

# **SANDIP** SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

# CURRICULA FOR UG PROGRAMS Table 1: Coverage of Subject Area over Curriculum (UG Programs)

Semester	Subject Area Coverage
I-II	Basic Science Courses, Engineering Science Course, Program Core Courses, Vocational and Skill Enhancement Courses, Ability Enhancement Courses, Indian Knowledge System (IKS), Co-curricular Courses.
III-IV	Combined institute and program core courses, Open Electives, Multidisciplinary Minor, Value Added Courses, Vocational and Skill Enhancement Courses, Ability Enhancement Courses, Entrepreneurship/Economics/Management Course, Value Education Courses, Community Engineering Project.
V-VI	Combined institute and program core courses, Program Electives, Multidisciplinary Minor, Open Elective, Vocational and Skill Enhancement Course.
VII - VIII	Program Core Courses, Program Electives, Multidisciplinary Minor, Internship, Research Methodology, Project work.

	Assessment for Theory Course (Scaled to allotted marks)								
CIA	Weightage (Marks)	Description							
CIA 1	10	Home Assignments							
CIA 2	20	Written Exam Components							
CIA 3	10	Activity/Project and Research Based Learning along with Seminar Presentation							
CIA 4	10	Behavioral Attitude and General Discipline (5%), Theory and Practical Attendance (5%)							
ESE	50	End Semester Examination							
TOTAL	100								



# **SANDIP** SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

			Formativ	e Assessment
CIA: Continuous	*: Oral Examination	CIA	Weightage	Description
Internal	PCC: Program Core course	CIA 1	10%	Home Assignment
Assessment	<b>PEC</b> : Programme elective Core	CIA 2	20%	Written Exam
L: Theory Lecture	<b>OE:</b> Open Elective	CIA 3	10%	Seminar Presentation
T: Tutorial P: Practical ESE: End Semester	VAC: Value Added Courses  AEC: Ability Enhancement curses  CEP/FP: Community  Engineering Project/Field project	CIA 4	10%	<ul> <li>Behavioral Attitude + General Discipline (5%)</li> <li>Theory + practical attendance (5%)</li> </ul>
Examination	VSEC: Vocational and Skill Enhancement Course MDM: Multidisciplinary Minor Course	TOTAL	50%	

	Assessment for Theory Course (Scaled to allotted marks)									
CIA	Weightage (Marks)	Description								
CIA 1	CIA 1 10 Home Assignments									
CIA 2	20	Written Exam Components								
CIA 3	10	Activity/Project and Research Based Learning along with Seminar Presentation								
CIA 4	10	Behavioral Attitude and General Discipline (5%), Theory and Practical Attendance (5%)								
ESE	50	End Semester Examination								
TOTAL	100									





Department of Computer Science and Engineering MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA,INDIA

# Multidisciplinary Minor offered by Computer Science & Engineering Department

Sr. No.	Course Name	Course Code	Scheme	Credits	Semester
1	Data Structures	NYCSM01	2-0-0	2	III
2	Data Base Managements system	NYCSM02	2-0-0	2	IV
3	Operating System	NYCSM03	4-0-0	4	V
4	Computer Network	NYCSM04	2-0-0	2	VI
5	Software Engineering	NYCSM05	2-0-0	2	VII
6	Machine Learning	NYCSM06	2-0-0	2	VIII
	TOTAL	•		14	

# Honors Courses offered by Computer Science & Engineering Department Minor in Computer Science and Engineering

Sr. No.	Course Name	Course Code	Scheme	Credits	Semester
1	Multicore Programming	NYCSH01	3-0-0	3	V
2	Software Defined Networking	NYCSH02	3-0-0	3	V
3	Pervasive and Ubiquitous Computing	NYCSH03	3-0-0	3	VI
4	Virtualization Techniques	NYCSH04	3-0-0	3	VI
5	Randomized Algorithm	NYCSH05	3-0-0	3	VII
6	Fog and Edge Computing	3-0-0	3	VIII	
	TOTAL	18			





**Department of Computer Science and Engineering**MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA,INDIA

# Open Electives offered by Computer Science & Engineering Department

Sr. No.	Open Elective #	Course Name	Course Code	Scheme	Credits	Semester
1	Open Elective I	Fundamental of Computer Basics	NYCSO01	NYCSO01 3-0-0		III
2	Open Elective I	Multimedia System	NYCSO02	3-0-0		III
3	Open Elective II	Introduction to Artificial Intelligence	NYCSO03	3-0-0	3	IV
4	Open Elective II	Introduction to DBMS	NYCSO04	3-0-0		IV
5	Open Elective III	Cyber Law & Ethics	NYCSO05	2-0-0		V
6	Open Elective III	Introduction to Reverse Engineering	NYCSO06	2-0-0	2	V
		TOTAL			08	

