GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CURRICULUM STRUCTURE
AND
COs & CO-PO/PSO MAPPING

(1st Semester to 8th Semester of R16
w.e.f. 2016-2017 Admission Batch)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

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GURU NANAK INSTITUTE OF TECHNOLOGY
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CURRICULUM STRUCTURE

(1st Semester to 8th Semester of R16 w.e.f. 2016-2017 Admission Batch)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

1st Semester							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	M 101	Mathematics -I	3	1	0	4	4
2	PH 101	Physics – I	3	1	0	4	4
3	EC 101	Basic Electronics Engineering	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
A. PRACTICAL							
6	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
7	PH191	Physics -I Lab	0	0	3	3	2
8	EC 191	Basic Electronics Engineering Lab	0	0	3	3	2
9	ME 192	Workshop Practice	0	0	3	3	2
B. SESSIONAL							
10	XC181	Extra-Curricular Activity (NSS/ NCC)	0	0	2	2	1
Total of Practical & Sessional						13	08

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2nd Semester							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201	Chemistry	3	1	0	4	4
3	EE 201	Basic Electrical Engineering	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291	Chemistry Lab	0	0	3	3	2
8	EE 291	Basic Electrical Engineering Lab	0	0	3	3	2
9	ME 291	Engg Drawing & Graphics	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0

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			3rd Semester					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	BS	M(CSE)301	Mathematics-III	3	1	0	4	4
2	BS	PH301	Physics-II	3	0	0	3	3
3	ES	EE(CSE) 301	Circuit Theory and Network	3	0	0	3	3
4	PC	CS301	Data Structures	3	0	0	3	3
5	PC	CS302	Digital Electronics and Computer Organization	3	0	0	3	3
			Total Theory				16	16
			B. PRACTICAL					
6	BS	PH391	Physics-II Lab	0	0	3	3	2
7	ES	EE(CSE)391	Circuit Theory and Network Lab	0	0	3	3	2
8	PC	CS391	Data Structures Lab	0	0	3	3	2
9	PC	CS392	Digital Electronics and Computer Organization Lab	0	0	3	3	2
			Total Practical				12	8
C. SESSIONAL								
10	HU	HU381	Technical Report writing and Language Practice Lab	0	0	2	2	1
Total							**30**	**25**

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			4th Semester					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	BS	M(CSE)401	Numerical Methodsand Statistics	3	0	0	3	3
2	HS	HU401	Environmental science	2	0	0	2	2
3	PC	CS401	Computer Architecture	3	0	0	3	3
4	PC	CS402	Design and Analysis of Algorithms	3	0	0	3	3
5	PC	CS 403	Formal Language and Automata Theory	3	0	0	3	3
Total Theory							14	14
			B. PRACTICAL					
6	BS	M(CSE)491	Numerical Methodsand Statistics Lab	0	0	3	3	2
7	PC	CS491	Computer Architecture Lab	0	0	3	3	2
8	PC	CS492	Algorithms Lab	0	0	3	3	2
9	PC	CS493	Programming with C++ Lab	1	0	2	3	2
Total Practical							12	8
			C. MANDATORY COURSES					
10	MC	MC 481	Technical Communication & Soft Skills	0	0	3	3	2 Unit
Total							**29**	**22**

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SL No			5th Semester					
				Contact hours				Cr. Points
	Type	Code	A. THEORY	L	T	P	Total	
1	PC	CS501	Computer Graphics	3	0	0	3	3
2	PC	CS502	Operating System	3	0	0	3	3
3	HS	HU 503	Economics for Engineers	2	0	0	2	2
4	PC	CS503	Data Base Management System	3	0	0	3	3
5	FE	CS(IT)504A	Object Oriented Programming usingJava	3	0	0	3	3
		CS(IT)504B	Multimedia Technology					
		CS(ECE)504C	Communication Engineering					
6	PE	CS505A	Operations Research	3	0	0	3	3
		CS505A	Computational Geometry					
		CS505A	Digital Signal Processing					
Total Theory							17	17
			B. PRACTICAL					
7	PC	CS591	Computer GraphicsLab	0	0	3	3	2
8	PC	CS592	Operating System Lab	0	0	3	3	2
9	PC	CS 593	Data Base Management System Lab	0	0	3	3	2
10	FE	CS(IT)594A	Object Oriented Programming Lab					
		CS(IT)594B	Multimedia Technology Lab					
		CS(ECE)594C	Communication Engineering Lab	**0**	**0**	3	3	2
Total Practical							12	8
			C. MANDATORY COURSES					
11	MC	MC581	General Aptitude /Foreign Language	0	0	3	3	2 Unit
Total							32	25

GURU NANAK INSTITUTE OF TECHNOLOGY
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			6th SEMESTER					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	PC	CS601	Computer Network	3	0	0	3	3
2	PC	CS602	Microprocessor and Microcontroller	3	0	0	3	3
3	PC	CS603	Software Engineering	3	0	0	3	3
4	PE	CS604A	Compiler Design	3	0	0	3	3
		CS604B	Robotics					
		CS604C	Simulation and modeling					
5	FE	IT(CSE)605A	Pattern Recognition	3	0	0	3	3
		IT(CSE)605B	Distributed Operating System					
		IT(CSE)605C	Distributed Database					
		IT(CSE)605D	Computer Vision					
6	FE	IT(CSE)606A	Data Warehousing and Data Mining	3	0	0	3	3
		IT(CSE)606B	Digital ImageProcessing					
		IT(CSE)606C	E-commerce and ERP					
Total Theory							18	18
			B. PRACTICAL					
7	PC	CS691	Computer Network Lab	0	0	3	3	2
8	PC	CS692	Microprocessor and Microcontroller Lab	0	0	3	3	2
9	PC	CS693	Software Engineering Lab	0	0	3	3	2
10		CS682	Mini Project	0	0	3	3	2
Total Practical							12	8
			C. SESSIONAL					
10		CS681	Group Discussion and Seminar	0	0	3	3	2
Total							33	28

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			7th SEMESTER					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	PC	CS701	Artificial Intelligence	3	0	0	3	3
2	HS	HU702	Values & Ethics in Profession	2	0	0	2	2
3	PE	CS702A	Soft Computing	3	0	0	3	3
		CS702B	Natural Language Processing					
		CS702C	Web technology					
4	PE	CS703A	Cloud Computing	3	0	0	3	3
		CS703B	Data Analytics					
		CS703C	Sensor Network and IOT					
5	PE	CS704A	Distributed Algorithms	3	0	0	3	3
		CS704B	Bio-informatics					
		CS704C	Cryptography and Network Security					
Total Theory							14	14
			B. PRACTICAL					
6	PC	CS791	Artificial Intelligence Lab	0	0	3	3	2
7	PE	CS792A	Soft Computing Lab	0	0	3	3	2
		CS792B	Natural Language Processing Lab					
		CS792C	Web Technology Lab					
8		CS795	Project-1	0	0	3	3	2
Total Practical							9	6
			C. SESSIONAL					
9		CS781	Industrial Training	0	0	0	0	2
Total Sessional								
			D. MANDATORY COURSES					
10	MC	MC781	Technical Skill Development	0	0	3	3	2Unit
Total							26	22

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			8th SEMESTER					
				Contact hours				Cr. Points
			8th Semester	L	T	P	Total	
SL No	**Type**	**Code**	**A. THEORY**					
1	HS	HU804	Principles of Management	2	0	0	2	2
2	PE	CS801A	Mobile Computing	3	0	0	3	3
		CS801B	Human computer Interaction					
		CS801C	Cyber Law and Security Policy					
		CS801D	VLSI Design					
3	PE	CS802A	Parallel Computing	3	0	0	3	3
		CS802B	Machine Learning					
		CS802C	Real Time Operating System and Embedded System					
		CS802D	Advanced Computer Architecture					
Total Theory							8	8
			B. PRACTICAL					
4	PC	CS891	Design lab	0	0	3	3	2
5		CS892	Project 2	0	0	12	9	6
6		CS893	Seminar Presentation	0	0	3	3	2
Total Practical							15	10
			C. SESSIONAL					
7		CS881	Grand Viva	0	0	0	0	4
Total							26	22
Grand Total								198

GURU NANAK INSTITUTE OF TECHNOLOGY
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CURRICULUM STRUCTURE

(1st Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
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1st Semester							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	M 101	Mathematics -I	3	1	0	4	4
2	PH 101	Physics – I	3	1	0	4	4
3	EC 101	Basic Electronics Engineering	3	1	0	4	4
4	HU 101	Communicative English	2	0	0	2	2
5	ME 101	Engineering Mechanics	3	1	0	4	4
Total of Theory						18	18
A. PRACTICAL							
6	HU191	Lang. Lab. and Seminar Presentation	0	0	2	2	1
7	PH191	Physics -I Lab	0	0	3	3	2
8	EC 191	Basic Electronics Engineering Lab	0	0	3	3	2
9	ME 192	Workshop Practice	0	0	3	3	2
B. SESSIONAL							
10	XC181	Extra-CurricularActivity (NSS/ NCC)	0	0	2	2	1
Total of Practical & Sessional						13	08

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

COs and CO-PO/PSO Mapping

(1st Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Mathematics –I
Course Code: M101

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

M101.1: Recall the distinctive characteristics of matrix algebra, differential calculus, integral calculus, and vector analysis.
M101.2: Understand the theoretical working of matrix algebra, differential calculus, integral calculus, and vector analysis.
M101.3: Apply the principles of matrix algebra, differential calculus, integral calculus, and vector analysis for the solutions of the problems.
M101.4: Analyze the application of matrix algebra, differential calculus, integral calculus, and vector analysis.
M101.5: Evaluate the result for application to the problems on matrix algebra, differential calculus, integral calculus, and vector analysis.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M101.1	3	2	1	-	-	-	-	-	-	-	-	-
M101.2	3	3	2	1	-	-	-	-	-	-	-	2
M101.3	3	2	3	2	-	-	-	-	-	-	-	2
M101.4	2	3	2	2	-	-	-	-	-	-	-	1
M101.5	3	2	2	1	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
M101.1	-	-	-
M101.2	1	-	-
M101.3	1	3	-
M101.4	3	1	3
M101.5	1	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Physics -I
Course Code: PH 101

