Transactions, Concept of Schedule, Serial Schedule, Cascaded Aborts.

Concurrency Control: Need, Locking Methods, Deadlocks, Time-stamping Methods. Recovery Methods: Shadow-Paging and Checkpoints.

UNIT-V: DATABASE ARCHITECTURES (6Hrs.)

Database Architectures: Centralized and Client-Server Architectures, 2 Tier and 3 Tier Architecture, Introduction to Parallel Databases, Key elements of Parallel Database Processing, Architecture of Parallel Databases, Introduction to Distributed Databases, Architecture of Distributed Databases, Distributed Database Design.

UNIT-VI: ADVANCE DATABASE CONCEPTS(oHrs.)

Data Warehousing: Introduction, Characteristics and Limitations of Data Warehousing, Architecture of Data Warehouse, Data Mart, OLAP.

Data Mining: Process, Knowledge Discovery, Goals of Data Mining, Data Mining Tasks, Association, Classification.

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit): GATE: All units

Text Books

- 1. Silberschatz A., Korth H., Sudarshan S, Database System Concepts, McGraw Hill Publication, ISBN-0-07-120413-X, Sixth Edition.
- 2. G. K. Gupta "Database Management Systems", Tata McGraw Hill.

Reference Books

- 1. Kristina Chodorow, Michael Dirolf, MongoDB: The Definitive Guide, O'Reilly Publications.
- 2. Jiawei Han, MichelineKamber, Jian Pei, Data Mining: Concepts and Techniques, Elsevier.
- 3. Bill Schmarzo, Big Data: Understanding How Data Powers Big Business, Wiley, 978-81-265-4545-2.
- 4. Helen Morris, Introduction to Database Systems, PEARSON INDIA, 1st Edition.
- 5. Raghu Ramakrishnan, Johannes, Database Management Systems, McGraw Hill, Indian 3rd Edition.
- 6. AtulKahate, Introduction to Database Management System, PEARSON INDIA, 5th Edition.

E- Books / E- Learning References:

- https://www.pdfdrive.com/dbms-korthpdf-e46256085.html 1
- https://www.db-book.com/db6/slide-dir/ 2.
- 3. https://www.octawian.ro/fisiere/situri/asor/build/html/ downloads/1fcab5 80S 9c715fc20a9a9c2a8/Silberschatz A databases 6th ed.pdf 4. https://www.bmc.com/blogs/dbms-database-management-systemsAISSMS IOIT (AUTONOMOUS),
- 5. https://www.techtarget.com/searchdatamanagement/definition/databasemanagement-system
- 6. https://www.geeksforgeeks.org/dbms/

Se	cond Year Inform Human Co	mon techning mputer Interaction	Course)
Course Code:	ITOEC306	Credit	3
Contact Hrs.:	3 Hrs/week (L)	Type of Course:	Lecture
Examination Scheme	40\$	60\$\$	

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/	Marks
1.	MOOCs Assignments	External	40
2.	MOOCs Examination	External	60

1	To introduce the human-computer interfaces,	
2	To explain the concept of usability and its engineering	
3	To identify of usability requirements.	
5	To convert the design to an information system	
6	To evaluate the system for system usability.	
Course	Outcomes: Students will be able to the second second	
306.1	Describe the human-computer interfaces	
306.2	Identify usability requirements for given problem	
306.3	Convert design to information system	
306.4	Evaluate the system for system usability	
Topics	covered:	
Student	s must register for below mentioned NPTEL MOOC:	

Course Name: Design & Implementation of Human-Computer Interfaces: Duration: (12 weeks)

Link: https://onlinecourses.nptel.ac.in/noc22_cs125/preview

HU PULLER For MOOCs: Assignments marks will be converted on the scale of 40 marks. \$ For MOOCs: Score of examination conducted by the respective authority of MOOC or \$\$ Score of ESE Conducted by Institute will be converted on the scale of 60 marks.

E- Books / E- Learning References:

- 1. https://www.interaction-design.org/literature/topics/user-centered-design
- http://www.interaction-design.org/interaction-design.or BOS-INFORMATION TECHNOLOG
- 3. http://www.individual-differences.com/

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AISSMS IOIT (AUTONOMOUS) PUNE-1.

Second Year (actornation Second blogy (2022 Course)			
Course Code:	ITPCC307	Credit	1
Contact Hours:	2 Hrs./week(P)	Type of Course:	Practical
Examination	Term-work	Practical	
Scheme	25 Marks	25 Marks	

Pre-requisites:

Basic Electronics Engineering

Course assessment methods/tools:

Sr./No.	Course assessment methods/tools	External/	Marks
		· Internal	and the state of the
1.	Term Work	Internal	25
2.	Practical	External	25

Course	Objectives
1	To explain the implementation of digital circuits.
2	To explain the implementation of sequential circuits.
3	To demonstrate computer organization related operations using simulation tool

Course Outcomes: Students will be

307.1	Draw and implement combination circuits
307.2	Draw and implement sequential circuits
307.4	Perform computer organization related operations using simulation tool

List of Experiments:

- 1. Implementation of the given Boolean function using logic gates in both SOP and POS forms.Realize
 - (a) 4:1 multiplexer using gates.
 - (b) 3-variable function using IC 74151(8:1MUX).
- 2. Implementation and verification of decoder/de-multiplexer and encoder using logic gates.
- 3. Design and implement half adder, full adder using basic gates.
- 4. To design a 4 bit Binary to Gray code Converter, 4-bit Gray to Binary code Converter.
- 5. Design and implement 4-bit binary adder using IC 7483.
- 6. Verification of state tables of RS, JK, T and D flip-flops using NAND & NOR gates.
- 7. Design and implement MOD-N Counter using IC7490.
- 8. Design of Ripple carry adders on Virtual Lab.
- 9. Design and simulate single bit ALU with 4 functions(AND,OR,XOR,ADD)
- 10. Design and simulate single bit RAM cell or 4 address * 2 bit memory using & bit RAM cell.
- 11. Design and develop a mini project using Sequential and combinational logic cir

Text Books:

1. Modern Digital Electronics by R.P.Jain, Fourth Edition, Tata McGraw-Hill Education.

1 St. Aller

2. Computer Organization: By Stallings.

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TOMOUS).

Reference Books:

- 1. M. Moris Mano (2006), Computer System Architecture, 3rd edition, Pearson/PHI, India
- 2. Digital Fundamentals by Morris and Mano, PHI Publication
- 3. Fundamental of digital circuits by A.Anandkumar, PHI Publication
- 4. Digital Fundamentals by FLOYD & JAIN, Pearsons Pub
- 5. Fundamentals of Logic Design by Charles H. Roth Thomson
- 6. Structured Computer Organization: By Tanenbaum.

E- Books / E- Learning References:

- 1. https://de-iitr.vlabs.ac.in/
- 2. https://nptel.ac.in/courses/108105132
- 3. http://vlabs.iitkgp.ernet.in/coa/
- 4. https://nptel.ac.in/courses/106105163

AISSMS Institute of Information Technology, Pune

BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

	Data Structur	e and Algorithms Lab	
Course Code:	ITPCC308	Credit:	2
Contact Hours:	4 Hrs/week(P)	Type of Course:	Practical
Examination	Term-work	Oral	
Scheme	25 Marks	25 Marks	

Pre-requisites:

- Programming and Problem Solving I
- Programming and Problem Solving II

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	É External/	Marks	
1.	Term Work	Internal	25	
2.	Oral	External	25	

Course Objectives

1	To demonstrate the use of arrays and linked list
2	To make use of array and link list for implementation of applications.
- 3	To explain interconversion of expressions using array and linked list
4	To explain different types of queues and demonstrate its operations.

Course Outcomes: Student

308.1	Write programs to store data and perform operations using arrays.
308.2	Write programs to store data and perform operations using link list.
308.3	Perform interconversion of expressions using array and linked list
308.4	Implement different types of queues and demonstrate its operations.