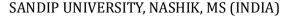




**Department of Computer Science and Engineering**MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA,INDIA

# Programme Elective Courses offered by Computer Science & Engineering Department in

Sr. No.	Programme Elective Courses#	Course Name	Course Code	Scheme	Credits	Semester
1	PEC#1	Advanced Computer Organization	NYCSE01	3-0-0	2	V
2	PEC#1	Advanced Computer Architecture	NYCSE02	3-0-0	3	V
3	PEC#2	Mobile Computing	NYCSE03	3-0-0	2	VI
4	PEC#2	Information Storage and Retrieval	NYCSE04	3-0-0	3	VI
5	PEC#3	Mobile Application Development	NYCSE05	3-0-0	3	VI
6	PEC#3	Cloud Computing	NYCSE06	3-0-0	3	VI
7	PEC#4	Software Project Management	NYCSE07	3-0-0	3	VII
8	PEC#4	Software Defined Networks	NYCSE08	3-0-0	3	VII
9	PEC#5	Internet of Things	NYCSE09	3-0-0	3	VIII
10	PEC#5	Distributed Database System	NYCSE10	3-0-0		VIII
11	PEC#6	Distributed Computing System	NYCSE11	3-0-0	3	VIII
12	PEC#6	High Performance Networks	NYCSE12	3-0-0	3	VIII
		TOTAL		-	18	





VAC

10

#### SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

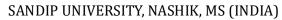
#### B. Tech Compute Sciences and Engineering (CSE) Semester – III **Teaching Examination Scheme** Scheme (Hrs./Week) Course Total Sr. **Course Name Formative Summative** Marks Core Code No. Assessment Assessment L T P $\mathbf{C}$ CIA **ESE** Course Course Lab Lab Discrete Mathematics and 3 **PCC** 3 50 100 100 NYCS301 1. Logic 3 3 **PCC Computer Graphics** 50 100 100 NYCS302 3 3 **PCC Data Structures** 50 100 100 NYCS303 3. 2 **PCC Data Structures Laboratory** 1 50 50\* 50 NYCS311 4. 5. **MDM** Minor Course 1 # 2 2 50 100 100 6. 3 3 OE Open Elective-I --50 100 100 **AEC** Key Competencies for 0 0 4 2 50 50\* 50 NHSA11 7. (HSSM) Career Growth Constitutional and Human 2 VEC 2 50 100 100 8. NLWV01 Rights Community Engineering 4 2 50\* **CEP** 50 50 9. NYCS312 Project **TOTAL** 00 10 21 300 150 600 **750** 16 150 Value Added Course Computer Graphics

Programming Using C++

2

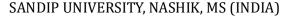
25

25





		Formative Assessment					
CIA: Continuous Internal	*: Oral Examination	CIA	Weightage	Description			
Assessment	PCC: Program Core course	CIA 1	10%	Home Assignment			
L: Theory Lecture	PEC: Programme Elective Core	CIA 2	20%	Written Exam			
T: Tutorial	OE: Open Elective	CHIZ	2070	Witten Lam			
P: Practical	VAC: Value Added Courses	CIA 3	10%	Seminar Presentation			
ESE: End Semester Exam	AEC : Ability Enhancement Course CEP/FP: Community Engineering Project/Field Project VSEC: Vocational and Skill	CIA 4	10%	<ul> <li>Behavioral Attitude + General Discipline (5%)</li> <li>Theory + Practical attendance (5%)</li> </ul>			
	Enhancement Course  MDM: Multidisciplinary Minor  Course	TOTAL	50%				





VAC

11

Java Programming

#### SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

#### **Department of Computer Science and Engineering**

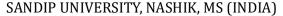
MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

#### B. Tech Compute Sciences and Engineering (CSE) Semester - IV Teaching **Examination Scheme** Scheme (Hrs./Week) Course **Total** Sr. Core **Course Name Formative Summative** Marks Code No. Assessment Assessment L T P $\mathbf{C}$ CIA **ESE** Course Course Lab Lab Object Oriented 3 3 1 PCC NYCS401 50 100 100 Programming using Java Database Management NYCS402 3 3 2 PCC 50 100 100 --System Computer Organization 3 3 3 **PCC** NYCS403 50 100 100 and Architecture Database Management **PCC** NYCS411 2 1 50\* 4 50 50 System Laboratory Minor course 2 # 2 2 5 MDM 50 100 100 3 3 6 **OE** Open Elective-II 50 100 100 --Object Oriented 7 **VSEC** NYCS412 Programming 4 2 50 50\* 50 Laboratory Strategic **AEC** 8 NHSA12 Communication for 4 2 50 50\* 50 --(HSSM) Professionals **EEMC** Personal Finance 9 2 NYCS413 4 50\* 50 50 --(HSSM) Management **VEC** Innovation and NYCS414 4 2 10 50 50\* 50 (HSSM) Entrepreneurship TOTAL 14 00 23 250 250 **500** 250 **750** Value Added Course