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

PH101.1: Describe various types mechanical resonance and its electrical equivalence
PH101.2: Explain basic principles of Laser, Optical fibers and various types of semiconductors
PH101.3: Apply superposition to explain interference and diffraction as well as apply wave mechanics for attainment of Heisenberg's uncertainty principle
PH101.4: Analyze importance of light as a carrier of information and examine different crystallographic structures according to their co-ordination number and packing factors
PH101.5: Justify the need of quantum mechanics as remedy to overcome limitations imposed by classical physics

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH101.1	3	-	-	-	-	-	-	-	-	-	-	2
PH101.2	3	-	-	-	-	-	-	-	-	-	-	2
PH101.3	3	2	-	-	-	-	-	-	-	-	-	1
PH101.4	2	3	-	-	-	-	-	-	-	-	-	1
PH101.5	1	3	-	-	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
PH101.1	1	3	-
PH101.2	2	3	-
PH101.3	-	-	-
PH101.4	1	-	-
PH101.5	2	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Basic Electronics Engineering
Course Code: EC101

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

EC101.1: Study PN junction diode, ideal diode, diode models and its circuit analysis, application of diodes and special diodes.
EC101.2: Learn how operational amplifiers are modeled and analyzed, and to design Op-Amp circuits to perform operations such as integration, differentiation on electronic signals.
EC101.3: Study the concepts of both positive and negative feedback in electronic circuits.
EC101.4: Develop the capability to analyze and design simple circuits containing non-linear elements such as transistors using the concepts of load lines, operating points and incremental analysis.
EC101.5: Learn how the primitives of Boolean algebra are used to describe the processing of binary signals.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EC101.1	3	-	-	-	-	-	-	-	-	-	-	-
EC101.2	2	3	-	-	-	-	-	-	-	-	-	1
EC101.3	1	3	-	-	-	-	-	-	-	-	-	-
EC101.4	1	2	3	-	-	-	-	-	-	-	-	1
EC101.5	3	1	-	-	-	-	-	-	-	-	-	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
EC101.1	-	-	-
EC101.2	1	-	-
EC101.3	1	3	-
EC101.4	3	1	3
EC101.5	1	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Communicative English
Course Code: HU101

Course Outcomes:

By pursuing this course the students shall be able to:

HU101.1: Define, identify and describe the basics of communication theory and its application.
HU101.2: Recognize, recall and make use of English vocabulary and its varied usage
HU101.3: Develop and apply reading and writing skills in an academic and global business context
HU101.4: Identify, explain and use the grammatical structures and forms in English.
HU101.5: Analyze, classify and elaborate on the forms and formats of business writing.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU101.1	-	-	-	-	-	-	1	-	2	3	-	2
HU101.2	-	-	-	-	-	-	1	-	2	3	-	3
HU101.3	-	-	-	-	-	3	3	3	2	3	2	3
HU101.4	-	-	-	-	-	3	3	2	-	3	-	3
HU101.5	-	-	-	-	-	3	3	3	-	3	2	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
HU101.1	-	-	3
HU101.2	-	-	2
HU101.3	-	2	3
HU101.4	-	-	2
HU101.5	-	1	3

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Engineering Mechanics
Course Code: ME101

Course Outcomes (COs):

On successful completion of the learning sessions of the course, the learner will be able to:

ME101.1: Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
ME101.2: Study the effect of friction in static and dynamic conditions.
ME101.3: Understand the different surface properties, property of masses and material properties.
ME101.4: Analyze and solve different problems of kinematics and kinetics.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ME101.1	3	3	2	2					1			
ME101.2	3	3	2	2					1			1
ME101.3	3	2	3	2	1				1			1
ME101.4	3	3	3	3					1		1	

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
ME101.1	-	2	-
ME101.2	-	2	-
ME101.3	-	2	-
ME101.4	-	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Lang. Lab. and Seminar Presentation
Course Code: HU191

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

HU191.1: Listen to and summarize, interpret and explain audio material/data in English
HU191.2: Understand and implement the basics of note taking of factual data/information in English and keep a laboratory record
HU191.3: Engage in spoken interaction using needs specific vocabulary, language function and pronunciation in conversations, role plays and group discussions
HU191.4: Maintain and keep a listening log and write a film review
.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU191.1	1	-	2	-	-	2	2	1	2	2	-	2
HU191.2	1	-	1	2	-	3	2	1	2	2	-	2
HU191.3	1	-	2	2	-	3	2	1	2	2	-	3
HU191.4	-	-	-	-	-	3	2	-	-	-	-	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
HU191.1	1	2	2
HU191.2	1	1	1
HU191.3	2	2	2
HU191.4	-	-	-

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Physics-I Lab
Course Code: PH 191

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

PH191.1: Demonstrate experiments allied to their theoretical concepts
PH191.2: Conduct experiments using LASER, Optical fiber, Torsion pendulum, Spectrometer
PH191.3: Participate as an individual, and as a member or leader in groups in laboratory sessions actively
PH191.4: Analyze experimental data from graphical representations, and to communicate effectively them in Laboratory reports including innovative experiments

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH191.1	2	-	-	-	-	-	-	-	-	-	-	-
PH191.2	-	-	-	3	-	-	-	-	-	-	-	-
PH191.3	-	-	-	-	-	-	-	-	3	-	-	-
PH191.4	-	-	-	-	-	-	-	-	-	1	-	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
PH191.1	1	1	2
PH191.2	1	1	1
PH191.3	2	1	1
PH191.4	1	2	3

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Basic Electronics Engineering Lab
Course Code: EC191

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

EC191.1: Knowledge of Electronic components such as Resistors, Capacitors, Diodes, Transistors measuring equipment like DC power supply, Multimeter, CRO, Signal generator, DC power supply.
EC191.2: Analyze the characteristics of Junction Diode, Zener Diode, BJT & FET and different types of Rectifier Circuits.
EC191.3: Determination of input-offset voltage, input bias current and Slew rate, Common-mode Rejection ratio, Bandwidth and Off-set null of OPAMPs.
EC191.4: Able to know the application of Diode, BJT & OPAMP.
EC191.5: Familiarization and basic knowledge of Integrated Circuits

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EC191.1	3	3	-	-	-	-	-	-	-	-	-	-
EC191.2	2	3	-	-	-	-	-	-	1	1	-	1
EC191.3	1	3	3	-	-	-	-	-	-	2	-	
EC191.4	1	2	3	-	-	-	-	-	-	1	-	1
EC191.5	3	1	2	-	-	-	-	-	-	-	-	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
EC191.1	-	-	-
EC191.2	1	-	-
EC191.3	1	3	-
EC191.4	3	1	3
EC191.5	1	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Workshop Practice
Course Code: ME192

Course Outcomes (COs):

On successful completion of the learning sessions of the course, the learner will be able to:

ME192.1: Gain basic knowledge of Workshop Practice and Safety useful for our daily living.
ME192.2: Identify Instruments of a pattern shop like Hand Saw, Jack Plain, Chisels etc. and performing operations like such as Marking, cutting etc. used in manufacturing processes.
ME192.3: Gain knowledge of the various operations in the Fitting Shop using Hack Saw, various files, Scriber, etc. to understand the concept of tolerances applicable in all kinds of manufacturing.
ME192.4: Get hands on practice of in Welding and various machining processes which give a lot of confidence to manufacture physical prototypes in project works.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ME191.1	3	-	-	-	-	2	-	1	-	-	1	-
ME191.2	3	-	-	-	-	1	-	2	-	-	-	-
ME191.3	2	-	-	-	-	1	-	1	-	-	-	-
ME191.4	3	-	-	-	1	3	-	3	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
ME191.1	-	2	-
ME191.2	-	2	-
ME191.3	-	2	-
ME191.4	-	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Extra-Curricular Activity (NSS/NCC)
Course Code: XC181

Course Outcomes (COs):

On successful completion of the learning sessions of the course, the learner will be able to:

XC181.1:
XC181.2:
XC181.3:
XC181.4:

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
XC181.1												
XC181.2												
XC181.3												
XC181.4												

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
XC181.1			
XC181.2			
XC181.3			
XC181.4			

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CURRICULUM STRUCTURE

(2nd Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

2nd Semester							
Sl No	**Paper Code**	**Theory**	**Contact Hours /Week**				**Credit Points**
			L	**T**	**P**	**Total**	
1	M 201	Mathematics -II	3	1	0	4	4
2	CH 201	Chemistry	3	1	0	4	4
3	EE 201	Basic Electrical Engineering	3	1	0	4	4
4	CS 201	Computer Fundamentals & Principle of Computer Programming	3	1	0	4	4
5	ME 201	Engineering Thermodynamics & Fluid Mechanics	3	1	0	4	4
Total of Theory						20	20
B. PRACTICAL							
6	CS291	Computer Fundamentals & Principle of Computer Programming Lab	0	0	3	3	2
7	CH 291	Chemistry Lab	0	0	3	3	2
8	EE 291	Basic Electrical Engineering Lab	0	0	3	3	2
9	ME 291	Engg Drawing & Graphics	0	0	3	3	2
Total of Practical						12	08
C.SESSIONAL							
10	MC 281	Soft Skill Development	0	0	2	2	0

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

COs and CO-PO/PSO Mapping

(2nd Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Mathematics-II
Course Code: M201

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

M201.1: Recall the distinctive characteristics of improper integral, Laplace Transform, ordinary differential equation, graph theory.
M201.2: Understand the theoretical working of improper integral, Laplace Transform, ordinary differential equation, graph theory.
M201.3: Apply the principles of improper integral, Laplace Transform, ordinary differential equation, graph theory.
M201.4: Analyze the application of improper integral, Laplace Transform, ordinary differential equation, graph theory.
M201.5: Evaluate the result for application to the problems on improper integral, Laplace Transform, ordinary differential equation, graph theory.
M201.6: Design graph to solve different real-life problems.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M201.1	3	2	1	-	-	-	-	-	-	-	-	-
M201.2	3	3	2	1	-	-	-	-	-	-	-	2
M201.3	3	2	3	2	-	-	-	-	-	-	-	2
M201.4	2	3	2	2	-	-	-	-	-	-	-	1
M201.5	3	2	2	1	-	-	-	-	-	-	-	1
M201.6	3	2	3	2	-	-	-	-	-	-	-	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
M201.1	-	-	-
M201.2	2	-	-
M201.3	1	3	2
M201.4	3	2	2
M201.5	1	2	1
M201.6	1	1	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Chemistry
Course Code: CH201