List of Experiments:

- 1. Create an array to store N integers and find min and max using function
- 2. Create a Dynamic array to store N integers and write a menu driven C++ program to perform following operations.
 - a) Quick Sort
 - b) Merge Sort

(Note: Analyze and provide comparative study of both the algorithms)

- 3. Create a 2-D array to store names of N students and write a menu driven C+ program to perform following operations.
 - a) Linear search
 - b) Insertion Sort(Alphabetical order)
 - c) Binary search

CHAIRMAN (Note: Analyze and provide comparative study of both the search as orithor TECHNOLO

- 4. Create Singly linked list to store details of company, like Namen Spotro Autonomous) number of employees . Write a menu driver. C++ program to perform following operations.
 - a) Create a list of N companies
 - b) Append a new company to the list
 - c) Add a company to the beginning of list

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- d) Find no. of Employees, if company name is specified
- e) Find Location if company name is specified

(Note: Define a C++ class to represent a List and define member functions for the listed operations)

- 5. Create doubly linked list to store details of Doctor, like Name, specialization and phone number. Write a menu driven C++ program to perform following operations.
 - a) Create a list by appending a node
 - b) List all the Doctors with phone numbers for given specialization.
 - c) Reverse the List, such that the last Doctor, should be first in the List.
 - (Note: Define a C++ class to represent a List and define member functions for the listed operations)
- 6. Create Circular List to represent a polynomial for two variables. Write a menu driven C++ program to perform following operations on polynomials.
 - a) Create polynomial
 - b) Display a polynomial
 - c) Add two polynomials
 - d) Evaluate a given polynomial

(Note: The polynomial can be evaluated by providing values for x and y variables)

- 7. Design and develop a Stack using sequential representation and write a menu driven C++ program to perform following operations.
 - a) Input a valid infix expression and convert it to postfix expression.
 - b) Input a valid infix expression and convert it to prefix expression.
 - (Note: Define a C++ class to represent a Stack and define member functions for the Overflow, underflow, push and pop operations, define non-member functions for conversions)
- 8. Design and develop a Stack using Linked representation and write a menu driven C++ program to perform following operations.
 - a) Input a valid postfix expression and evaluate it
 - b) Input a valid prefix expression and evaluate
 - (Note: Define a C++ class to represent a Stack and define member functions for the Overflow, underflow, push and pop operations, define non-member functions for evaluations)
- 9. Design and Develop a Linear queue using sequential representation having max size of 50 numbers with operations as insert/delete items to/from it. Write a menu driven C program to perform following operations.
 - a) Issue a token number to customer(insert)
 - b) Serve a Customer(delete)
 - c) Display token numbers of Customers
- 10. Design and Develop a Circular queue using sequential representation having max size of 50 numbers with operations as insert/delete items to/from it. Write a menu driven C program to perform following operations.
 - a) Issue a token number to customer(insert)
 - b) Serve a Customer(delete)
 - c) Display token numbers of Customers
 - (Note: Define a C++ class to represent a Circular Queue and define member Functions insert, delete and display).
- 11. Design and Develop Priority queue using linked representation and demonstrate its use.
- 12. Design and Develop mini project using data structure concepts.

Oral Evaluation

1. Student will design and develop a mini project using data structure by and the present the same during OR exam.

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CHAIR

Text Books

- 1. E. Horowitz, S. Sahni, D. Mehta, "Fundamentals of Data Structures in C++", Galgotia Book Source, New Delhi, 1995, ISBN 16782928
- 2. Y. Langsam, M. Augenstin, A. Tannenbaum, "Data Structures using C and C++", 2nd Edition, Prentice Hall of India, 2002, ISBN-81-203-1177-9.

Reference Books

- 1. Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures: A Pseudocode Approach using C++", Cengage Learning, 5th Edition, ISBN 978-8131504925
- 2. Mark Allen Weiss, "Data structures and Algorithm Analysis in C++ ", Pearson Education India, 3 edition (2007), ISBN 978-8131714744
- 3. Hemant Jain, "Problem Solving in Data Structures & Algorithms using C++", CreateSpace Independent Publishing Platform (2017), ISBN 978-1542396479
- 4. G A V PAI, "DATA STRUCTURES and Algorithms Concepts, Techniques and Applications", McGraw Hill (2017), ISBN 978-0070667266
- 5. E Balagurusamy, "Object-Oriented Programming with C++", McGraw Hill Education; Seventh edition (2017), ISBN 978-9352607990

E- Books / E- Learning References:

- 1. https://www.geeksforgeeks.org/
- 2. https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- 3. https://www.codechef.com/certification/data-structures-and-algorithms/prepare
- 4. <u>https://www.codespaces.com/best-data-structures-and-algorithms-courses-</u> classes.html#1-data-structures-and-algorithms-specialization-program-coursera
- 5. <u>https://www.codespaces.com/best-data-structures-and-algorithms-courses-</u> classes.html#6-javascript-algorithms-and-data-structures-masterclass-udemy

CHAIRMAN BOS-INFORMATION TECHNOLOG AISSMS IOIT (AUTONOMOUS) PUNE-1.

Second Year (information Feelinslogy (2022 Course) Database Management System Lab					
Course Code:	ITPCC309	Credit	1		
Contact Hours:	2 Hrs/week (P)	Type of Course:	Practical		
Examination Scheme	Term-work 25 Marks	Practical 25 Marks			

Pre-requisites:

- **Discrete Mathematics**
- Data Structure and Algorithms

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/ Internal	Marks
1.	Term-work	Internal	25
2.	Practical	External	25

Course Objectives

1.	To discuss the properties and installation procedure of MySQL/Oracle and SQLite
2	To explain SQL DDL/DML queries with various operators and clauses
3	To explain procedures and triggers to execute a given task
- 4	To provide the insight to design and draw E-R diagram for any enterprise

Course	Outcomes: Students will be able to
309.1	Study and Installation of MySQL/Oracle and SQLife tools
309.2	Solve SQL DDL/DML queries using various operators and clauses
309.3	Write procedures and triggers to execute a given task
309.4	Draw the design of enterprise database with suitable E-R diagram

List of Experiments:

- 1. Study of MySQL Open-source software. Discuss the characteristics like efficiency, scalability, performance and transactional properties.
- 2. Install and configure client and server of MySQL(Show all commands and necessary steps for installation and configuration)
- 3. Study of SQLite: What is SQLite? Uses of SQLite. Building and installing SQLite.
- 4. Design any database with at least 3 entities and relationships between them. Draw suitable ER/EER diagram for the system.
- 5. Design and implement a database (for assignment no 4) using DDL with primary key and foreign key constraints.
- 6. Perform following SQL queries on the database created in assignment 5. Implementation of relational operators in SQL -INFORMATION TECHNOLO
 - 1. Boolean operators and pattern matching
 - 2. Arithmetic operations and built in functions
 - 3. Group functions
 - 4. Processing Date and Time functions

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- 5. Complex queries and set operator
- 7. Execute DDL/DML statements which demonstrate the use of views. Update the base table using its corresponding view. Also consider restrictions on updatable views and perform view creation from multiple tables.
- 8. Write and execute PL/SQL stored procedure and function to perform a suitable task on the database using all types of cursors.
- 9. Write and execute suitable database triggers. Consider row level and statement level triggers.
- 10. Perform case study of any organization (back end only), draw ER diagram and Database design.
- 11. Design a mini project to demonstrate the database for any organization using opensource tools/framework.

Text Books

- 1. Silberschatz A., Korth H., Sudarshan S, Database System Concepts, McGraw Hill Publication, ISBN-0-07-120413-X, Sixth Edition.
- 2. G. K. Gupta "Database Management Systems", Tata McGraw Hill.

Reference Books

- 1. Kristina Chodorow, Michael Dirolf, MongoDB: The Definitive Guide, O'Reilly Publications.
- 2. Jiawei Han, MichelineKamber, Jian Pei, Data Mining: Concepts and Techniques, Elsevier.
- 3. Bill Schmarzo, Big Data: Understanding How Data Powers Big Business, Wiley, 978-81-265-4545-2.
- 4. Helen Morris, Introduction to Database Systems, PEARSON INDIA, 1st Edition.
- 5. Raghu Ramakrishnan, Johannes, Database Managen ent Systems, McGraw Hill, Indian 3rd Edition.
- 6. AtulKahate, Introduction to Database Management System, PEARSON INDIA, 5th Edition.

E- Books / E- Learning References:

- 1. https://www.javatpoint.com/mysql-queries
- 2. https://dev.mysql.com/doc/mysql-tutorial-excerpt/8.0/en/examples.html
- 3. https://dev.mysql.com/doc/refman/8.0/en/entering-queries.html
- 4. https://www.w3schools.com/mysql/mysql_sql.asp
- 5. https://www.geeksforgeeks.org/mysql-common-mysql-queries/
- 6. https://www.databasejournal.com/mysql/the-10-most-common-mysql-queries/
- 7. https://www.educba.com/mysql-query-commands/
- 8. <u>https://www.oreilly.com/library/view/mysql-reference-manual/0596002653/ch03s05.html</u>

ECHNOLOGY

Second Year Information Technology (2002 Course) Audit course- Vedic Mathematics					
Course Code:	ITHSM310	Credit	1		
Contact Hours:	1 Hrs/week	Type of Course:	Lecture		
Examination Scheme	Term-work 25 Marks				

Pre-requisites:

Nil

Course assessment methods/tools:

Sr. No.	Course assessment met	hods/tools	*External/ Internal	Marks
1.	Term-work		Internal	* 25

Course Objectives

	To develop the understanding of Techniques/Sutras to solve mathematical arithmetic's in easy and faster way and use these techniques to varies Competitive Examinations.
2	To Improve speed and efficiency to solve even the most complex Mathematical problems.
3	To remove the phobia about mathematics in the minds of Students.
4	To help students to have better command over mathematical concepts and boost up their self- confidence level towards the subject.