2

25

25





#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

			Formative	e Assessment
CIA: Continuous Internal	*: Oral Examination	CIA	Weightage	Description
Assessment	PCC: Program Core course	CIA 1	10%	Home Assignment
L: Theory Lecture T: Tutorial	PEC: Programme elective Core  OE: Open Elective	CIA 2	20%	Written Exam
P: Practical	VAC: Value Added Courses	CIA 3	10%	Seminar Presentation
ESE: End Semester Exam	AEC : Ability Enhancement curses CEP/FP: Community Engineering project/Field Project VSEC: Vocational and Skill	CIA 4	10%	<ul> <li>Behavioral Attitude +         General Discipline         (5%)</li> <li>Theory + Practical         attendance (5%)</li> </ul>
	Enhancement Course  MDM: Multidisciplinary minor course	TOTAL	50%	

#### Exit option:

- Award of UG Certificate in exiting the First Year programme after securing minimum 40 credits will be awarded UG Certificate in the Computer Sciences and Engineering provided they secure 8 credits in work-based vocational courses or internship / Apprenticeship offered during summer vacation in addition to 4 credit from skill based courses earn during first and second semester. Refer Annexure 1
- Award of UG Diploma in exiting the second Year programme after securing minimum 80 credits will be awarded UG Diploma in the Computer Sciences and Engineering provided they secure 8 credits in work-based vocational courses or internship / Apprenticeship offered during summer vacation in addition to 4 credit from skill based courses earn during first and second semester. Refer Annexure 1





## **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA,INDIA

#### Annexure-1

Course Work (for Exit Criterion to UG Diploma)																																																																				
	Commo		Teaching Scheme (Hrs./Week)				Scheme Exam			neme	T ( )																																																									
Sr. No.	Core	Course Code	Course Name	L T P C		L T P C		L T P C	L T P C	L T P C	L T P C	L T P C	L T P C	L T P C	L T P C	L T P C		L T P C	L T P C	Asses		L T P C		L T P C		T P C		T P C	T P C	T P C		L T P C	L T P C	L T P C	L T P C	L T P C	L T P C	L T P C		L T P C		L T P C			L T P C	L T P C	L T P C	L T P C		T P C	T P C	T P C	T P C	P C	P C	P C	P C	P C	P C	P C	Т Р C	T P C	T P C	Forma Assessi CIA			nmative essment E	Total Marks
								Course	Lab	Course	Lab																																																									
1	EC		Prompt Engineering for Software Development	3			3	50	1	100	1	100																																																								
2	EC	NYCSX02	Python Programming for AI	3			3	50	1	100		100																																																								
3	EC	NYCSX03	Internship (2 Weeks)				2		50			50																																																								



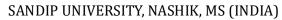
# SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

#### B. Tech Compute Sciences and Engineering (CSE) Semester –V

	Schiester v											
Sr.	Sr. Core	Course Code	Course Name	L	Т	P	P C	Form Assess CL	ment		native sment E	Total
1100					-			Course	Lab	Course	Lab	
1	PCC	NYCS501	Theory of Computation	3			3	50		100		100
2	PCC	NYCS502	Operating System	3			3	50		100		100
3	PCC	NYCS503	Data Communication	3			3	50		100	-	100
4	PCC	NYCS511	Operating System Laboratory	1		2	1		50		50*	50
5	PEC	NYCSE-	Program Elective-I	3			3	50		100		100
6	MDM		Minor Course 3#	3			3	50		100		100
7	OE		Open Elective III	2			2	50		100		100
8	AEC (HSSM)	NHSA13	Essential Aptitude Skills	1		4	2		50		50*	50
	TOTAL 17 00 6 20 300 100 600 100 700											700
			Value Adde	ed Co	urse							
09	VAC		Network Programming			2			25			25