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

CH201.1: Remember fundamental concepts of Engineering Chemistry and define relevant terminologies.
CH201.2: Understand the principles of thermodynamics, kinetics, and physical properties of molecules.
CH201.3: Apply the basic concept of Organic Chemistry and knowledge of chemical reactions to industries and technical fields.
CH201.4: Analyze and explain the defects in crystalline solids and protective measures of corrosion of metals in the industries.
CH201.5: Assess qualitative and quantitative parameters of applied and industrial chemistry.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CH201.1	3	1		-	-	-	-	-	-	-	-	-
CH201.2	3	2	1	-	-	-	-	-	-	-	-	-
CH201.3	-	-	2	-	2	-	-	-	-	-	-	1
CH201.4	2	-	1	-	2	-	-	-	-	-	-	-
CH201.5	2	-	-	-	-	-	2	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CH201.1	-	1	-
CH201.2	2	1	-
CH201.3	-	1	-
CH201.4	2	1	-
CH201.5	1	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Basic Electrical Engineering
Course Code: EE201

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

EE201.1: Understand and analyze basic electric and magnetic circuits.
EE201.2: Understand and analysis the AC single phase and three phase circuit
EE201.3: Understand and analysis of the basic principles of various electrical machines
EE201.4: Apply concepts of AC fundaments in solving AC network problems

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EE201.1	3	3	1	-	-	-	-	-	-	-	-	-
EE201.2	2	2	-	1	-	-	-	-	-	-	-	2
EE201.3	3	2	-	2	-	-	-	-	-	-	-	2
EE201.4	2	1	2	3	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
EE201.1	2	1	1
EE201.2	2	2	1
EE201.3	1	2	1
EE201.4	1	-	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Computer Fundamentals & Principle of Computer Programming
Course Code: CS201

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

CS201.1: Identify the working principle of input and output devices of Computers memorize the basic terminology used in computer programming.
CS201.2: Express programs in C language and use different data types for writing the programs.
CS201.3: Implement programs using the dynamic behavior of memory by the use of pointers.
CS201.4: Explain the difference between call by value and call by address.
CS201.5: Write programs using basic data files and developing applications for real world problems

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS201.1	3	3	3	2	2	-	-	-	-	-	2	3
CS201.2	2	2	3	3	3	-	-	-	-	-	-	3
CS201.3	2	3	2	2	2	-	-	-	-	-	-	3
CS201.4	3	2	2	3	3	-	-	-	-	-	-	2
CS201.5	2	2	2	1	1	-	-	-	-	-	2	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS201.1	2	3	3
CS201.2	2	2	3
CS201.3	2	3	2
CS201.4	2	2	2
CS201.5	3	3	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Engineering Thermodynamics & Fluid Mechanics
Course Code: ME201

Course Outcomes:

Upon successful completion of this course, the student will be able to:

ME201.1: Understand the basic principles of thermodynamics, heat and work transfer.
ME201.2: Acquire the knowledge of basic concepts of Heat Engine, Entropy from Second law of thermodynamics.
ME201.3: Get the knowledge of thermodynamic properties of a pure substance and inter relationships between key properties of a system or state possessed by the substance.
ME201.4: Understand the basic principles of fluid mechanics, and ability to analyze fluid flow problems with the application of the momentum and energy equations.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ME201.1	3	3	2	2	-	1	1	1	1	-	1	2
ME201.2	3	3	2	2	-	1	2	-	1	-	1	2
ME201.3	2	2	1	1	-	2	1	-	-	-	-	1
ME201.4	3	3	2	2	-	1	1	-	-	-	1	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
ME201.1	-	2	-
ME201.2	-	2	-
ME201.3	-	2	-
ME201.4	-	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Computer Fundamentals & Principle of Computer Programming Lab
Course Code: CS291

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

CS291.1: Identify the working of different operating systems like DOS, Windows, Linux
CS291.2: Express programs in C language
CS291.3: Implement programs connecting decision structures, loops
CS291.4: Experiment with user defined functions to solve real time problems
CS291.5: Write C programs using Pointers to access arrays, strings, functions, structures and files

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS291.1	3	1	3	3	1	-	-	-	-	-	3	3
CS291.2	3	2	3	2	3	-	-	-	-	-	2	2
CS291.3	-	2	-	2	1	-	-	-	-	-	-	3
CS291.4	2	2	3	2	2	-	-	-	-	-	2	2
CS291.5	2	3	1	3	-	-	-	-	-	-	1	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS291.1	3	3	2
CS291.2	3	3	3
CS291.3	2	3	2
CS291.4	2	2	3
CS291.5	3	2	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Chemistry Lab
Course Code: CH291

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

CH291.1: Operate different types of instruments for estimation of small quantities chemicals used in industries and scientific and technical fields.
CH 291.2: Work as an individual also as a team member
CH 291.3: Analyze different parameters of water considering environmental issues
CH 291.4: Synthesize nano and polymer materials.
CH 291.5: Design innovative experiments applying the fundamentals of chemistry

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CH291.1	3	2	1	1	1	1	-	-	2	-	-	-
CH291.2	-	-	-	-	-	-	-	-	3	-	-	-
CH291.3	-	-	-	-	-	2	3	-	-	-	-	1
CH291.4	-	-	-	-	2	1	-	-	-	-	-	-
CH291.5	2	-	2	-	1	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CH291.1	-	1	-
CH291.2	2	1	-
CH291.3	-	1	-
CH291.4	2	1	-
CH291.5	1	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Basic Electrical Engineering LAB
Course Code: EE291

Course Outcomes (COs):

On successful completion of the learning sessions of the course, the learner will be able to:

EE291.1: Identify common electrical components and their ratings.
EE291.2: Make Circuit connection by wires of appropriate ratings.
EE291.3: Understand the usage of common electrical measuring instruments
EE291.4: Understand the basic characteristics of transformers and electrical machines

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EE291.1	2	-	-	-	-	2	-	1	1	1	-	1
EE291.2	2	2	1	-	-	-	1	-	2	3	2	3
EE291.3	3	3	-	1	-	-	1	1	2	2	2	2
EE291.4	3	3	1	1	1	-	1	1	2	2	2	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
EE291.1	2	1	1
EE291.2	2	1	-
EE291.3	1	1	-
EE291.4	1	1	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Engineering Drawing & Graphics
Course Code: ME291

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

ME291.1: Learn basics of drafting and use of drafting tools which develops the fundamental skills of industrial drawings.
ME291.2: Know about engineering scales, dimensioning and various geometric curves necessary to understand design of machine elements.
ME291.3: Understand projection of line, surface, and solids to create the knowledge base of orthographic and isometric view of structures and machine parts.
ME291.4: Become familiar with computer aided drafting useful to share the design model to different section of industries as well as for research & development.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ME291.1	2	-	1	2	-	1	-	-	1	-	-	1
ME291.2	3	-	2	2	-	1	-	-	1	1	-	1
ME291.3	2	2	2	1	-	1	-	-	1	-	-	1
ME291.4	1	-	2	2	2	1	-	-	1	1	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
ME291.1	-	2	-
ME291.2	-	2	-
ME291.3	-	2	-
ME291.4	-	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CURRICULUM STRUCTURE

(3rd Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

			3rd Semester					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	BS	M(CSE)301	Mathematics-III	3	1	0	4	4
2	BS	PH301	Physics-II	3	0	0	3	3
3	ES	EE(CSE) 301	Circuit Theory and Network	3	0	0	3	3
4	PC	CS301	Data Structures	3	0	0	3	3
5	PC	CS302	Digital Electronics and Computer Organization	3	0	0	3	3
			Total Theory				16	16
			B. PRACTICAL					
6	BS	PH391	Physics-II Lab	0	0	3	3	2
7	ES	EE(CSE)391	Circuit Theory and Network Lab	0	0	3	3	2
8	PC	CS391	Data Structures Lab	0	0	3	3	2
9	PC	CS392	Digital Electronics and Computer Organization Lab	0	0	3	3	2
			Total Practical				12	8
C. SESSIONAL								
10	HU	HU381	Technical Report writing and Language Practice Lab	0	0	2	2	1
Total							**30**	**25**

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

COs and CO-PO/PSO Mapping

(3rd Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Mathematics-III
Course Code: M (CSE) 301

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

M(CSE)301.1: Recall the distinctive characteristics of matrix algebra, differential calculus, integral calculus and vector analysis..
M(CSE)301.2: Understand the theoretical working of matrix algebra, differential calculus, integral calculus and vector analysis.
M(CSE)301.3: Apply the principles matrix algebra, differential calculus, integral calculus and vector analysis for the solutions of the problems.
M(CSE)301.4: Analyze the application of matrix algebra, differential calculus, integral calculus and vector analysis.
M(CSE)301.5: Evaluate the result for application to the problems on matrix algebra, differential calculus, integral calculus and vector analysis.

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M(CSE)301.1	3	2	1	-	-	-	-	1	-	-	1	1
M(CSE)301.2	3	3	2	-	-	-	-		-	1	1	-
M(CSE)301.3	3	2	3	-	-	-	-	1	-	-	-	1
M(CSE)301.4	3	3	2	2	1	-	-	1	-	-	-	1
M(CSE)301.5	-	-	-	-	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
M(CSE)301.1	-	-	-
M(CSE)301.2	-	-	-
M(CSE)301.3	-	-	-
M(CSE)301.4	-	-	2
M(CSE)301.5	-	-	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Circuit Theory & Networks
Course Code: EE(CSE)301

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

EE(CSE)301.1: Define various kinds of sources and their symbols, identify and use Kirchhoff's Laws and Networks theorem for simple circuit analyses
EE(CSE)301.2: To introduce the concept of DC & AC transient analysis
EE(CSE)301.3: Deduce expressions and perform calculations relating to the Transient response, Laplace transform, Two port network and Graph theory
EE(CSE)301.4: The Laplace's transform students will able to understand initial & final value theorem and its applications both time & s domain.
EE(CSE)301.5: Ability to solve circuits using node, branch, cutest & tie set and tree

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EE(CSE)301.1	3	2	3	-	-	-	-	2	-	1	-	-
EE(CSE)301.2	3	2	3	-	-	-	1	-	3	-	-	1
EE(CSE)301.3	3	3	3	-	-	1	2	-	2	-	2	-
EE(CSE)301.4	3	3	3	-	-	-	2	2	1	-	2	1
EE(CSE)301.5	2	1	2	-	-	-	1	-	-	-	-	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
EE(CSE)301.1	2	1	-
EE(CSE)301.2	2	1	-
EE(CSE)301.3	2	1	1
EE(CSE)301.4	2	1	1
EE(CSE)301.5	1	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Physics-II
Course Code: PH301