Course	Outcomes: Students will be able to support the state of t
310.1	Apply Vedic Mathematics techniques to Perform quickly and accurately mathematical calculations like multiplication, division, squares, cubes, LCM, HCF.
310.2	Apply Vedic Mathematics techniques to solve Linear Equations, Quadratic Equations, Factorization of a Cubic Polynomial.
310.3	Apply Vedic Mathematics techniques to Perform calculations in Coordinate Geometry, Differentiation, Integration and Trigonometry without relying heavily on calculators or written methods.

UNIT I:- BASIC LEVEL(4Hrs)

Introduction of Vedic Mathematics, Multiplication, Square. Cube, Divisibility Test, Highest Common Factor of Polynomials, Multiplication of Polynomials, Division of Polynomials

UNIT II: INTERMEDIATE LEVEL(4Hrs)

Linear Equations, Quadratic Equations, Factorization of a Cubic Polynomial, Magic squares, Dates and Calendar.

UNIT III: ADVANCE LEVEL (4Hrs)

Determinant, Coordinate Geometry, Differentiation, Integration, Trigonometry.

CHAIRMAN **BOS-INFORMATION TECHNOLOGY** AISSMS IOIT (AUTONOMOUS), PUNE-1

Textbooks

- 1. Advanced Vedic Mathematics, Rajesh Kumar Thakur.
- 2. Vedic Mathematics Made Easy, DhavalBathia
- 3. VEDIC MATHEMATICS ForStudents: LEVEL -- 1 OF 5 SERIES, by Nava Vision

Reference Books

- 1. Sri Bharati krishna Tirthaji,"Vedic Mathematics", Published by MotilalBanarsidass, 1965.ISBN 81-208-0163-6.
- 2. Williams K.R. "Discover Vedic Mathematics" Vedic Mathematics Research Group, 1984.ISBN 1-869932-01-3.
- 3. Wiliams K.R. and M.Gaskell "The Cosmic Calculator". otilalBanarsidass,2002.ISBN 81-208-1871-7.
- 4. Nicholas A.P., Williams, J. Pickles." Vertically and Crosswise". Inspiration books, 1984.ISBN 1-902517-03-2

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CHAIRMA BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

New York

	Management	t Information System	
Course Code:	ITHSM401	Credit:	2
Contact Hrs.:	1Hr./week (L) 1 Hr./week(T)	Type of Course:	Lecture/Tutorial
Examination Scheme	Term Work 25 Marks	Oral 25 Marks	

Pre-requisites:

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/ Internal	Marks
1.	Term Work	Internal	25
2.	Oral	Internal	25

Course O	biective	28	
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- To explain the foundations of management information system.
- 2 To classify and explain the various M-commerce facilities.
- 3 To introduce the enterprise management system.
- 4 To develop a management information system for society

Course Outcomes : Students will be able to

- 401.1 Describe the basics of management information system
- 401.2 Explain various M-commerce strategies.
- 401.3 Discuss benefits of enterprise management system
- 401.4 Develop a management information system for society

Topics covered:

UNIT-I: INTRODUCTION TO INFORMATION SYSTEM (4Hrs)

Foundations of Information Systems: Need and objective of Information systems. Components and resources of information systems, Types of information systems: Operations support systems and Management support systems.

Management Information Systems: Definition, role and impact of MIS, Functions of the managers: planning, organizing, staffing, coordinating and directing, MIS as a support to the management

Applications in Manufacturing Sector: HR Management, Marketing Management, Finance Management, Materials Management and Marketing Management,

Applications in service: Banking, Insurance, Airline, Hotel, Hospital, Education

UNIT-II: E-COMMERCE (2 Hrs.)

Electronic Commerce Systems (E-Commerce): Introduction, scope, B2C, B2B and C2C, C2G, G2G, Essential e-Commerce processes, Electronic Payment Processes, m commerce. Customer Relationship Management (CRM): Introduction, What is CRM? Three phases of CRM, Benefits, challenges and trends in CRM, E-ERM

> CHAIRMAN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS, PUNE-1.

UNIT-III: ENTERPRISE MANAGEMENT SYSTEMS(2Hrs.)

Introduction, Enterprise Resource Planning (ERP) systems: Basic features, benefits, selection, implementation, EMS and MIS

ITES: Objectives of ITES, ITES Services and applications like Medical Transcription, Document Processing

PROJECT BASED ACTIVITY: (16 hrs.)

In a group student has to develop a management information system for a societal need **Guidelines:**

- 1. There should be a team of 3 to 6 students who will work cohesively.
- 2. The project scope/topic can be from any field/area, but selection related to IT technical aspect is desirous.
- 3. The project/problem done in first year engineering could be extended further, based on its potential and significance analysis.
- 4. Project/problem requiring solutions through conceptual model development and use of software tools should be preferred.
- 5. Different alternate approaches such as theoretical practical, working model, demonstration or software analysis should be used in solving/implementing of project/problem.
- 6. The project/problem requiring multi-disciplinary approach to solve it, should be preferred.
- 7. Problem may require in depth study of specific practical, scientific or technical domain.
- 8. Hands-on activities, organizational and field visits, interacting with research institutes and expert consultation should be included in the approach to make students aware of latest technologies.
- 9. Progress of PBL will be monitored regularly on weckly basis. Weekly review of the work is necessary.
- 10. During process of monitoring and continuous assessment and evaluation the individual and team performance is to be measured by mentor.
- 11. Students must maintain an institutional culture of authentic collaboration, selfmotivation, peer learning and personal responsiveness. The institution/department should support students in this regard through guidance/orientation programs and the provision of appropriate resources and services.
- 12. Supervisor/mentor and students must actively participate in assessment and evaluation processes. Group may demonstrate their knowledge and skills by developing a public product and/or report and/or presentation.

Recommended parameters for assessment, evaluation and weightage:

- 1. Idea Inception (5%)
- 2. Outcomes of PBL/Problem Solving Skills/Solution provided/Final product(40%) (Individual assessment and team assessment)
- 3. Documentation (Gathering requirements, design & modeling, implementation/execution, use of technology and final report, other documents (25 %)
- 4. Potential for the patent(10%)
- 5. Demonstration (Presentation, User Interface, Usability etc.) (10%)
- 6. Contest Participation/ publication (5%)
- 7. Awareness /Consideration of Environment/ Social /Ethics/ Safety measures/Legal aspects (5%).

Note: teacher will Design the rubrics based on the above parameters for evaluation of student performance

Text Books:

- O'Brien James, "Management Information Systems", 7th Edition State McCharley Publishing Company Limited, ISBN 0 07 -0622003-2
- Rober Schulthesis, Mary Sumner, "Management information system", Tata McGiakonoMous, Hill Publishing Company Limited, 0.07.463879-3

3. Arpita Gopal, Chandrani Singh, "E-world Emerging trends in Information Technology", Excel Books, 978-81-7446-732-4

Reference Books:

- 1. KC Laudon, JP Laudon, "MIS Managing digital firm, Person Education", 978-81317-1413-7
- 2. Jawadekar W., "Management Information Systems", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, 2002, ISBN 0-07 044575 3
- 3. Lucas Henry C., "Information Technology for Management" Edition, Tata McGraw-Hill Publishing Company Limited, 2004, ISBN 0 07- 047242- 4
- 4. Post J, Anderson D., "Management Information Systems" 3rd Edition, Tata McGraw-Hill Publications, ISBN 0 - 07 - 049940 -3
- 5. Gupta L., "Management Information Systems: A Managerial Perspective", Galgotia, ISBN 81-7515-085-8
 - 6. Brendan Read : Designing the Best Call Center for Your Business, 2nd Edition, CMPBook, ISBN 1578203139, 9781578203130

E- Books / E- Learning References:

- 1. <u>https://repository.dinus.ac.id/docs/ajar/Kenneth_C.Laudon,Jane_P_Laudon_-</u> <u>Management_Information_Sysrem_13th_Edition_.pdf</u>
- 2. <u>https://d3bxy9euw4e147.cloudfront.net/oscms-</u> prodcms/media/documents/PrinciplesofManagement-OP.pdf
- 3. <u>https://ebooks.lpude.in/management/mba/term_4/DMGT505_MANAGEMENT_INFO</u> RMATION_SYSTEM.pdf

CHAIRMAN EOS-INFORMATION TECHNOLOGY AUSSMS IOIT (AUTONOMOUS), PUNE-1.