		Formative Assessment					
CIA: Continuous Internal	*: Oral Examination	CIA	Weightage	Description			
Assessment	PCC: Program Core Course	CIA 1	10%	Home Assignment			
L: Theory Lecture T: Tutorial	PEC: Programme elective Core  OE: Open Elective	CIA 2	20%	Written Exam			
P: Practical	VAC: Value Added Courses	CIA 3	10%	Seminar Presentation			
ESE: End Semester Exam	AEC: Ability Enhancement Courses CEP/FP: Community Engineering Project/Field Project	CIA 4	10%	<ul> <li>Behavioral Attitude + General Discipline (5%)</li> <li>Theory + Practical attendance (5%)</li> </ul>			
	VSEC: Vocational and Skill Enhancement Course MDM: Multidisciplinary Minor Course	TOTAL	50%				





#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

# B. Tech Compute Sciences and Engineering (CSE) Semester – VI

			Semes	ter –	VI							
				Teaching Scheme (Hrs./Week)				Examination Scheme				
Sr. No.	Core	Course Code	Course Name	L	Т	P	C	Forma Assessi CIA		Summ Assess ESE		Total Marks
					-	•		Course	Lab	Course	Lab	
1.	PCC	NYCS601	Design and Analysis of Algorithm	3			3	50		100		100
2.	PCC	NYCS602	Computer Networks	3			3	50		100		100
3.	PCC	NYCS603	Software Engineering	3			3	50		100		100
4.	PCC	NYCS611	Design and Analysis of Algorithm Laboratory			2	1		50		50*	50
5.	PEC	NYCSE_	Program Elective-II	3			3	50		100		100
6.	PEC	NYCSE_	Program Elective-III	3			3	50		100		100
7.	MDM		Minor Course 4#	2			2	50		100		100
8.	VSEC	NYCS612	Computer Networks Laboratory			4	2		50		50*	50
9.	AEC	NHSA14	Employability Skills and Career Advancement			4	2		50		50*	50
			TOTAL	17		10	22	300	150	600	150	750
			Value Ad	ded C	ours	se						
11	VAC		Advanced Web Designing			2			50			50



## SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

		Formative Assessment					
CIA: Continuous Internal	*: Oral Examination	CIA	Weightage	Description			
Assessment	PCC: Program Core course	CIA 1	10%	Home Assignment			
L: Theory Lecture T: Tutorial	PEC: Programme Elective Core  OE: Open Elective	CIA 2	20%	Written Exam			
P: Practical	VAC: Value Added Courses	CIA 3	10%	Seminar Presentation			
ESE: End Semester Exam	AEC: Ability Enhancement Courses CEP/FP: Community Engineering Project/Field Project VSEC: Vocational and Skill	CIA 4	10%	<ul> <li>Behavioral Attitude +         General Discipline         (5%)</li> <li>Theory + Practical         attendance (5%)</li> </ul>			
	Enhancement Course  MDM: Multidisciplinary Minor  Course	TOTAL	50%				

#### Exit option:

• Students exiting the 3-year UG program will be awarded B.Voc. in the Computer Sciences and Engineering upon securing minimum 120 credits with additional 8 credits in skill-based vocational courses (skill-based courses, internship, mini projects etc.) offered during summer vacation after the sixth semester. **Refer Annexure 2** 

#### Annexure-2

	Course Work (for Exit Criterion to UG Diploma) (B. Voc)															
		Commo		Teaching Scheme (Hrs./Week)			Scheme			Scheme Examinat			Examination		eme	T. ( )
Sr. No.	Core	Course Code	Course Name	L	Т	P	С		Formative Assessment CIA		Assessment		nmative essment E	Total Marks		
								Course	Lab	Course	Lab					
1	CE	NYCSX04	Networking Essentials	3			3	50		100		100				
2	CE	NYCSX05	Machine Learning with Practical Applications	3			3	50	1	100	-1-	100				
3	CE	NYCSX06	Internship (4 weeks)		-		2		50			50				



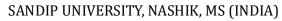
# SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

#### **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA, INDIA

#### B. Tech Compute Sciences and Engineering (CSE) Semester – VII

				Tea	ching (Hrs	_		Examination		on Schem	n Scheme	
Sr. No.	Core	Course Code	Course Name	L	Т	P	C	Formative Assessment CIA				Total Marks
				L	1	r		Course	Lab	Course	Lab	
1.	PCC	NYCS701	Complier Design	3			3	50		100		100
2.	PCC	NYCS702	Data Science and Machine Learning	3			3	50		100		100
3.	PEC	NYCSE_	Program Elective-IV	3			3	50		100		100
4.	MDM		Minor Course 5#	2			2	50		100		100
5.	ELC	NYCS711	Internship				12		100		100	200
6.	AEC	NHSA15	Corporate Readiness & Entrepreneurial Excellence			4	2		50		50	100
			TOTAL	10	00	04	25	200	150	400	150	700
Value Added Course												
7	VAC	VAC105	Data Science Essentials	-	-	2	-	-	25	-	-	25
	*45 Day	ys Internship d	uring summer vacation of 6 <sup>th</sup> Se	meste	r	I	ı	I		I		1