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

PH301.1: Define and understand electrostatics, magneto statics and electromagnetic theory, operator formalism in Quantum Mechanics, categories of storage devices, materials of low-dimensions and fundamental particles.
PH301.2: Apply the knowledge of Schrödinger equation in problems of junction diode, tunnel diode, Electromagnetic theory in communication and networking, Poisson's equations in various electronic systems, Fermi levels in intrinsic and extrinsic semiconductors
PH301.3: Analyze the Role of quantum confinement in inducing novel features of a nano material, Change in electric and magnetic fields in various symmetrical bodies
PH301.4: Compare different dimensions of nano materials

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH301.1	3	1	-	-	-	-	-	-	-	-	-	1
PH301.2	3	2	-	-	-	-	-	-	-	-	-	2
PH301.3	2	3	-	-	-	-	-	-	-	-	-	1
PH301.4	1	2	2	3	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
PH 301.1	3		-
PH 301.2	3	2	-
PH 301.3	3	3	-
PH 301.4	2	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Data Structures
Course Code: CS301

Course Outcomes

On completion of the course students will be able

CS301.1: To identify how the choices of data structure & algorithm methods impact the performance of program.
CS301.2: To express problems based upon different data structure for writing programs.
CS301.3: To implement programs using appropriate data structure & algorithmic methods for solving problems.
CS301.4: To explain the computational efficiency of the principal algorithms for sorting, searching, and hashing.
CS301.5: To write programs using dynamic and static data structures and building applications for real world problems.

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS301.1	3	2	-	2	3	-	-	-	-	-	1	3
CS301.2	3	2	2	2	2	-	-	-	-	-	-	2
CS301.3	2	3	3	2	3	-	-	-	-	-	1	2
CS301.4	2	2	2	3	1	-	-	-	-	-	-	1
CS301.5	2	3	3	3	2	-	-	-	-	-	1	2

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
CS301.1	1	1	1
CS301.2	3	2	2
CS301.3	3	3	3
CS301.4	2	1	2
CS301.5	3	3	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Digital Electronics and Computer Organization
Course Code: CS302

Course Outcomes:

On completion of the course students will be able

CS302.1: To memorize basic gate operations and laws Boolean algebra.
CS302.2: To understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.
CS302.3: To analyze basic structure of different combinational circuits- multiplexer, decoder, encoder etc.
CS302.4: To test different operations with sequential circuits.
CS302.5: To simulate memory and I/O operations.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS302.1	3	3	2	3	2	-	-	-	-	-	-	1
CS302.2	2	2	3	3	3	-	-	-	-	-	-	1
CS302.3	3	3	2	3	3	-	-	-	-	-	-	2
CS302.4	3	3	3	3	2	-	-	-	-	-	-	1
CS302.5	3	2	3	3	3	-	-	-	-	-	-	1

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
CS302.1	-	1	-
CS302.2	2	1	-
CS302.3	2	2	1
CS302.4	-	2	1
CS302.5	2	2	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Circuit Theory & Network Lab
Course Code: EE(CSE)391

Course Outcomes:

Having successfully completed the course, student will be able to:

EE(CSE)391.1: Evaluate lecture material with circuit simulation software and laboratory bench experiments
EE(CSE)391.2:Analyze the response of Step, Ramp, Impulse and Sinusoidal signals.
EE(CSE)391.3:Solve the Laplace Transform and Inverse Laplace Transform.
EE(CSE)391.4:Conduct experimental investigation and gain knowledge of Two-port networks

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
EE(CSE)391.1	2	2	-	3	-	-	-	-	-	-	-	-
EE(CSE)391.2	-	2	-	3	-	-	-	-	-	-	-	-
EE(CSE)391.3	2	-	-	3	-	-	-	-	1	-	-	-
EE(CSE)391.4	-	2	-	3	-	-	-	-	-	-	-	-

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
EE(CSE)391.1	2	1	1
EE(CSE)391.2	2	1	-
EE(CSE)391.3	1	1	-
EE(CSE)391.4	1	1	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Physics-II Lab
Course Code: PH391

Course Outcomes:

Having successfully completed the course, student will be able to:

PH391.1: demonstrate experiments allied to their theoretical concepts
PH391.2: conduct experiments using semiconductors, dielectric and ferroelectrics
PH391.3: classify electron motion under various combination of magneto-electric effects
PH391.4: participate as an individual, and as a member or leader in groups in laboratory sessions actively
PH391.5: analyze experimental data from graphical representations, and to communicate effectively them in Laboratory reports including innovative experiments

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PH391.1	2	-	-	-	-	-	-	-	-	-	-	1
PH391.2	2	1	-	3	-	-	-	-	-	-	-	-
PH391.3	-	-	2	-	-	-	-	-	-	-	-	1
PH391.4	-	-	-	-	-	-	-	-	3	-	-	-
PH391.5	-	-	-	-	-	-	-	-	-	1	-	-

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
PH391.1	2	1	1
PH391.2	2	2	2
PH391.3	2	1	1
PH391.4	1	2	2
PH391.5	3	3	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Data Structures Lab
Course Code: CS391

Course Outcomes:

Having successfully completed the course, student will be able

CS391.1: To identify the appropriate data structure as applied to specified problem definition.
CS391.2: To summarize operations like searching, insertion, deletion, traversing mechanism used on various data structures.
CS391.3: To implement practical knowledge of data structures on the applications.
CS391.4: To illustrate how to store, manipulate and arrange data in an efficient manner.
CS391.5: To write programs to access queue and stack using arrays and linked list, binary tree and binary search tree.

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS391.1	3	3	3	2	3	-	-	-	-	-	-	2
CS391.2	3	2	2	3	3	-	-	-	-	-	3	2
CS391.3	2	3	3	-	2	-	-	-	-	-	-	2
CS391.4	2	2	1	3	2	-	-	-	-	-	2	3
CS391.5	2	2	3	1	2	-	-	-	-	-	-	3

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
CS391.1	1	1	1
CS391.2	3	2	2
CS391.3	3	3	3
CS391.4	2	1	2
CS391.5	3	3	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Digital Electronics and Computer Organization Lab
Course Code: CS392

Course Outcomes:

After the completion of this lab, students will be able

CS392.1: To remember and understand basic gate operations
CS392.2: To examine basic structure of digital computer.
CS392.3: To illustrate basic structure of different digital components - multiplexer, decoder, encoder etc.
CS392.4: To test different operations with flip-flop.
CS392.5: To simulate arithmetic and control unit operations.

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS392.1	3	3	2	3	2	-	-	-	-	-	-	2
CS392.2	2	2	3	3	3	-	-	-	-	-	-	1
CS392.3	3	3	3	3	3	-	-	-	-	-	-	1
CS392.4	2	2	3	3	3	-	-	-	-	-	-	1
CS392.5	3	2	3	3	3	-	-	-	-	-	-	1

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
CS392.1	1	1	1
CS392.2	2	3	2
CS392.3	2	3	2
CS392.4	2	3	2
CS392.5	2	3	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Technical Report Writing & Language Practice
Course Code: HU381

Course Outcomes:

By the end of the course the student should be able to

HU381.1: Understand and make use of a wide taxonomy of listening skills & sub-skills for comprehending and interpreting data in English
HU381.2: Describe, analyze, converse and interact with others in English in spoken interpersonal exchanges in situations in public and professional life.
HU381.3: Appraise a problem or situation and participate in the modalities of a Group Discussion
HU381.4: Investigate, locate, identify and classify the technical details and user interface of a device or technical product or mechanism in a detailed technical report.
HU381.5: Identify, participate and formulate effective interpersonal for professional presentations and interviews.

CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU381.1	3	-	-	3	-	3	-	-	3	3	-	-
HU381.2	2	3	2	3	-	3	-	-	2	3	-	1
HU381.3	1	3	-	3	-	2	-	-	2	3	-	1
HU381.4	1	2	3	3	-	2	-	-	2	3	-	-
HU381.5	3	3	2	3	-	2	-	-	2	3	-	1

CO-PSO Mapping

CO	PSO1	PSO2	PSO3
HU381.1	2	2	3
HU381.2	2	2	3
HU381.3	-	-	1
HU381.4	2	2	2
HU381.5	2	3	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CURRICULUM STRUCTURE

(4th Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

			4th Semester					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	BS	M(CSE)401	Numerical Methodsand Statistics	3	0	0	3	3
2	HS	HU401	Environmental science	2	0	0	2	2
3	PC	CS401	Computer Architecture	3	0	0	3	3
4	PC	CS402	Design and Analysis of Algorithms	3	0	0	3	3
5	PC	CS 403	Formal Language and Automata Theory	3	0	0	3	3
Total Theory							14	14
			B. PRACTICAL					
6	BS	M(CSE)491	Numerical Methodsand Statistics Lab	0	0	3	3	2
7	PC	CS491	Computer Architecture Lab	0	0	3	3	2
8	PC	CS492	Algorithms Lab	0	0	3	3	2
9	PC	CS493	Programming with C++ Lab	1	0	2	3	2
Total Practical							12	8
			C. MANDATORY COURSES					
10	MC	MC 481	Technical Communication & Soft Skills	0	0	3	3	2 Unit
Total							**29**	**22**

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

COs and CO-PO/PSO Mapping

(4th Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Numerical Methods and Statistics
Course Code: M (CSE) 401

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

M(CSE)401.1: Recall the distinctive characteristics of various numerical techniques and the associated error measures and Statistics.
M(CSE)401.2: Understand the theoretical workings of various numerical techniques and Statistics to solve the engineering problems and demonstrate error.
M(CSE)401.3: Apply the principles of various numerical techniques and statistics to solve various problems.
M(CSE)401.4: Analyze the application of matrix algebra, differential calculus, integral calculus and vector analysis.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M(CSE)401.1	3	2	2	2	-	-	-	1	1	-	-	1
M(CSE)401.2	3	2	2	2	-	-	-	1	1	-	-	1
M(CSE)401.3	3	2		2	2	-	-	1	1	-	-	1
M(CSE)401.4	3	3	2	2	2	-	-	1	1	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
M(CSE)401.1	2	1	3
M(CSE)401.2	2	1	-
M(CSE)401.3	2	1	3
M(CSE)401.4	2	1	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Environmental Science
Course Code: HU401