Second Year Information Lechnology (2022 Course) Probability and Statistics				
Course Code:	ITPCC402	Credit:	3	
Contact Hrs.:	3 Hrs/week (L)	Type of Course:	Lecture	
Examination Scheme	In-sem. Evaluation 40 Marks	End-sem. Examination 60 Marks		

Pre-requisites:

Discrete Mathematics

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	• External/	Marks
		Internal	
1.	In-Sem. Evaluation	Internal	40
2.	End Semester Examination	External	60

Course	Objectives	
1	To understand the basic concepts in probability	
2	To understand data distribution using probability	
3	To Relate probability function to the distribution of a random variable.	
4	To Apply statistical measures on data	
5	To compute regression and correlation between two variables.	
6	To test hypothesis.	
Course	e Outcomes: Students will be able to	
402.1	Use probability and its concepts with real worlds problems.	
402.2	Corelate data distribution using probability.	
402.3	Relate probability function to the distribution of a random variable.	
402.4	Apply statistical measures on data.	
402.5	Compute regression and correlation between two variables.	
402.6	Test the hypothesis using statistical testing	
Topics	s covered:	
UNIT	L DDADADII ITV (6 hmg)	

UNIT-I: PROBABILITY (6 hrs.)

Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability - classical, statistical, and axiomatic. Conditional Probability, laws of addition and multiplication, independent events, theorem of total probability, Bayes' theorem and its applications.

UNIT-II: PROBABILITY DISTRIBUTION (6 hrs.)

Probability distributions: Binomial, Poisson, Normal and Hyper geometric, Sampling distributions

UNIT-III: RANDOM VARIABLES (6 hrs.)

HAIRMAN Discrete and continuous random variables, p.m.f., p.d.f. and c.d.f., illustrations and properties HNOLOG of random variables, univariate transformations with illustrations. MS IOIT (AUTONOMOUS), Two dimensional random variables: discrete and continuous type, joint, marginal and conditional p.m.f, p.d.f., and c.d.f., independence of variables.

UNIT-IV: STATISTICS (6 hrs.)

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Sample variable, statistical sampling, population, frequency distribution Collection, Mean, median, mode, Measures of dispersion: range, variation, standard deviation, skewness and kurtosis

UNIT-V: REGRESSION AND CORRELATION ANALYSIS (6 hrs.)

Regression - Linear Regression Logistic Regression, Ridge Regression, Lasso Regression, Polynomial Regression, Regression model evaluation metrics

Covariance, Correlation, Difference Between Covariance and Correlation, Correlation methods-Pearson correlation, Kendall rank correlation, Spearman correlation, Analysis of variance- ANOVA

UNIT-VI: HYPOTHESIS TESTING (6 hrs.)

Hypothesis, hypothesis testing – Null- and alternative hypothesis, Type-I and type-II errors, Significance levels and powers of the tests. p-values. Tests for the expected value and variance of random variables- One-tailed and two-tailed tests, T-test, F-test, Z-test and Chi-Square test, Relationship between confidence intervals and hypothesis testing.

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(*if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit):* GATE: All units

Text Books:

- 1. Montgomery, Douglas C., and George C. Runger. Applied Statistics and Probability for Engineers. John Wiley & Sons, 2010
- 2. Probability and Random variable, David Stirzaker, University of oxford.
- 3. Text Book of correlation and regression ,A.K.Sharma, Discovery Publishing House,2005

Reference:

- 1. Introduction to Hypothesis Testing (Easy Statistics), Anusha IlluKumbura, Easy Statistic Series.
- 2. Probability and Statistics, Michael J. Evans and Je§rey S. Rosenthal, University of Toronto
- 3. Random Variable and Probability Distribution. Cramer, Cambridge University Press.

E- Books / E- Learning References:

- 1. <u>https://www.spps.org/cms/lib/MN01910242/Centricity/Domain/859/Statistics%20Te</u>xtbook.pdf
- 2. <u>https://www.fireblazeaischool.in/blogs/covariance-and-correlation-in-machine-</u>learning/
- 3. https://www.probabilitycourse.com/chapter4/4_0_0_intro.php
- 4. https://www.geeksforgeeks.org/types-of-regression-techniques/

BOS-INFORMATION TECHNOLOG AISSMS IOIT (AUTONOMOUS), PUNE-1.

Second Year Information Technology (2022 Course) Object Oriented Programming				
Course Code:	ITPCC403	Credit:	3	
Contact Hrs.:	3 Hrs/week (L)	Type of Course:	Lecture	
Examination Scheme	In-sem. Evaluation 40 Marks	Practical/Activity based Evaluation 60 Marks		

Pre-requisites:

- Programming and Problem solving -I
- Programming and Problem solving -II

Course assessment methods/tools:

Marks
40
60
10000000000000000000000000000000000000

Course	e Objectives	
1	To explain object-oriented programming cor cepts	
2	To create classes and objects for real world problems	
3	To use inheritance and polymorphism	
4	To create abstract class and Interface	
5	To handle exceptions using exception handling	
6	To make use of collections for implementing generics	
Course	e Outcomes: Students will be able to	
403,1	Describe the object-oriented programming paradigm	
403.2	Define classes and objects for real world problems	
403.3	Implement inheritance and polymorphism for given problems	
403.4	Implement abstract class and interface	
403.5	Handle exceptions using exception handling mechanism	
403.6	Make use of collections for implementing generics programming	

Topics covered:

UNIT-I: CONCEPTS OF OBJECT-ORIENTED PROGRAMMING (6 Hrs.)

Introduction to Procedural-Oriented and Object-Oriented Paradigms, Limitations of Procedural Programming, Need of Object-Oriented Programming, Fundamentals of the Object-Oriented Programming (OOP): Objects, Classes, Data abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding and Message Passing, Data types, Control structures, Arrays and Strings, Case study

UNIT-II: DEFINING CLASSES AND METHODS (6 Hrs.)

Define a Class, Creating an Objects, Access specifiers, Introducing Methods, adding a Method- with parameters, without parameters, with return type, without return types, Static data, Static methods, Constructors, types of Constructors, Overloading Methods/Constructors, the finalized attended to the finalized attended at

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PUNE-1.

UNIT-III: INHERITANCE AND POLYMORPHISM (6 Hrs.)

Introduction, Need of Inheritance, Types of Inheritance, using super keyword, Creating Polymorphism, Method Overriding, Dynamic Method Dispatch, Using final with Inheritance, Case study

UNIT-IV: ABSTRACT CLASSES AND INTERFACE (6 Hrs.)

Using Abstract methods and Class, Defining an Interface, Implementing Interfaces, Nested Interfaces, Applying Interfaces, variables in Interfaces, Interfaces can be extended, Case study

UNIT-V: EXCEPTION HANDLING (6 Hrs.)

Errors, Types of errors, Exception, Exception Handling, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, Creating Your Own Exception Subclasses, Case study.

UNIT-VI: GENERIC PROGRAMMING AND COLLECTIONS FRAMEWORK (6 Hrs.)

Collections Overview, The Collection Interface: The List Interface, The Set Interface, The Map Interface and The Queue Interface, The Collection Classes: The ArrayList Class, The LinkedList Class, The HashSet Class, the Hash map Class, TheTreeSetClass, Case study

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit):

GATE:Unit 1

PRACTICAL OR ACTIVITY BASED EVALUATION

- 1. Based on unit III to VI practical oriented problems will be assigned by teacher during End Sem Examination.
- 2. Three hours will be given to students for End Sem Examination.
- 3. From each unit two problems will be allotted to students and student will provide solution for any one problem per unit. Within 3 hrs. student will solve 4 problems.
- 4. Evaluation of each problem carries 15 marks where 10 marks is for successful execution and 5 marks is for QA. The weightage of four problems solved by students is 60.

Text Books:

- 1. Object Oriented Programming Using Java, E. Balaguruswamy, Tata McGraw Hill
- 2. Programming with Java, E. Balaguruswamy, Tata McGraw Hill

Reference Books:

- 1. Timothy A. Budd, An Introduction to Object Oriented Programming, Addison-Wesley
- 2. The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
- 3. Object-Oriented Programming and Java by Danny Poo (Author), Derek Kiong (Author), Swarnalatha Ashok (Author)Springer. 2nd ed. 2008 edition (12 October 2007), ISBN-10: 1846289629, ISBN-13: 978-1846289620,2007
- 4. Object-Oriented Design Using Java, Dale Skrien, McGraw-Hill Publishing, 2008, ISBN - 0077423097, 9780077423094.
- 5. UML for Java Programmers by Robert C. Martin, Prentice Hall, ISBN 0131428489,2003.