		Formative Assessment			
CIA: Continuous Internal	*: Oral Examination	CIA	Weightage	Description	
Assessment	PCC: Program Core Course	CIA 1	10%	Home Assignment	
L: Theory Lecture	PEC: Programme Elective Core	CIA 2	20%	Written Exam	
T: Tutorial	OE: Open Elective	CIAZ	2070	WITHOU Exam	
P: Practical	VAC: Value Added Courses	CIA 3	10%	Seminar Presentation	
ESE: End Semester Exam	AEC : Ability Enhancement Courses			Behavioral Attitude +  Convert Dissipling (59)	
	CEP/FP: Community Engineering	CIA 4	10%	General Discipline (5%)  Theory + Practical	
	Project/Field Project			attendance (5%)	
	VSEC: Vocational and Skill				
	Enhancement Course				
	MDM: Multidisciplinary Minor	TOTAL	50%		
	Course				



# **SANDIP** SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

	B. Tech Compute Sciences and Engineering (CSE) Semester – VIII												
					Teaching Scheme (Hrs./Week)				Examination Scheme				
Sr. No.	Core	Course Code	Course Name	L	Т	P	C	Form: Assess CLA	ment		native sment E	Total Marks	
								Course	Lab	Course	Lab		
1.	PCC	NYCS801	Cryptography and Security	3			3	50		100		100	
2.	PCC	NYCS802	High Performance Computing	3			3	50		100		100	
3.	PEC	NYCS-	Program Elective V	3			3	50		100	1	100	
4.	PEC	NYCS-	Program Elective VI	3			3	50		100	1	100	
5.	RM	NRDP101	Research Methodology	4			4	50		100	-	100	
6.	ELC	NYCS811	Project			8	4		50		100*	100	
7.	MDM		Minor Course 6#	3			3	50		100	-	100	
			TOTAL	18	00	08	23	300	100	600	100	800	
			Value Ado	led C	ours	e							
8	VAC		Cryptography-Practical Approach			2		-	25	-	-	25	

		Formative Assessment					
CIA: Continuous Internal	*: Oral Examination	CIA	Weightage	Description			
Assessment	PCC: Program Core Course	CIA 1	10%	Home Assignment			
L: Theory Lecture	PEC: Programme Elective Core	CIA 2	20%	Written Exam			
T: Tutorial	OE: Open Elective	CIAZ	2070	WITHCH Exam			
P: Practical	VAC: Value Added Courses	CIA 3	10%	Seminar Presentation			
ESE: End Semester Exam	AEC : Ability Enhancement Courses CEP/FP: Community Engineering Project/Field Project VSEC: Vocational and Skill	CIA 4	10%	<ul> <li>Behavioral Attitude + General Discipline (5%)</li> <li>Theory + Practical attendance (5%)</li> </ul>			
	Enhancement Course  MDM: Multidisciplinary Minor  Course	TOTAL	50%				





# **Department of Computer Science and Engineering**

MAHIRAVANI, TRIMBAK ROAD, TAL & DIST: NASHIK-422213, MAHARASHTRA,INDIA

## **Credit Distribution**

Semester		Total Credits as per GR	Total Credits SUN CSE
Basic Science Course		14-18	16
Engineering Science Course	BSC/ESC	16-12	12
Programme Core Course ( PCC)		44-56	52
Programme Elective Course ( PEC)	Program Courses	20	18
Multidisciplinary Minor (MD M)	Multidisciplinary	14	14
Open Elective (OE) Other than a particular program	Courses 08		8
Vocational and Skill Enhancement Course (VSEC)	ement Course Skill Courses 0		08
Ability Enhancement Course (AEC -01, AEC-02)		04	12
Entrepreneurship/ Economics / Management Course	Humanities Social Science and Management	04	02
Indian knowledge System ( IKS)	(HSSM)	02	02
Value Education Course (VEC)		04	04
Research Methodology		04	04
Community Engineering Project (CEP ) / Field Project (FP )	Experiential Learning Courses	02	02
Project	Dearming Courses	04	04
Internship/ OJT		12	12
Co-curricular Course ( CC )	Liberal Learning Courses	04	04
<b>Total Credits ( Major )</b>		160-176	174