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able

HU401.1: To understand the natural environment and its relationships with human activities.
HU401.2: To apply the fundamental knowledge of science and engineering to assess environmental and health risk.
HU401.3: To develop guidelines and procedures for health and safety issues obeying the environmental laws and regulations.
HU401.4: Acquire skills for scientific problem-solving related to air, water, noise & land pollution.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU401.1	3	2	1	-	-	-	-	-	-	-	-	-
HU401.2	3	3	2	1	-	-	-	-	-	-	-	2
HU401.3	3	2	3	2	-	-	-	-	-	-	-	2
HU401.4	2	3	2	2	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
HU401.1	-	-	-
HU401.2	1	-	-
HU401.3	1	3	-
HU401.4	3	1	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Computer Architecture
Course Code: CS401

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able

CS401.1: To understand basic structure of digital computer, stored program concept and instruction format.
CS401.2: To describe the Implementation of Arithmetic and logical operation representation.
CS401.3: To solve pipelining concepts and parallelism techniques with a prior knowledge of stored program methods.
CS401.4: To solve pipelining concepts and parallelism techniques with a prior knowledge of stored program methods.
CS401.5: To design the SIMD and MIMD architecture and their interconnection techniques.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS401.1	3	3	2	1	3	-	-	-	-	-	1	1
CS401.2	3	3	3	2	3	-	-	-	-	-	1	1
CS401.3	2	3	2	3	2	-	-	-	-	-	1	1
CS401.4	2	3	3	2	2	-	-	-	-	-	1	1
CS401.5	2	2	3	3	3	-	-	-	-	-	1	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS401.1	3	1	1
CS401.2	3	1	1
CS401.3	3	1	1
CS401.4	3	1	1
CS401.5	3	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Design & Analysis of Algorithm
Course Code: CS402

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able:

CS402.1: To remember the concepts of time and space complexity, worst case, average case and best case complexities and the big-O notation.
CS402.2: To express and develop the concepts to algorithm design.
CS402.3: To analyze the mathematical foundation in analysis of algorithms.
CS402.4: To validate different algorithmic design strategies.
CS402.5: To building the efficiency of algorithms using time and space complexity theory.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS402.1	3	2	2	1	-	-	-	-	-	-	1	-
CS402.2	2	2	3	2	-	-	-	-	-	-	-	-
CS402.3	2	2	2	3	1	-	-	-	-	-	-	-
CS402.4	2	2	3	3	2	-	-	-	-	-	-	-
CS402.5	2	2	3	3	3	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS402.1	3	1	1
CS402.2	3	1	1
CS402.3	3	1	1
CS402.4	3	1	2
CS402.5	3	1	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Formal Language and Automata Theory
Course Code: CS403

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able:

CS403.1: To acquire the knowledge of the basics of state machines with or without output and its different classifications
CS403.2: To summarize synchronous sequential circuits as the foundation of digital system.
CS403.3: To implement different techniques of designing grammars and recognizers for several programming languages.
CS403.4: To measure Turing's Hypothesis as a foreword to algorithms.
CS403.5: To assess the power and limitation of a computer, and take decisions on computability.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS403.1	3	3	2	2	1	-	-	-	-	-	-	3
CS403.2	2	3	2	3	2	-	-	-	-	-	1	2
CS403.3	3	2	2	2	3	-	-	-	-	-	2	2
CS403.4	2	2	3	2	3	-	-	-	-	-	1	2
CS403.5	2	2	3	2	2	-	-	-	-	-	2	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS403.1	-	2	-
CS403.2	-	2	-
CS403.3	2	3	-
CS403.4	2	2	-
CS403.5	1	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Numerical Methods and Statistics Lab
Course Code: M (CSE) 491

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to

M(CSE)491.1 : Understand the theoretical workings of numerical techniques with the help of C/ Matlab.
M(CSE)491.2: Execute basic command and scripts in a mathematical programming language.
M(CSE)491.3: Apply the programming skills to solve the problems using multiple numerical approaches.
M(CSE)491.4: Analyze if the results are reasonable, and then interpret and clearly communicate the results.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M(CSE)491.1	3	2	1	-	-	-	-	-	-	-	-	1
M(CSE)491.2	3	2	2	-	-	-	-	-	-	-	-	1
M(CSE)491.3	3	2	2	-	-	-	-	-	-	-	-	2
M(CSE)491.4	3	3	2	3	-	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
M(CSE)491.1	-	-	-
M(CSE)491.2	1	-	-
M(CSE)491.3	1	2	-
M(CSE)491.4	3	1	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Computer Architecture Lab
Course Code: CS491

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able to:

CS491.1: design the basic gates.
CS491.2: verify the truth table
CS491.3: design circuit using Xilinx tools.
CS491.4: analysis the circuit and verify test bench waveform

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS491. 1	3	3	3	2	3	-	-	-	-	1	1	1
CS491. 2	3	3	2	3	3	-	-	-	-	1	1	1
CS491. 3	3	3	3	3	2	-	-	-	-	1	1	1
CS491. 4	3	3	3	3	3	-	-	-	-	1	1	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS491. 1	3	1	1
CS491. 2	3	1	1
CS491. 3	3	1	1
CS491. 4	3	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Algorithms Lab
Course Code: CS492

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able

CS492.1: To define and demonstrate the correctness of the basic algorithms for those classic problems in various domains.
CS492.2: To express and develop methods for analyzing the efficiency and correctness of algorithms.
CS492.3: To experiment the dynamic programming, greedy method, Backtracking, Branch and Bound strategy, and recite algorithms that employ this strategy.
CS492.4: To explain the performances of all algorithms.
CS492.5: To experiment and simulate criteria and specifications appropriate to new problems.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS492. 1	1	2	2	1	-	-	-	-	-	-	-	-
CS492. 2	2	2	3	2	-	-	-	-	-	-	-	-
CS492. 3	2	2	2	3	1	-	-	-	-	-	-	-
CS492. 4	2	2	3	3	2	-	-	-	-	-	-	-
CS492. 5	2	2	3	3	3	-	-	-	-	-	-	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS492. 1	3	1	1
CS492. 2	3	1	1
CS492. 3	3	1	1
CS492. 4	3	1	1
CS492. 5	3	1	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Programming with C++ Lab
Course Code: CS493

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able to:

CS493.1: Identify the computer programming techniques to solve practical problems.
CS493.2: Express the concepts and implementation of constructors and destructors.
CS493.3: Execute software applications using object oriented programming language in C++
CS493.4: Explain C++ data types, memory allocation/deallocations, functions and pointers..
CS493.5: Solve object oriented programming concepts to software problems using C++.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS493.1	3	3	3	3	3	-	-	-	-	2	2	-
CS493.2	3	3	3	3	3	-	-	-	-	-		-
CS493.3	3	3	3	3	3	-	-	-	-	-	2	-
CS493 4	3	3	3	2	3	-	-	-	-	-	-	-
CS493.5	3	3	3	3	3	-	-	-	-	-	3	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS493. 1	3	3	3
CS493. 2	3	2	3
CS493. 3	2	3	2
CS493. 4	3	3	3
CS493. 5	3	3	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CURRICULUM STRUCTURE
(5th Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

SL No			5th Semester					
				Contact hours				Cr. Points
	Type	Code	A. THEORY	L	T	P	Total	
1	PC	CS501	Computer Graphics	3	0	0	3	3
2	PC	CS502	Operating System	3	0	0	3	3
3	HS	HU 503	Economics for Engineers	2	0	0	2	2
4	PC	CS503	Data Base Management System	3	0	0	3	3
5	FE	CS(IT)504A	Object Oriented Programming using Java	3	0	0	3	3
		CS(IT)504B	Multimedia Technology					
		CS(ECE)504C	Communication Engineering					
6	PE	CS505A	Operations Research	3	0	0	3	3
		CS505A	Computational Geometry					
		CS505A	Digital Signal Processing					
Total Theory							17	17
			B. PRACTICAL					
7	PC	CS591	Computer Graphics Lab	0	0	3	3	2
8	PC	CS592	Operating System Lab	0	0	3	3	2
9	PC	CS 593	Data Base Management System Lab	0	0	3	3	2
10	FE	CS(IT)594A	Object Oriented Programming Lab					
		CS(IT)594B	Multimedia Technology Lab					
		CS(ECE)594C	Communication Engineering Lab	0	0	3	3	2
Total Practical							12	8
			C. MANDATORY COURSES					
11	MC	MC581	General Aptitude /Foreign Language	0	0	3	3	2 Unit
Total							32	25

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

COs and CO-PO/PSO Mapping

(5th Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Computer Graphics
Course Code: CS501

Course Outcomes

On successful completion of the learning sessions of the course, the learner will be able

CS501.1: To remember the foundations of computer graphics and different display technology and devices.
CS501.2: To analyze the concept of geometric, mathematical and algorithmic approach necessary for programming computer graphics.
CS501.3: To explain clipping with the comprehension of windows, view-ports in relation to images display on screen.
CS501.4: To experiment and compare different hidden surface illumination methods.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS501.1	3	-	-	-	-	-	-	-	-	-	-	1
CS501.2	1	3	2	3	-	-	-	-	-	-	-	1
CS501.3	2	2	1	1	1	-	-	-	-	-	-	1
CS501.4	1	2	2	1	1	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS501. 1	-	-	-
CS501. 2	-	1	1
CS501. 3	1	1	1
CS501. 4	-	-	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Operating System
Course Code: CS502

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able

CS502.1: To define how computing resources such as CPU, memory and I/O are managed by the operating system.
CS502.2: To categorize kernel and user mode in an operating system.
CS502.3: To implement different CPU scheduling problem to achieve specific scheduling criteria.
CS502.4: To explain the knowledge of process management, synchronization, deadlock to solve basic problems.
CS502.5: To evaluate appropriate design choices when solving real-world problems

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS502.1	3	3	3	3	2	-	-	-	-	-	3	3
CS502.2	3	2	3	2	2	-	-	-	-	-	2	3
CS502.3	2	3	2	2	2	-	-	-	-	-	1	3
CS502.4	3	2	3	2	3	-	-	-	-	-	2	2
CS502.5	2	3	1	3	1	-	-	-	-	-	1	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS502. 1	2	1	2
CS502. 2	2	2	3
CS502. 3	2	3	2
CS502. 4	3	2	1
CS502. 5	2	2	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Economics for Engineers
Course Code: HU503