E- Books / E- Learning References:

- 1. https://www.w3schools.com/java/java_oop.asp
- 2. https://www.geeksforgeeks.org/object-oriented-programming-oops-conceptionsation
- 3. https://www.freecodecamp.org/news/object-oriented-p.ogramming-concents-taoh/TECHNOLOG AISSMS IOIT (AUTONOMOUS),

in the

4. https://www.guru99.com/java-oops-concept.html

AISSMS Institute of Information Technology, Pune

PUNE-1.

	Processor Archit	ecture and Interfacing	
Course Code:	ITPCC404	Credit:	3
Contact Hrs.:	3Hrs/week (L)	Type of Course:	Lecture
Examination	In-sem. Evaluation	End-sem. Examination	

Pre-requisites:

• Digital Electronics and Computer Organisation Course assessment methods/tools:

	the second se			
1. In-Sem. Evaluation Internal	40			
2. End Semester Examination External	60			
Course Objectives	and the second sec			
To explain the architecture of the PIC controller.				
2 To describe Instruction set and I/O Port Programming.				
3 To apply programming concepts for Delay, Arithmetic and L Memory Access.	ogic Operations, and			
4 To describe concepts of Timer, Serial Port, and Interrupt prog	gramming.			
To apply knowledge of programming for interfacing of LCD. DAC.	, Keyboard, ADC, and			
6 To analyze current trends in microcontrollers.				
Course Outcomes: Students will be able to	-			
404.1 Describe the architecture of the PIC controller.				
404.2 Describe Instruction set and I/O Port Programming.				
Explain interrupts and Use programming concepts to interface I/O.				
404.4 Describe concepts of Capture, Compare and PWM programm	ning.			
404.5 Explain the different model and application of the Raspberry	Explain the different model and application of the Raspberry Pi.			
404.6 Use python programming concepts to interface I/O using Rat	spberry Pi.			
Topics covered:				
UNIT-I-PIC MICROCONTROLLERS: INTRODUCTION (6 hrs.)			
Microcontrollers and Embedded Processors, Overview of the PIC1	8 Family, PIC18 PIN			
connection, PIC18 Configuration Registers, The WREG Register in	PIC18, The PIC18 File			
Register and access Bank, Use of Instructions with the Default Acce	ess Bank, PIC18 Status			
Register, PIC18 Data Format and Directives, The Program Counter	er and Program ROM			
Space in the PIC18, RISC Architecture in the PIC18.				
UNIT-II: INSTRUCTION SET AND I/O PORT PROGRAMMIN	Operations Logic and			
Arithmetic Instructions, Signed Number Concepts and Arithmetic Compare Instructions, Potete Instruction and Data Serialization	n BCD and ASCII			
Conversion Branch Instructions and Looning Call Instructions an	d Stack. PIC18 Time			
Delay and Instruction Pipeline. I/O Port Programming in PIC18.	I/O Bit Manipulation			
Programming.	CHAIRMAN TECH			
UNIT-III: PIC INTERUPTS & INTERFACING-I (6 hrs.)	BOS-INFORMATION AUTONOM			
Timer/Counter: Registers used for Timer/Counter operation, Delay ca	lculations, PUNE-1.			
Programming of Timers using Embedded C.				
PIC Interrupts: Interrupt Vs Polling, IVT, Steps in executing interrupt	, Sources of			
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interrupts; Enabling and disabling interrupts, Interrupt registers, Priority of interrupts, Programming of: Timer using interrupts, External hardware interrupts, Serial communication interrupt; Interfacing of LED, Interfacing 16X2 LCD (8 bits) and Key board (4 x 4 Matrix), Interfacing Relay & Buzzer.

UNIT-IV: PIC INTERFACING-II (6 hrs.)

CCP modes: Capture, Compare and PWM generation; DC Motor speed control with CCP, Stepper motor interfacing with PIC, Basics of Serial communication protocols: Study of RS232, I2C, SPI, UART, Serial communication programming using Embedded C.

UNIT-V: INTRODUCTION to RASPBERRY Pi (4 hrs.)

Different Models of Raspberry Pi, Why Raspberry Pi, Peripherals of Raspberry Pi, Applications of Raspberry Pi.

UNIT-VI: INTERFACING USING Pi (8 hrs.)

Overview of Rasberian OS (Operating System), Installation, different types of Operating Systems. Basic Python Programming ,Temperature dependent auto cooling system

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit):

NA

Text Books:

- 1. Muhammad Ali Mazidi, Rolin D. Mckinlay, Danny Causey 'PIC Microcontroller and Embedded Systems using Assembly and C for PIC18', Pearson Education 2008.
- 2. John Iovine, 'PIC Microcontroller Project Book', McGraw Hill 2000Understand the basics of embedded system
- 3. Ramesh Gaokar, Fundamentals of Microcontrollers and applixcation in Embedded system(With PIC 18 Microcontroller family)Penram International Publishing.

Reference Books:

- 1. Microcontroller from Assembly Language to C using PIC18FXX2, Robert B. Reese, Davinici Engineering press.
- 2. PIC Microcontroller: An Introduction to Software and Hardware Interfacing, Han Way Huang, Cengage Learning.
- 3. Tony Givargis, "Embedded system design", Wiley Student Edition.
- 4. Peatman,"Design with PIC Microcontroller", Pearson Education.
- 5. Han-way Huang,"PIC Microcontroller", India Ecition
- 6. Rasberry Pi CookBook: Software & Hardware problems and Solutions By Simon Monk (O'Reilly Media Inc.)
- 7. Raspberry Pi Hardware Reference by Warren Gay (Apress)

E- Books / E- Learning References:

- 1. <u>https://www.youtube.com/watch?v=sUkgUQ9mpcs&list=PL8G4ZtHAnWn3rrCZ</u> PIej2-eqk1bjKCsmL&index=49
- <u>https://www.youtube.com/watch?v=WGcierfsSNo&list=PL8G4ZtHAnWn3rrCZPI</u> ej2-egk1bjKCsmL&index=50
- 3. https://www.youtube.com/watch?v=nLlBssKCN2w
- 4. https://nptel.ac.in/courses/117104072
- 5. https://nptel.ac.in/courses/108105102
- 6. https://tinyurl.com/kvbwxfay
- 7. https://www.coursera.org/learn/raspberry-pi-platform

CHAIRMAN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

	Computer Gra	phics and Animation	
Course Code:	ITPCC405	Credit:	. 3
Contact Hrs.:	3 Hrs/week (L)	Type of Course:	Lecture
Examination	In-sem. Evaluation	End-sem. Examination	
Scheme	40 Marks	60 Marks	2

Pre-requisites: • Data Structure and Algorithms

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/	Marks
1.	In Sem Evaluation	Internal	40
2.	End Semester Examination	External	60 else

Course	Objectives
1 1	To explain graphics, graphics drawing algorithm to solve problems
2	To explain Polygon filling & 2D Transformation.
3	To explain 3D Transformation, windowing and cripping concepts
4	To describe basics of animation.
5	To explain principles and types of animation.
6	To explain the workflow of animation.
Course	Outcomes: Students will be able to
405.1	Use line drawing and circle drawing algorithms to solve problems
405.2	Apply Polygon filling & 2D Transformation methods.
405.3	Apply 3D Transformation, windowing and clipping concepts.
405.4	Explain basics concept of animation.
405.5	Explain principles and types of animation.
405.6	Explain the process of making an animation
Topics of	covered:
Unit-I: I	NTRODUCTION AND OVERVIEW OF GRAPHICS SYSTEM(6Hrs.)
Introduct	ion to Computer Graphics, Raster scan and Random scan display,
Line Dr	awing: DDA Line Mathematical Treatment algorithm, Bresenhem Line Mathematical
Treatmen	t & algorithm
Circle D	rawing: Bresenhem's circle drawing Mathematical Treatment & algorithm.
OpenGL	2 – Introduction, Open GL libraries, Primitive operations
UNIT-II	: POLYGON FILLING AND 2D TRANSFORMATION (6Hrs.)
Polygon	s: Polygons and its types, Inside test method,
Polygon	filling methods: Seed Fill/Flood fill, Boundary Fill, Scan-line Fill algorithms,
2D I ran	siormations: Iranslation, Scaling, Rotation
UNIT-II	1: WINDOWING, CLIPPING AND 3D TKA INSPORTATIONS (OHERSTMATION (CONTRACT))
Line Cli	ning: Cohen Sutherland Method
Polygon	Clinning: Sutherland Hodgman Method
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3D Transformation: Translation, scaling, rotation about X, Y, Z

UNIT-IV: INTRODUCTION TO ANIMATION & VOCABULARY (6 Hrs.)

What is animation? History of animation, Early animation devices, pros and cons of animation, Animation Vocabulary-Timeline, Framerate, Working on one's & two's, Shots & Scenes, Keyframes | Breakdowns | Inbetweens, Timing | Spacing | Easing

Demonstration of animation terminology using tools

UNIT-V: PRINCIPLES OF ANIMATION & ITS TYPE (6 Hrs.)

Principles of animation – (Squash and stretch, Anticipation, Staging, Straight ahead action and pose to pose, Follow through and overlapping action, Slow in and slow out, Arc, Secondary action, Timing, Exaggeration, Solid drawing, Appeal), Type of animation – Traditional animation, 2D animation, 3D animation, Typograf hy Animation, Clay animation, Sand Animation, Flip book Animation, Stop-motion animation

Demonstration of animation concepts using tools

UNIT -VI: PROCESS OF ANIMATION, SOFTWARE & HARDWARE (6 Hrs.)

How animation works? Workflow of creating animation. Steps of making an animated film Animation Software, Animation Hardware.

Syllabus contents required for competitive exams (GATE, UPSC, MPSC etc.)(if complete unit is applicable then write only "unit 1/2/.." or write the contents from that unit): NA

Text Books:

- 1. D. Hearn, M. Baker, "Computer Graphics C Version", 2nd Edition, Pearson Education, 2002, ISBN 81 7808 794 4
- 2. S. Harrington, "Computer Graphics", 2nd Edition, McGraw-Hill Publications, 1987, ISBN 0-07-100472-6.
- 3. The complete animation course by Chris Patmore Pub.-Baron's Educational Series. (New York)
- 4. Animation Unleashed by Ellen Bessen, Michael Weise Productions, 2008(U.S.A)

Reference Books:

- 1. D. Rogers, "Procedural Elements for Computer Graphics", 2nd Edition, Tata McGraw-HillPublication, 2001, ISBN 0-07-047371-4.
- 2. J. Foley, V. Dam, S. Feiner, J. Hughes, "Computer Graphics Principles and Practice", 2nd Edition, Pearson Education, 2003, ISBN 81 7808 038 9.
- 3. F.S. Hill JR, "Computer Graphics Using Open GL", Pearson Education
- 4. The Encyclopedia of Animation Techniques, Richard Taylor, 1996 (India)
- 5. Experimental Animation: An Illustrated Anthology by Robert Russet and Cecile Starr Pub.-Van Nostrand Reinhold Compa Pub.1976 (U.S.A)

E- Books / E- Learning References:

- 1. https://www.bloopanimation.com/animation-for-beginners/
- 2. <u>https://www.digitalartsonline.co.uk/features/motion-graphics/best-websites-online-tools-for-learning-animation/</u>

CHAIRM BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

Second Vear information Techristogy (2022 Course) Web Development				
Course Code:	ITVSE406	Credit:	3	
Contact Hrs.:	1 Hr/week (L) 4 Hrs/week(P)	Type of Course:	Lecture/Practical	
Examination Scheme	Term-work 50 Marks	Practical 50 Marks		

Pre-requisites:

NA

Course assessment methods/tools:

Sr., No.	Course assessment methods/tools	External/	Marks
1.	Term Work	Internal	50
2.	Practical	External	50

Course Objectives

1	To explain static and dynamic website using technologies like html, css,	bootstrap.
		•

- 2 To use of web scripting languages for web development
- 3 To use front end & back end technologies
- To develop web application using Node.js
- 5 To develop web application using Express.js

Course Outcomes: Students will be able to

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- 406.2 Demonstrate the use of web scripting languages.
- 406.3 Develop web application with Front End & Back End Technologies
- 406.4 Develop web application using Node.js
- 406.5 Develop web application using Express.js
- **Topics** Covered

Unit I. INTRODUCTION TO WEB DEVELOPMENT (2 hrs.)

HTML: Getting started with HTML, Why HTML, Tags and Elements, Attributes, Properties, Headings list, Links, Tables, Images, HTML Form, Media (Audio, Video), Semantic HTML5 Elements.

CSS: Why CSS, Types of CSS, How to use CSS, Properties, Classes, Child-Class (Nested CSS), Colors, Text, Background, Border, Margin, Padding, Positioning (flex, grid, inline, block), Animation, Transition.

Unit II: BOOTSTRAP (2 hrs.)

Why Bootstrap, CSS over Bootstrap, How to Use Bootstrap, Bootstrap Grid System, Bootstrap Responsive, Bootstrap Classes, Bootstrap Components (i.e., Button, Table, List, etc.), Bootstrap as a Cross Platform.

Unit-III: JAVA SCRIPT (2 Hrs.)

Introduction to Scripting languages, Introduction to JavaScript (JS), Variables, GHAIRMAN, and operators, Control flow and conditional statements, Functions, Agos. INFORMATION ECHNOLOG DOM model, Accessing and modifying elements with JavaScript, Dynamics MS control for Mous), and manipulation

Unit IV: FORM AND USER INPUT (2 Hrs.)

Forms and User Input, Form validation with JavaScript, Sending form data to the server

Unit V: INTRODUCTION TO REACT (2 Hrs.)

Introduction to React, Understanding component-based architecture, Introduction to Creating components with React. Managing state and props

Unit VI: INTRODUCTION TO NODE.JS AND EXPRESS (2 Hrs.)

Introduction to server-side JavaScript with Node.js, Bui¹ding a simple web server with Express.js, Handling HTTP requests and responses.

List of Practical Assignments:

- 1. Design a personal portfolio webpage using HTML and CSS
- 2. Design the following static web pages required for an online book store web site.
 - i. HOME PAGE: The static home page must contain three frames.
 - ii. LOGIN PAGE
 - iii. CATOLOGUE PAGE: The catalogue page should contain the details of all the books available in the web site in a table.
 - iv. REGISTRATION PAGE
- 3. Write JavaScript to validate the following fields of the above registration page.
 - i. Name (Name should contains alphabets and the length should not be less than 6 characters).
 - ii. Password (Password should not be less than 6 characters length).
 - iii. E-mail id (should not contain any invalid and must follow the standard pattern (name@domain.corn)
 - iv. Phone number (Phone number should contain 10 digits only).
- 4. Create a Node.JS Application which serves a static website .
- 5. Create a Express.JS Application which serves a static website.
- 6. Create a responsive, interactive website using HTML, CSS and JavaScript and publish the app using GitHub / GitHub Pages or Free hosting platforms like Netlify.

Text Books:

1. Kogent Learning Solutions Inc, Web Technologies: HTML, JAVASCRIPT, PHP, JAVA, JSP, XML and AJAX, Blackbook, Dreamtech Press, Second Edition, ISBN: 9788177228496.

2. Raymond Camden, Andy Matthews, jQuery Mobile Web Development Essentials, Packt Publishing, Second Edition, 9781782167891.

3. Steven M. Schafer, "HTML, XHTML and CSS", Wiley India Edition, Fourth Edition, 978-81-265-1635-3

4. Dr.HirenJoshi, Web Technology and Application Development, DreamTech, First, ISBN:978-93- 5004-088-1

Reference Books:

1. Steven M. Schafer, "HTML, XHTML and CSS", Wiley India Edition, Fourth Edition, 978-81-265-1635-3

4. Adam Bretz & Colin J Ihrig, Full Stack Javascript Development with MEAN, SPD, First Edition,

ISBN:978-0992461256.