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:

HU503.1: Apply the appropriate engineering economics analysis method(s) for problem solving: present worth, annual cost, rate-of-return, payback, break-even, benefit-cost ratio.
HU503.2: Evaluate the cost effectiveness of individual engineering projects using the methods learned and draw inferences for the investment decisions.
HU503.3: Compare the life cycle cost of multiple projects using the methods learned, and make a quantitative decision between alternate facilities and/or systems.
HU503.4: Evaluate the profit of a firm, carry out the break even analysis and employ this tool to make production decision.
HU503.5: Discuss and solve advanced economic engineering analysis problems including taxation and inflation.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU503.1	-	-	-	-	-	-	-	-	-	-	-	3
HU503.2	-	-	-	3	-	3	-	-	-	-	-	-
HU503.3	-	-	2	-	-	-	-	-	-	-	-	2
HU503.4	-	-	-	-	-	-	-	-	2	-	-	-
HU503.5	-	-	-	-	-	-	-	-	-	-	-	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
HU503.1	-	-	-
HU503.2	-	-	-
HU503.3	-	-	-
HU503.4	-	-	-
HU503.5	-	-	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: DATABASE MANAGEMENT SYSTEM
Course Code: CS503

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able:

CS503.1: To **Express** the knowledge of data models.
CS503.2: To **implement** the concept of designing an efficient relational database system.
CS503.3: To **Correlate** real world queries with database system.
CS503.4: To **Illustrate** transaction processing, concurrency control and recovery management of a database.
CS503.5: To **Assess** the internal storage structure to implement a proper database for an organization.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS503.1	3	3	3	3	3	2	-	-	3	-	-	2
CS503.2	3	3	3	2	3	2	-	-	2	-	-	1
CS503.3	3	3	3	3	3	-	-	-	2	-	-	2
CS503.4	2	2	2	2	3	1	-	-	2	-	-	1
CS503.5	3	2	2	2	3	1	-	-	1	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS503.1	3	2	2
CS503.2	3	2	2
CS503.3	3	1	1
CS503.4	3	1	2
CS503.5	3	2	2

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Object Oriented Programming using Java
Course Code: CS(IT)504A

On successful completion of the learning sessions of the course, the learner will be able:

Course Outcomes:

CS(IT)504A.1: To define the process of interaction between Objects and System w.r.t. Object Oriented Paradigm.
CS(IT)504A.2: To summarize basic concepts of Object Orientation in Java Programming along with different properties and features.
CS(IT)504A.3: To implement various string handling functions as well as basic I/O operations in object oriented environment.
CS(IT)504A.4: To explain basic code reusability concept w.r.t. Inheritance, Package and Interface.
CS(IT)504A.5: To write programs using Exception handling, Multithreading and Applet (Web program in java) programming concept in Java.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS(IT)504A.1	3	3	2	3	3	-	-	-	-	-	3	1
CS(IT)504A.2	2	3	3	2	2	-	-	-	-	-	2	2
CS(IT)504A.3	3	3	2	2	1	-	-	-	-	-	1	3
CS(IT)504A.4	2	2	3	2	3	-	-	-	-	-	2	2
CS(IT)504A.5	3	3	2	3	1	-	-	-	-	-	1	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS(IT)504A.1	2	2	3
CS(IT)504A.2	2	2	3
CS(IT)504A.3	2	2	3
CS(IT)504A.4	2	2	3
CS(IT)504A.5	3	3	3

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Operations Research
Course Code: CS505A

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to:
.
CS505A.1: Recall the distinctive characteristics of different types of decision-making problem to formulate and solve a real-world problem a prototype of mathematical problem.
CS505A.2: Understand the theoretical workings of appropriate decision-making approaches and tools to identify the optimal strategy in competitive world.
CS505A.3: Analyze the principles of different Methods/Model of Operations Research to solve practical problems.
CS505A.4: Apply the principles of different Methods/Model of Operations Research to solve practical problems.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS505A.1	3	2	1	-	-	-	-	1	-	-	1	1
CS505A.2	3	3	2	-	-	-	-	-	-	1	1	-
CS505A.3	3	2	3	-	-	-	-	1	-	-	-	1
CS505A.4	3	3	2	2	1	-	-	1	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS505A.1	-	-	-
CS505A.2	-	-	-
CS505A.3	-	-	-
CS505A.4	-	-	2

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Computer Graphics Lab
Course Code: CS591

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able

CS591.1: To remember the Geometric primitives.
CS591.2: To analyze the concept of scan line polygon filling.
CS591.3: To explain basic transformations on objects.
CS591.4: To experiment all algorithm on 2D space.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS591.1	2	-	-	-	-	-	-	-	-	-	-	1
CS591.2	1	3	-	2	1	-	-	-	-	-	-	1
CS591.3	1	1	1	2	1	-	-	-	-	-	-	1
CS591.4	1	1	2	2	2	-	-	-	-	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS591.1	1	1	1
CS591.2	-	1	1
CS591.3	-	-	1
CS591.4	-	-	1

GURU NANAK INSTITUTE OF TECHNOLOGY
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Course Name: Operating Systems Lab
Course Code: CS592

Course Outcomes:

On successful completion of the learning sessions of the course, the learner will be able to

CS592.1: Analyze different aspects of Linux.
CS592.2: Create or design different scripts using shell programming.
CS592.3: Implement process, thread, and semaphore concept of operating system.
CS592.4: Create shared memory with the implementation of reading from, write into shared memory.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS592.1	3	1	3	3	2	-	-	-	-	-	3	3
CS592.2	3	2	3	2	2	-	-	-	-	-	2	3
CS592.3	2	3	2	2	2	-	-	-	-	-	1	3
CS592.4	2	2	3	2	3	-	-	-	-	-	2	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS592.1	2	1	2
CS592.2	2	2	3
CS592.3	2	3	2
CS592.4	3	2	1

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Database Management System Lab
Course Code: CS593

Course Outcomes:

On completion of the course students will be able to

CS593.1: Understand the basic concepts regarding database, know about query processing and techniques involved in query optimization and understand the concepts of database transaction and related database facilities including concurrency control, backup and recovery.
CS593.2: Understand the introductory concepts of some advanced topics in data management like distributed databases, data warehousing, deductive databases and be aware of some advanced databases like partial multimedia and mobile databases.
CS593.3: Differentiate between DBMS and advanced DBMS and use of advanced database concepts and become proficient in creating database queries.
CS593.4: Analyze database system concepts and apply normalization to the database.
CS593.5: Apply and create different transaction processing and concurrency control applications.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS593.1	3	3	3	3	3	2	-	-	2	-	-	2
CS593.2	3	3	3	2	3	2	-	-	2	-	-	1
CS593.3	3	3	3	3	3	-	-	-	2	-	-	2
CS593.4	2	2	2	2	3	1	-	-	2	-	-	1
CS593.5	3	2	2	2	3	1			1	-	-	1

GURU NANAK INSTITUTE OF TECHNOLOGY
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CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS593.1	3	2	2
CS593.2	3	2	2
CS593.3	3	1	1
CS593.4	3	1	2
CS593.5	3	2	2

Course Name: Object Oriented Programming Lab
Course Code: CS(IT)594A

Course Outcomes:

On completion of the course students will be able

CS(IT)594A.1: To identify the process of object orientation in java with the help of Class-object-Constructor relationship in Object Oriented Programming.
CS(IT)594A.2: To express the basic knowledge of code reusability with the help of Java in Object Oriented Programming.
CS(IT)594A.3:To implement various keywords, Encapsulation and Polymorphism technique in OOPs environment.
CS(IT)594A.4:To experiment with basic Data abstraction concept, Inheritance, Package and Interface.
CS(IT)594A.5:To write programs in Exception handling, Multithreading and Applet (Web program in java) mechanism in Java.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS(IT)594A.1	2	2	3	3	2						3	1
CS(IT)594A.2	1	3	2	2	3						1	2
CS(IT)594A.3	2	-	1	2	2						2	3
CS(IT)594A.4	3	2	3	2	3						2	2
CS(IT)594A.5	2	3	1	3	2						1	3

CO-PSO mapping:

GURU NANAK INSTITUTE OF TECHNOLOGY
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CO	PSO1	PSO2	PSO3
CS(IT)594A.1	2	2	3
CS(IT)594A.2	2	2	3
CS(IT)594A.3	2	2	3
CS(IT)594A.4	2	2	3
CS(IT)594A.5	3	3	3

CURRICULUM STRUCTURE
(6th Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

			6TH SEMESTER					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	PC	CS601	Computer Network	3	0	0	3	3
2	PC	CS602	Microprocessor and Microcontroller	3	0	0	3	3
3	PC	CS603	Software Engineering	3	0	0	3	3
4	PE	CS604A	Compiler Design	3	0	0	3	3
		CS604B	Robotics					
		CS604C	Simulation and modeling					
5	FE	IT(CSE)605A	Pattern Recognition	3	0	0	3	3
		IT(CSE)605B	Distributed Operating System					
		IT(CSE)605C	Distributed Database					
		IT(CSE)605D	Computer Vision					
6	FE	IT(CSE)606A	Data Warehousing and Data Mining	3	0	0	3	3
		IT(CSE)606B	Digital Image Processing					
		IT(CSE)606C	E-commerce and ERP					
Total Theory							18	18
			B. PRACTICAL					
7	PC	CS691	Computer Network Lab	0	0	3	3	2
8	PC	CS692	Microprocessor and Microcontroller Lab	0	0	3	3	2
9	PC	CS693	Software Engineering Lab	0	0	3	3	2

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10		CS682	Mini Project	0	0	3	3	2
Total Practical							12	8
C. SESSIONAL								
10		CS681	Group Discussion and Seminar	0	0	3	3	2
Total							33	28

COs and CO-PO/PSO Mapping
(6th Semester of R16)

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

Course Name: Computer Networks
Course Code: CS601

Course Outcomes:

On completion of the course students will be able

CS601.1: To remember and understand computer networks, OSI model and TCP/IP protocol suit.
CS601.2: To experiment protocols layers and LAN technologies.
CS601.3: To analyze working of applications layer protocols.
CS601.4: To validate routing and congestion control algorithms.
CS601.5: To building networks using internet model and protocols.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS601.1	3	3	3	3	2	-	-	-	-	-	-	-
CS601.2	3	3	3	3	3	-	-	-	-	-	-	-
CS601.3	3	3	3	3	3	-	-	-	-	-	-	-
CS601.4	3	2	2	3	3	-	-	-	-	-	-	-
CS601.5	3	2	3	2	3	-	-	-	-	-	-	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3

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CS601.1	1	-	-
CS601.2	1	-	-
CS601.3	1	2	-
CS601.4	3	-	-
CS601.5	3	-	-

Course Name: Microprocessors & Microcontrollers
Course Code: CS602

Course Outcomes:

On completion of the course students will be able

CS602.1: Defining the details hardware model of microprocessors with the related signals and their implications
CS602.2: Identifying the architecture of microcontroller
CS602.3: Summarizing the concept and techniques of designing and implementing interfacing of microprocessor with memory and peripheral chips involving system design
CS602.4: Implementing the concept of programming in assembly Language
CS602.5: Reviewing the performance of different computers and its architecture to real-life applications

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS602.1	3	1	2	3	3	-	-	-	-	-	1	3
CS602.2	3	2	2	3	2	-	-	-	-	-	2	3
CS602.3	3	3	2	2	2	-	-	-	-	-	1	3
CS602.4	3	1	3	3	-	-	-	-	-	-	2	2
CS602.5	3	3	3	3	3	-	-	-	-	-	1	3

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CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS602.1	1	2	1
CS602.2	3	3	3
CS602.3	3	3	3
CS602.4	3	3	3
CS602.5	3	3	3

Course Name: Software Engineering
Course Code: CS603

Course Outcomes:

On completion of the course students will be able

CS603.1: To identify software engineering problems, including specification, design, implementation, and testing of software systems that meet performance and quality assurance
CS603.2: To gather software requirements through a productive working relationship with various stakeholders of the project
CS603.3: To prepare solutions in one or more application domains using software engineering approaches that integrates ethical, social, legal and economic concerns.
CS603.4: To validate the code from the design and effectively apply relevant standards and perform testing, and quality management and practice.
CS603.5: To build modern engineering tools necessary for project management, software reuse and maintenance.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS603.1	3	3	3	3	2	1	1	-	3	2	2	1
CS603.2	3	3	2	3	3	1	1	-	3	3	2	1
CS603.3	2	3	2	3	3	-	2	3	3	2	2	1

CS603.4	2	3	2	3	2	-	1	-	3	2	2	1
CS603.5	3	2	3	3	3	1	1	-	3	1	3	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS603.1	3	3	3
CS603.2	2	3	2
CS603.3	3	3	3
CS603.4	3	3	3
CS603.5	2	3	2

Course Name: Compiler Design
Course Code: CS604A

Course Outcomes:

On completion of the course students will be able

CS604A.1: To define compilers and various components of a compiler.
CS604A.2: To understand the roles of different phases of a compiler.
CS604A.3: To implement different algorithms for designing different phases of compilers.
CS604A.4: To build simple compilers using C programming languages.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS604A.1	3	1	3	3	2	-	-	-	-	-	3	3
CS604A.2	3	3	3	2	1	-	-	-	-	-	2	1
CS604A.3	-	2	2	2	2	-	-	-	-	-	1	3
CS604A.4	2	3	1	3	1	-	-	-	-	-	1	3

CO-PSO mapping:

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CO	PSO1	PSO2	PSO3
CS604A.1	3	3	3
CS604A.2	2	3	2
CS604A.3	3	3	3
CS604A.4	3	3	3

Course Name: Distributed Operating System
Course Code: IT(CSE)605B

Course Outcomes:

On completion of the course students will be able

IT(CSE)605B.1: To define the distributed operating system, architecture, goal of DOS and its designing issues.
IT(CSE)605B.2: To categorize the technique of inter-process communication.
IT(CSE)605B.3: To choose the local clock instead of global clock and the different mutual exclusion and deadlock algorithms.
IT(CSE)605B.4: To organize the distributed file system and shared memory architecture.
IT(CSE)605B.5 :To evaluate the idea about the designing policy of different distributed operating system like AMOEBA, MACH, DCE

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
IT(CSE)605B.1	3	1	3	3	2	-	-	-	-	-	3	3
IT(CSE)605B.2	3	2	3	2	2	-	-	-	-	-	2	3
IT(CSE)605B.3	2	3	2	2	2	-	-	-	-	-	1	3

IT(CSE)605B.4	2	2	3	2	3	-	-	-	-	-	2	2
IT(CSE)605B.5	2	3	1	3	1	-	-	-	-	-	1	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
IT(CSE)605B.1	2	1	2
IT(CSE)605B.2	2	2	3
IT(CSE)605B.3	2	3	2
IT(CSE)605B.4	3	2	1
IT(CSE)605B.5	2	2	2

Course Name: E Commerce & ERP
Course Code: IT(CSE)606C

Course Outcomes

On completion of the course students will be able to

IT(CSE)606C.1: Define and differentiate various types of Ecommerce.
IT(CSE)606C.2: Define and describe E-business and its Models.
IT(CSE)606C.3: Describe Hardware and Software Technologies for Ecommerce.
IT(CSE)606C.4: Understand the basic concepts of ERP and identify different technologies used in ERP.
IT(CSE)606C.5: Apply different tools used in ERP

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
IT(CSE)606C.1	3	3	3	3	3	2	-	-	3	1	3	2
IT(CSE)606C.2	3	3	3	2	3	2	-	-	2	1	2	1
IT(CSE)606C.3	3	3	3	3	3	-	-	-	2	-	2	2
IT(CSE)606C.4	3	2	3	2	3	1	-	-	2	-	3	1

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Department of Computer Science and Engineering

IT(CSE)606C.5	3	2	2	2	3	1	-	-	1	1	3	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
IT(CSE)606C.1	3	2	2
IT(CSE)606C.2	3	2	2
IT(CSE)606C.3	3	1	1
IT(CSE)606C.4	3	1	2
IT(CSE)606C.5	3	2	2

Course Name: Computer Networks Lab
Course Code: CS691

Course Outcomes:

On completion of the course students will be able

CS691.1: To define and demonstrate the socket program using TCP & UDP.
CS691.2: To express and develop simple applications using TCP & UDP.
CS691.3: To experiment code for data link layer protocol simulation.
CS691.4: To explain the performances of routing protocol.
CS691.5: To experiment and simulate congestion control algorithm using network simulator

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS691.1	3	3	3	3	2	-	-	-	-	-	-	-
CS691.2	3	3	3	3	2	-	-	-	-	-	-	-
CS691.3	3	3	3	3	2	-	-	-	-	-	-	-
CS691.4	3	3	3	3	3	-	-	-	-	-	-	-

CS691.5	3	3	3	3	3	-	-	-	-	-	-	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS691.1	1	-	-
CS691.2	1	-	-
CS691.3	1	2	-
CS691.4	3	-	-
CS691.5	3	-	-

Course Name: Microprocessors & Microcontrollers Lab
Course Code: CS692

Course Outcomes:

On completion of the course students will be able

CS692.1: To understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller
CS692.2: To execute code with standard microprocessor real time interfaces including GPIO, serial ports, digital-to-analog converters and analog-to-digital converters.
CS692.3: To analyze abstract problems and apply a combination of hardware and software to address the problem
CS692.4: To detect the interactions between software and hardware
CS692.5: Programming for evaluate digital interfaces

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CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS692.1	3	1	3	3	3	-	-	-	-	-	1	3
CS692.2	3	2	3	3	2	-	-	-	-	-	2	2
CS692.3	3	3	3	2	3	-	-	-	-	-	1	2
CS692.4	3	1	3	3	-	-	-	-	-	-	2	2
CS692.5	3	3	3	3	3	-	-	-	-	-	1	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS692.1	3	2	1
CS692.2	1	-	2
CS692.3	1	2	3
CS692.4	1	-	1
CS692.5	2	-	2

Course Name: Software Engineering Lab
Course Code: CS693

Course Outcomes

On completion of the course students will be able

CS693.1: To identify software development models.
CS693.2: To prepare SRS document, design document, project management related document.
CS693.3: To validate function oriented and object-oriented software design using tools
CS693.4: To adapt various testing techniques through test cases.

CO-PO mapping:

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS693.1	3	3	3	3	2	1	1	-	3	2	2	1
CS693.2	3	3	2	3	3	1	1	-	3	3	2	1
CS693.3	2	3	2	3	3	-	2	-	3	2	2	1
CS693.4	2	3	2	3	2	-	1	-	3	2	2	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS693.1	2	3	2
CS693.2	2	3	2
CS693.3	3	3	3
CS693.4	3	3	3

CURRICULUM STRUCTURE

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

(7th Semester of R16)

			7TH SEMESTER					
				Contact hours				Cr. Points
SL No	**Type**	**Code**	**A. THEORY**	L	T	P	Total	
1	PC	CS701	Artificial Intelligence	3	0	0	3	3
2	HS	HU702	Values & Ethics in Profession	2	0	0	2	2
3	PE	CS702A	Soft Computing	3	0	0	3	3
		CS702B	Natural Language Processing					
		CS702C	Web technology					
4	PE	CS703A	Cloud Computing	3	0	0	3	3
		CS703B	Data Analytics					

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		CS703C	Sensor Network and IOT					
5	PE	CS704A	Distributed Algorithms					
		CS704B	Bio-informatics					
		CS704C	Cryptography and Network Security	3	0	0	3	3
Total Theory							14	14
			B. PRACTICAL					
6	PC	CS791	Artificial Intelligence Lab	0	0	3	3	2
7	PE	CS792A	Soft Computing Lab					
		CS792B	Natural Language Processing Lab	0	0	3	3	2
		CS792C	Web Technology Lab					
8		CS795	Project-1	0	0	3	3	2
Total Practical							9	6
			C. SESSIONAL					
9		CS781	Industrial Training	0	0	0	0	2
Total Sessional								
			D. MANDATORY COURSES					
10	MC	MC781	Technical Skill Development	0	0	3	3	2Unit
Total							26	22

COs and CO-PO/PSO Mapping

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

(7th Semester of R16)

Course Name: Artificial Intelligence
Course Code: CS701

Course Outcomes:

On completion of the course students will be able

CS701.1: To understand the concepts of Artificial intelligence, Intelligent agents and Learning
CS701.2: To Express knowledge of the world using logic and infer new facts from that Knowledge.
CS701.3: To implement intelligent algorithms for constraint satisfaction problems and game playing.
CS701.4: To apply Artificial intelligence Techniques in different fields like Natural Language Processing and Expert Systems..