Books / E- Learning References

- 1. https://www.meanacademy.in/web-technologies
- 2. https://www.meanacademy.in/angular
- 3. https://www.meanacademy.in/mongodb
- 4. https://www.meanacademy.in/nodejs
- 5. https://www.meanacademy.in/aws

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BOS-INFORMATION TECHNOLOGY CHAIRMAN

AISSMS IOIT (AUTONOMOUS),

Object Oriented Programming Lab				
Course Code:	ITPCC407	Credit:	2	
Contact Hrs.:	4 Hrs/week (P)	Type of Course:	Practical	
Examination	Term-work	Oral		
Scheme	25 Marks	25 Marks		

Pre-requisites:

- Programming and Problem Solving -I
- Programming and Problem Solving -II

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	• External/ • Internal	Marks
1	Term Work	Internal	25
2.	Oral	External	25

Course Objectives

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- 2 To handle exceptions using exception handling
- 3 To make use of collections for implementing generics
- 4 To use file handling for given problem

Course Outcomes: Students will be able to

- 407.1 Study and installation of Tools for development and execution of java Programs
- 407.2 Write program for a given problems using OOP Concepts.
- 407.3 Use exception handling mechanism to manage exceptions
- 407.4 Make use of generic framework for given problems
- 407.5 Solve a database-oriented problem using file handling
- 407.6 Demonstrate and Present solution for given problems

List of Experiments

- 1. Study of different modern tools and Installation of JDK and Java IDE like Netbeans or Eclipse
- 2. Design a class for student entity and consider relevant abstract data. Accept and display the data for 5 objects using array of objects.
- 3. Design a class 'Complex 'with data members for real and imaginary part. Provide default and Parameterized constructors. Write a program to perform arithmetic operations of two complex numbers.
- 4. Identify commonalities and differences between Publication, Book and Magazine classes. Title, Price, Copies are common instance variables and saleCopy is common method. The differences are, Bookclass has author and order Copies(). Magazine Class has orderQty, Currentissue, receiveissue().Write a program to find how many copies of the given books are ordered and display total sale of publication
- 5. Design and develop inheritance for a given case study, identify objects and realignship autonomous), and implement inheritance wherever applicable. Employee class with Emp_name.1. Emp_id, Address, Mail_id, and Mobile_no as members. Inherit the classes,

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Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club fund. Generate pay slips for the employees with their gross and net salary

- 6. Design a base class shape with two double type values and member functions to input the data and compute_area() for calculating area of figure. Derive two classes' triangle and rectangle. Make compute_area() as abstract function and redefine this function in the derived class to suit their requirements. Write a program that accepts dimensions of triangle/rectangle and display calculated area. Implement dynamic binding for given case study.
- 7. Design and develop a context for given case study and implement an interface for Vehicles Consider the example of vehicles like bicycle, car, and bike. All Vehicles have common functionalities such as Gear Change, Speed up and apply breaks .Make an interface and put all these common functionalities. Bicycle, Bike, Car classes should be implemented for all these functionalities in their own class in their own way.
- 8. Implement a program to handle Arithmetic exception, Array Index Out OfBounds. The user enters two numbers Num1 and Num2. The division of Num1 and Num2 is displayed. If Num1 and Num2 were not integers, the program would throw a Number Format Exception. If Num2 were zero, the program would throw an Arithmetic Exception. Display the exception.
- 9. Implement a generic program using any collection class to count the number of elements in a collection that have a specific property such as even numbers, odd number, prime number and palindromes.
- 10. Implement a program for maintaining a student records database using File Handling.Student has Student_id,name,Roll_no, Class, marks and address. Display the data for five students.
 - a) Create Database
 - b) Display Database
 - c) Clear Records
 - d) Modify record
 - e) Search Record
- 11. Using all concepts of Object-Oriented programming develop a solution for any application contains following operations such as
 - a) Creation of database
 - b) Addition of data
 - c) Deletion of Data
 - d) Updation of Data
 - e) Display of Data

Oral Evaluation

1. Student will design and develop a mini project using object oriented concepts and present the same during OR exam.

Text Books:

1. Programming with Java, E Balagurusamy, Tata McGraw Hill

Reference Books:

1. Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.

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BOS-INFORMATION TECHNOLOGY AISSIMS IOIT (AUTONOMOUS)

PUNE-1.

- 2. Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.
- 3. Murach's Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
- 4. Core Java Volume-I Fundamentals, Eight Edition, Horstmann& Cornell, Pearson Education.
- 5. The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
- 6. Java Programming, D. S. Malik, Cengage Learning.

E- Books / E- Learning References

- 1. https://www.w3schools.com/java/java_oop.asp
- 2. https://www.geeksforgeeks.org/object-oriented-programming-oops-concept-in-java/

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- 3. https://www.freecodecamp.org/news/object-oriented-programming-concepts-java/
- 4. https://www.guru99.com/java-oops-concept.html

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CHAIRMAN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

Second Year Information Techiology (2022 Course) Processor Architecture and Interfacing Lab				
Course Code:	ITPCC408	Credit:	1	
Contact Hrs.:	2Hrs/week (P)	Type of Course:	Practical	
Examination Scheme	Term-work 25 Marks	Practical 25 Marks		

Pre-requisites:

• Digital Electronics and Computer Organisation

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/	Marks
		Internal	
1.	Term Work	Internal	25
2.	Practical	External	25

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5 X & X @		10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 M M 70 M	

1	To explain embedded C programming co	oncepts to interface different I/O
2	To apply knowledge of programming for	r interfacing of different I/O
3	To make use of Python Programming to	interface I/O using Raspberry Pi.
Course	Outcomes : Students will be able to	
10.0.1	Write embedded C Program to interface	different I/O

400.1	
408.2	Write embedded C Program using serial communication protocols
408.3	Use python programming concepts to interface I/O using Raspberry Pi.

List of Experiments:

- 1. Parallel port interacting of LEDS-Different programs (flashing, Counter, BCD, HEX, Display of Characteristic)
- 2. Write a program for interfacing button, LED, relay & buzzer.

On pressing button1 relay and buzzer is turned ON and LED's start chasing from left to right.

On pressing button2 relay and buzzer is turned OFF and LED start chasing from right to left.

- 3. Interfacing 4X4 keypad and displaying key pressed on LCD.
- 4. Write an Embedded C program for External interrupt input switch press, output at relay
- 5. Generate square wave using timer with interrupt.
- 6. Interfacing serial port with PC both side communication.
- Generation of PWM signal for DC Motor control. 7.
- 8. Study of python programming language (Overview, syntax, One simple program like addition of two numbers).
- 9. Write a python program to add array of n numbers.

10. Write a python program to interface LFD using raspberry Pi

11. Develop a mini project using any microcontroller.

Text Books:

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- 1. Muhammad Ali Mazidi, Rolin D. Mckinlay, Danny Causey 'PIC'Merocont(Aliphonous), Embedded Systems using Assembly and C for PIC18', Pearson Education 2008E-1.
- 2. John Iovine, 'PIC Microcontroller Project Book', McGraw Hill 2000Understand the basics of embedded system
- 3. Ramesh Gaokar, Fundamentals of Microcontrollers and applixcationin Embedded sytem(With PIC 18 Microcontroller family)PenramInternational Publishing.

Reference Books:

- 1. Microcontroller from Assembly Language to C using PIC18FXX2, Robert B. Reese, Davinici Engineering press.
- 2. PIC Microcontroller: An Introduction to Software and Hardware Interfacing, Han
- 3. Way Huang, CengageLearning.Rajkamal, "Embedded Systems", TMH, Second Edition.
- 4. Tony Givargis, "Embedded system design", Wiley Student Edition.
- 5. Peatman,"Design with PICMicrocontroller", Pearson Education.
- 6. Han-way Huang,"PICMicrocontroller", India Edition

E- Books / E- Learning References

- 1. <u>https://www.youtube.com/watch?v=sUkgUQ9mpcg&list=PL8G4ZtHAnWn3rrCZ</u> <u>PIej2-eqk1bjKCsmL&index=49</u>
- 2. <u>https://www.youtube.com/watch?v=WGcierfsSNo&list=PL8G4ZtHAnWn3rrCZPI</u> ej2-eqk1bjKCsmL&index=50
- 3. https://www.youtube.com/watch?v=nLlBssKCN2w
- 4. https://nptel.ac.in/courses/117104072
- 5. https://nptel.ac.in/courses/108105102

ON TECHNOLOGY ONOMOUSI BOS-IN ounc-1.

Second Year Information Technology (2022 Course) Computer Graphics and Animation Lab					
Course Code:	ITPCC409	Credit:	. 1		
Contact Hrs.:	2 Hrs/week (L)	Type of Course:	Practical		
Examination	Term-work	Practical			
Scheme	25 Marks	25 Marks			

Pre-requisites:

• Data Structure and Algorithms

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/	Marks	
		• Internal		
1.	Term Work	Internal	25	
2.	Practical	External	25	

Course Objectives

- To demonstrate the installation of Open GL.
 - To make use of line drawing and circle drawing algorithm concepts
 - To explain different transformation and polygon filling methods.
- To implement computer graphics animation using software.

ourse Outcomes: Students will be able to

409.1	Study and installation of OpenGL
409.2	Write a program for a given problem using line drawing and circle drawing algorithm
409.3	Demonstrate different transformation and filling methods on polygon
409.4	Create the animation using software

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List of Experiments

- 1. Install and explore the OpenGL.
- 2. Draw any line or shape using any Line drawing algorithms using following line patterns.

i) Simple line ii) Dotted line iii) Dashed line iv) Solid line

using mouse interface. Divide the screen in four quadrants with center as (0, 0). The line should work for all the slopes +ve, -ve, >1, <1.

- 3. Implement Bresenham's circle drawing algorithm to draw any object. The object should be displayed in all the quadrants with respect to center and radius.
- 4. Implement translation, rotation, scaling and shear transformation on Polygon
- 5. Implement the following polygon filling methods I. Floodfill or seed fill II. boundary fill
- 6. Create bouncing square within canvas using H IML and JavaScript.
- 7. Moving car animation using CSS.

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- 8. Create a coffee machine animation using HTML, JavaScript and CSS.
- 9. Use graphics animation tools like Maya/Blender/3D Studio for creation of theme based animation.
- 10. Design and develop a mini project using computer graphics algorithms.

Text Books:

- 1. D. Hearn, M. Baker, "Computer Graphics C Version", 2nd Edition, Pearson Education, 2002, ISBN 81 7808 794 4
- 2. S. Harrington, "Computer Graphics", 2nd Edition, McGraw-Hill Publications, 1987, ISBN 0-07-100472-6.

Reference Books:

- 1. D. Rogers, "Procedural Elements for Computer Graphics", 2nd Edition, Tata McGraw-Hill Publication, 2001, ISBN 0 - 07 - 047371 - 4.
- 2. J. Foley, V. Dam, S. Feiner, J. Hughes, "Computer Graphics Principles and Practice", 2nd Edition, Pearson Education, 2003, ISBN 81 7808 038 9.
- 3. Foley, "Computer Graphics: Principles & Practice in C", 2e, ISBN 9788131705056, Pearson Edu.
- 4. F.S. Hill JR, "Computer Graphics Using Open GL", Pearson Education
- 5. Beginning Adobe Animate CC: Learn to Efficiently Create and Deploy Animated and Interactive Content by Tom Green & Joseph L
- 6. Adobe Animate CC Classroom in a Book by Russell Chun

E- Books / E- Learning References

- 1. https://www.bloopanimation.com/animation-for-beginners/
- 2. https://www.glprogramming.com/red/chapter01.html
- 3. https://www.w3schools.com/css/css_intro.asp
- 4. https://www.w3schools.com/html/html_intro.asp

CHAIRMAN BOS-INFORMATION TECHNOLOGY AISSMS IOIT (AUTONOMOUS), PUNE-1.

Second Year Information Technology (2022 Course) Audit course- Sustainable Development Goals						
Course Code:	ITHSM410	Credit				
Contact Hours:	1 Hrs/week (P)	Type of Course:	Lecture			
Examination Scheme	Term-work 25 Marks					

Pre-requisites:

Nil

Course assessment methods/tools:

Sr. No.	Course assessment methods/tools	External/ Internal	Marks
1.	Term-work	Internal	25

Course	Objectives
1	To discuss the sustainable development goals.
2	To explain framework of Seventeen Sustainable Development Goals.
3	To discuss structure and order of Sustainable Development Goals.
- 4	To study cases of Sustainable Development Goals.

Course	Outcomes: Students will be able to
412.1	Explain sustainable development goals.
412.2	Describe framework of Seventeen Sustainable Development Goals.
412.3	Discuss structure and order of Sustainable Development Goals.
412.4	Report case studies of Sustainable Development Goals.

Topics Covered

Unit 1: Introduction to SDGs(3 hrs)

Sustainability, Sustainable development, Role of UN and the Need for SDGs, Scope and Inclusion and Agenda 2030, Our Common Future and Philosophy behind SDGs, Distinction between Development and Sustainable Development

Unit 2: Sustainable Development Goals (5 hrs) Framework and Structuring of Seventeen SDGs SDG 1: No Poverty SDG 2: Zero Hunger SDG 3: Good Health and Well-being SDG 4: Quality Education SDG 5: Gender Equality SDG 6: Clean Water and Sanitation CHAIRMAN SDG 7: Affordable and Clean Energy **BOS-INFORMATION TECHNOLOGY** SDG 8: Decent Work and Economic Growth AISSMS IOIT (AUTONOMOUS). SDG 9: Industry, Innovation and Infrastructure PUNE-1. SDG 10: Reduced Inequality SDG 11: Sustainable Cities and Communities

SDG 12: Responsible Consumption and Production

SDG 13: Climate Action

SDG 14: Life Below Water

SDG 15: Life on Land

SDG 16: Peace and Justice Strong Institutions

SDG 17: Partnerships to achieve the Goal

Unit 3: SDG Structure and Order (3 hrs)

Interrelationships and Connections between Seventeen SDGs, SDG Structure and Order at Levels of People, Ecological and Spiritual, SDGs and Socio Ecological Systems: Economy; Society; Biosphere.

Unit 4: Sustainable Development Goals- Case Studies (2 hrs)

Case Studies from around the World, Case studies from India

Text Books

1. Hazra, Somnath., Bhukta, Anindya (2020) Sustainable Development Goals An Indian Perspective, Springer International Publishing, Switzerland

2. Ziai, Aram (2016) Development Discourse and Global History from colonialism to the sustainable development goals. Routledge, London & amp; New York

3. OECD (2019), Sustainable Results in Development: Using the SDGs for Shared Results and

Impact, OECD Publishing, Paris, https://doi.org/10.1787/368cf8b4-en.

4. Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., Woelm, F. 2020. The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020. Cambridge: Cambridge University Press.

Relevant websites, movies, and documentaries

https://www.un.org/sustainabledevelopment/

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Second Year Information Technology (2022 Course)Lifelong Learning Skill -ICourse Code:ITPCC411Credit:1

Lifelong Learning Skills courses introduced for holistic development of students where all the students are required to acquire 1 credit in 4th semester from **Extracurricular Activities** which will have grades as below. Activity Certificate obtained either in 3rd sem or 4th sem from below mentioned activities will be considered for grading in 4th sem.

Sr. No.	Activity	Level	Achievement	Grade	Achievement	Gr ade
1.	Sports	Inter collegiate	Participation	Р	Prize winner	C
		University	Participation	C	Prize winner	B
		Zonal	Participation	В	Prize winner	B+
		State	Participation	B+	Prize winner	Α
	a Maraja yai	National	Participation	A	Prize winner	A+
		International	Participation	A+	Prize winner	0
2.	2. NSS/NCC	Camp	Attende !	В		
		Camp + 5 Activities	Attended	B+	N	
Sr. No. 1. 2. 3. 4.		Camp + 10 Activities	Attended	A		
19 3		Camp + 15 Activities	Attended	A+	18 . A.	
		Camp + 20 Activities	Attended	0	19. 19. 19. 19. 19. 19. 19. 19. 19. 19.	
3.	Cultural	Inter collegiate	Participation	В	Prize winner	B+
		State	Participation	B+	Prize winner	A
		National	Participation	Α	Prize winner	A+
		International	Participation	A+	Prize winner	0
4.	Community	Certified by	1 Activity	В	a	
	Engagement	Engagement NGO/Authorities with report and geo-tagged	2 Activities	B+		
			3 Activities	A		1.00
		photograph	4 Activities	A+		
			5 Activities	0		

Extracurricular Activities:

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Seco	nd Year Inform	ation Tech ology (2	122 Course)
	Lifelong	Learning Skill -II	
Course Code:	ITPCC412	Credit:	1

Lifelong Learning Skills courses introduced for holistic development of students where all the students are required to acquire 1 credit in 4th semester from **Co-curricular Activities** which will have grades as below. Activity Certificate obtained either in 3rd sem or 4th sem from below mentioned activities will be considered for grading in 4th sem.

Co-curricular Activities:

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Sr. No	Activity	Level	Achievement	Grade	Achievement	Grade
1.	Conference	National	Participation	В	Prize winner	A
		International	Participation	B+	Prize winner	A+
		International (Scopus indexing)	Participation	A+	Prize winner	0
2.	Journal Publication	Non-refereed but recognized and reputed journal/ periodical, having ISSN number.	Publication	В		
		Refereed Journal - As listed by UGC	Publication	A		
		Refereed Journals- As listed by Scopus	Publication	A+		
		Refereed Journals - As listed by SCI/ SCIE	Publication	0		
3.	Hackathon		Participation	A+	Prize winner	0
4.	Professiona 1 Body	National	Membership	P	3 rd Prize	A
			Activities/participation	В	2 nd Prize	A+
			5 participations	B+	1 st Prize	0
5.	Internship	1 week	Completed	C		
		2 week	Completed	В		
		3 week	Completed	B+	Sponsored Project	A+
		4 week	Completed	A	Job through internship	0
6.	Entreprene urship	Awareness camp	Attended	A	Product Developed	A+
					Own Startup	0
7.	Project/Tec	Inter collegiate	Participation	Р	Prize winner	С
	hnical	University	Participatio.	C	Prize winner	В
	events	Zonal	Participation	В	Prize winner	B+
		State	Participatio1.	B+	Prize winner	Α.
		National	Participation	Α	Prize winner	A+
		International	Participation	A+	Prize winner	0

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