CS701.5: To analyze working knowledge in PROLOG in order to write simple PROLOG programs and explore more sophisticated PROLOG code on their own.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS701.1	3	1	3	3	2	-	-	-	-	-	3	3
CS701.2	3	2	3	2	1	-	-	-	-	-	2	2
CS701.3	-	2	2	2	2	-	-	-	-	-	1	3
CS701.4	2	2	3	2	3	-	-	-	-	-	2	2
CS701.5	2	3	1	3	1	-	-	-	-	-	1	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS701.1	2	1	2
CS701.2	2	2	3
CS701.3	1	3	-
CS701.4	3	-	1
CS701.5	2	2	2

Course Name: Values and Ethics in Profession
Course Code: HU702

Course Outcomes

On completion of the course students will be able to

HU702.1: Understand the core values that shape the ethical behavior of an engineer and Exposed awareness on professional ethics and human values.
HU702.2: Understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories
HU702.3: Understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field

HU702.4: Aware of responsibilities of an engineer for safety and risk benefit analysis, professional rights and responsibilities of an engineer.
HU702.5: Acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU702.1	-	-	-	-	-	1	1	1	1	2	-	-
HU702.2	-	-	-	-	-	1	1	3	1	2	-	-
HU702.3	-	-	-	-	-	3	2	3	-	1	-	-
HU702.4	-	-	-	-	-	3	2	1	-	-	-	-
HU702.5	-	-	-	-	-	3	2	2	-	1	3	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
HU702.1	-	-	-
HU702.2	-	-	-
HU702.3	-	-	-
HU702.4	-	-	-
HU702.5	-	-	-

Course Name: Web Technology
Course Code: CS702C

Course Outcomes:

On completion of the course students will be able to

CS702C.1: To define the concepts of World Wide Web (www), Internet, HTTP Protocol, Web Browsers, Client-Server etc.
CS702C.2: To summarize interactive web pages using HTML, DHTML and CSS.
CS702C.3: To implement the knowledge of different information interchange formats like XML.

CS702C.4: To explain web applications using scripting languages like JavaScript, CGI, PHP.
CS702C.5: To write different server side programming like Servlet, JSP and .Net framework.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS702C.1	3	1	3	3	2	-	-	-	-	-	3	3
CS702C.2	3	2	3	2	2	-	-	-	-	-	2	3
CS702C.3	2	3	2	2	2	-	-	-	-	-	1	3
CS702C.4	2	2	3	2	3	-	-	-	-	-	2	2
CS702C.5	2	3	1	3	1	-	-	-	-	-	1	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS702C.1	2	1	2
CS702C.2	2	2	3
CS702C.3	2	3	-
CS702C.4	3	-	1
CS702C.5	2	2	2

Course Name: Cloud Computing
Course Code: CS703A

Course Outcomes:

After completion of course, students would be able:

CS703A.1: To identify the business model concepts, architecture and infrastructure of cloud computing, including cloud service models and deployment models.

CS703A.2: To journaling some important cloud computing driven commercial systems such as Google Apps, Microsoft Azure and Amazon Web Services and other business applications
CS703A.3: To articulate and design suitable Virtualization concept, Cloud Resource Management and design scheduling algorithms.
CS703A.4: To categorize the core issues of cloud computing such as security, privacy, interoperability, and its impact on cloud application

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS703A .1	3	3	3	3	2	-	-	-	-	-	-	2
CS703A .2	3	3	3	3	3	-	-	-	2	-	-	-
CS703A .3	3	3	3	3	3	-	-	-	1	-	-	2
CS703A .4	3	2	2	3	3	-	-	-	1	-	-	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS703A .1	3	1	1
CS703A .2	3	1	1
CS703A .3	3	1	1
CS703A .4	3	1	2

Course Name: Cryptography and Network Security
Course Code: CS704C

Course Outcomes:

After completion of course, students would be able:

CS704C.1: To understand the basic concepts in cryptography

CS704C.2: To apply the deployment of different encryption techniques to secure messages in transit across data networks
CS704C.3: To discuss various techniques used to assure Integrity and Authentication
CS704C.4: To analyze diverse security measures and issues in practice

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS704C.1	3	1	2	1	1	-	-	-	3	2	1	1
CS704C.1	3	2	3	2	3	-	-	-	2	1	1	1
CS704C.1	1	3	2	3	2	-	-	-	2	3	1	1
CS704C.1	2	3	1	3	1	-	-	-	1	1	1	1

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS704C.1	3	1	1
CS704C.1	3	1	1
CS704C.1	3	1	3
CS704C.1	3	1	3

Course Name: Artificial Intelligence Lab
Course Code: CS791

Course Outcomes:

On completion of the course students will be able

CS791.1: To understand the concept of simple programming using PROLOG/ LISP.

CS791.2: To understand the concept of AI based programs using PROLOG/ LISP.
CS791.3: To apply logic based techniques in various real life problem domains.
CS791.4: To analyze logic based techniques in various real life problem domains.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS791.1	3	1	3	3	2	-	-	-	-	-	3	3
CS791.2	3	2	3	2	2	-	-	-	-	-	2	3
CS791.3	-	3	-	2	2	-	-	-	-	-	1	3
CS791.4	2	2	3	2	3	-	-	-	-	-	2	2

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS791.1	2	1	2
CS791.2	2	2	3
CS791.3	2	3	-
CS791.4	3	-	1

Course Name: Web Technology Lab
Course Code: CS792C

Course Outcomes

CS792C.1: To define interactive web pages using HTML, DHTML, CSS and image map.
CS792C.2: To summarize the knowledge of information interchange formats like XML.

CS792C.3: To implement JavaScript – a client side scripting languages in web programming.
CS792C.4: To explain PHP and ASP.net related web applications.
CS792C.5: To write the server side programming concepts using Servlet, JSP.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS792C.1	3	3	2	3	2	-	-	-	-	-	2	3
CS792C.2	2	2	3	2	3	-	-	-	-	-	3	2
CS792C.3	1	2	1	2	2	-	-	-	-	-	1	2
CS792C.4	3	2	3	2	3	-	-	-	-	-	3	2
CS792C.5	1	3	2	3	2	-	-	-	-	-	2	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS792C.1	2	2	3
CS792C.2	3	2	2
CS792C.3	-	1	2
CS792C.4	1	3	3
CS792C.5	2	2	-

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

CURRICULUM STRUCTURE
(8th Semester of R16)

			8TH SEMESTER					
				Contact hours				Cr. Points
			8th Semester	L	T	P	Total	

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

SL No	Type	Code	A. THEORY					
1	HS	HU804	Principles of Management	2	0	0	2	2
2	PE	CS801A	Mobile Computing	3	0	0	3	3
		CS801B	Human computer Interaction					
		CS801C	Cyber Law and Security Policy					
		CS801D	VLSI Design					
3	PE	CS802A	Parallel Computing	3	0	0	3	3
		CS802B	Machine Learning					
		CS802C	Real Time Operating System and Embedded System					
		CS802D	Advanced Computer Architecture					
Total Theory							8	8
			B. PRACTICAL					
4	PC	CS891	Design lab	0	0	3	3	2
5		CS892	Project 2	0	0	12	9	6
6		CS893	Seminar Presentation	0	0	3	3	2
Total Practical							15	10
			C. SESSIONAL					
7		CS881	Grand Viva	0	0	0	0	4
Total							26	22
Grand Total								198

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

COs and CO-PO/PSO Mapping

(8th Semester of R16)

Course Name: Cyber law and Security Policy
Course Code: CS801C

Course Outcomes:

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

On completion of the course students will be able

CS801C.1: To understand the Social and Intellectual Property Issues Emerging From Cyberspace.
CS801C.2: To gather the knowledge of information technology act and legal Frame Work of Right to Privacy, Data Security and Data Protection.
CS801C.3: To implement the relationship between commerce and cyberspace
CS801C.4: To review the different network security threats and countermeasures.
CS801C.5: To adapt the advanced security issues and technologies.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS801C.1	1	3	1	1	1	3	-	3	-	-	-	3
CS801C.2	3	3	1	2	3	-	-	3	-	-	-	3
CS801C.3	2	3	3	3	1	1	-	1	-	1	-	3
CS801C.4	2	2	3	3	2	-	-	-	-	-	-	3
CS801C.5	3	2	3	3	3	1	-	2	-	-	-	3

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS801C .1	-	1	-
CS801C .2	1	2	-
CS801C .3	2	2	1
CS801C .4	2	3	2
CS801C .5	3	3	2

Course Name: Machine Learning
Course Code: CS802B

Course Outcomes:

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

On completion of the course students will be able

CS802B.1: To remember the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.
CS802B.2: To understand of the strengths and weaknesses of many popular machine learning approaches.
CS802B.3: To analyze underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised, un-supervised learning and reinforcement learning.
CS802B.4: To design and implement various machine learning algorithms in a range of real-world applications.

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CS802B.1	3	3	2	3	2			1	1	1	1	1
CS802B.2	3	1	3	3	2			1	1	1	1	1
CS802B.3	2	3	3	2	1			1	1	1	1	1
CS802B.4	2	2	2	2	2			1	1	1	1	

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
CS802B.1	2	1	1
CS802B.2	1	1	2
CS802B.3	2	1	2
CS802B.4	1	1	1

Course Name: Principles of Management
Course Code: HU 804

Course Objectives:

GURU NANAK INSTITUTE OF TECHNOLOGY
Department of Computer Science and Engineering

HU804.1 To develop ability to critically analyze and evaluate a variety of management practices in the contemporary context

HU804.2 To understand and apply a variety of management and organizational theories in practice

HU804.3 To be able to mirror existing practices or to generate their own innovative management competencies required for today's complex and global workplace

HU804.4 To be able to critically reflect on ethical theories and social responsibility ideologies to create sustainable organizations

CO-PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
HU804.1	-	-	-	-	-	1	1	1	1	2	-	-
HU804.2	-	-	-	-	-	1	1	3	1	2	3	-
HU804.3	-	-	-	-	-	3	2	-	-	1	-	-
HU804.4	-	-	-	-	-	-	2	1	1	-	-	-

CO-PSO mapping:

CO	PSO1	PSO2	PSO3
HU804.1	-	-	-
HU804.2	-	-	-
HU804.3	-	-	-
HU804.4	-	-	-

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