GOVERNMENT COLLEGE OF ENGINEERING AND CERAMIC TECHNOLOGY

Established 1941

Accredited by NAAC with Grade A

(2015)

Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability and other value framework enshrined in Sustainable Development Goals and National Education Policy – 2020 into the Curriculum

73, Abinash Chandra Banerjee Lane

Kolkata-700010

West Bengal, India

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Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability and other value framework enshrined in Sustainable Development Goals and National Education Policy – 2020 into the Curriculum. A detail of course structures of all the programmes are attached herewith along with a list of courses focussed on the above-mentioned criteria.

	COURSE CODE	COURSE TITLE	Comments
1.	MC(CT) 301	Environmental Sciences	Environment
2.	HS(CT) 403	Economics & Statistics	Professional Ethics
3.	OE(CT) 603 A	Total Quality Management	Sustainability
4.	OE(CT) 603 B	Environment Engg & Management	Environment
5.	MC(CT) 602	Indian Constitution	Gender, Human Values
6.	INDTRG(CT)01	Training Proficiency	Professional Ethics
7.	PE(CT) 502 (A)	Bio Ceramics	Sustainability
8.	MC(CS/IT)401	Environmental Sciences	Environment
9.	MC(CS/IT)502	Constitution of India/ (Essence of Indian Traditional Knowledge)	Gender, Human Values
10.	HS(CS/IT)604	Industrial Management (Organizational Behavior/ Finance & Accounting	Professional Ethics
11.	INDTR(IT)701	Industrial Training	Professional Ethics
12.	PEC(CS)602F	Cyber Security	Professional Ethics
13.	M(CT)105A	Environmental Engineering & Occupational Health and Safety	Environment
14	M(CT)204A	Bio Ceramics	Sustainability
15	M(CT)301	Technology Management	Professional Ethics
16	M(CT) 302	Research Methodology	Professional Ethics
17	ITAUD101A	Indian Constitution	Gender, Human Values
18	ITAUD101B	Value Education	Human Values
19	ITAUD101C	Pedagogy Studies	Human Values
20	ITAUD101D	Stress Management by Yoga	Human Values
21	ITRES201	Research Methodology and IPR	Professional Ethics
22	ITOEC301D	Information and System Security	Professional Ethics

Course Structure for B.Tech. and M.Tech.

(Applicable from the academic session 2018-2019)

Government College of Engineering &

Ceramic Technology73, A.C Banerjee Lane

Kolkata-700010

Credit Structure for B.Tech. in Information Technology

SL. NO.	SUBJECT CATEGORY	CREDITS/SEMESTER								TOTAL CREDITS	CREDIT SUGGESTED BY AICTE
		SEM-I	SEM-II	SEM-III	SEM-IV	SEM-V	SEM-VI	SEM-VII	SEM-VIII		
01.	HUMANITIES AND SOCIAL SCIENCES (HS)	0	3	3	0	0	3	0	0	09	12
02.	BASIC SCIENCES(BS)	8.5	8.5	3	4	0	0	0	0	24	24
03.	ENGINEERING SCIENCES (ES)	8	8	4.5	4.5	0	0	0	0	25	29
04.	PROFESSIONAL SUBJECTS CORE	0	0	11.5	14	16.5	8.5	0	0	50.5	49
05.	PROFESSIONAL SUBJECTS ELECTIVES	0	0	0	0	3	3	7.5	3	16.5	18
06.	OPEN ELECTIVES	0	0	0	0	0	3	3	3	9	12
07.	PROJECT WORK, SEMINAR AND/OR INTERNSHIPS	0	0	0	0	0	3	6	8	17	15
08.	CLA	1	1	1	1	1	1	1	0	7	
09.	INDTR(IT)	0	0	0	0	0	0	1	0	1	
10.	CVV(IT)	0	0	0	0	0	0	0	1	1	
	TOTAL	**17.5**	**20.5**	**23**	**23.5**	**20.5**	**21.5**	**18.5**	**15**	**160**	**159**
11.	MANDATORY COURSES(MC) (NON- CREDIT)				√	√					
12.	As per AICTE MODEL SYLLABUS	17.5	20.5	23	22	21	22	18	15	159	159

UG Course Structure for Information Technology

1st SEMESTER							
Mandatory Induction Program- 3 Weeks duration							
SL. NO.	TYPE OF COURSE	COURSE CODE	COURSE TITLE	HOURS PER WEEK			Credit
				Lecture	Tutorial	Practical	
THEORY							
01	Basic Science Course	BS(CS/IT) 101	Mathematics – I	3	0	0	3
02	Basic Science Course	BS(CS/IT) 102	Physics	3	1	0	4
03	Engineering Science Course	ES(CS/IT) 101	Basic Electrical Engineering	3	1	0	4
SESSIONAL/PRACTICAL							
01	Basic Science Course	BSL(CS/IT) 103	Physics Laboratory	0	0	3	1.5
02	Engineering Science Course	ESL(CS/IT) 102	Basic Electrical Engineering Laboratory	0	0	2	1
03	Engineering Science Course	ESL(CS/IT) 103	Engineering Graphics & Design	1	0	4	3
04		CLA(IT)-1	Comprehensive Laboratory Assessment	-	-	-	1
TOTAL				**10**	**2**	**9**	**17.5**
2nd SEMESTER							
SL. NO.	TYPE OF COURSE	COURSE CODE	COURSE TITLE	HOURS PER WEEK			Credit
				Lecture	Tutorial	Practical	
THEORY							
01	Basic Science Course	BS(CS/IT) 204	Chemistry	3	0	0	3
02	Basic Science Course	BS(CS/IT) 205	Mathematics – II	3	1	0	4
03	Engineering Science Course	ES(CS/IT) 204	Programming for Problem solving	3	0	0	3

04	Humanities & Social Sciences including Management	HS(CT/IT/CS)201	English	2	0	0	2

SESSIONAL/PRACTICAL

01	Basic Science Course	BSL(CS/IT)206	Chemistry Laboratory	0	0	3	1.5
02	Engineering Science Course	ESL(CS/IT)205	Programming for Problem solving Laboratory	0	0	4	2
03	Engineering Science Course	ESL(CS/IT)206	Workshop /Manufacturing Practices	1	0	4	3
04	Humanities & Social Sciences including Management	HS(CT/IT/CS)202	Language Lab.	0	0	2	1
05		CLA(IT)-2	Comprehensive Laboratory Assessment	-	-	-	1
TOTAL				**12**	**1**	**13**	**20.5**

	3rd SEMESTER	

SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
THEORY							
01	BS(CS/IT)307	Mathematics- III	3	0	0	3	3
02	ES(CS/IT)307	Digital Electronics	3	0	0	3	3
03	PC(CS/IT)301	Computer Organization	3	1	0	4	4
04	PC(CS/IT)302	Data structure & Algorithms	3	0	0	3	3
05	HS(CS/IT)303	Economics for Engineers	3	0	0	3	3
SESSIONAL/PRACTICAL							
01	ESL(CS/IT)308	Digital Electronics Lab	0	0	3	3	1.5
02	PCL(CS/IT)303	Computer Organization Lab	0	0	3	3	1.5

03	PCL(CS/IT)304	Data structure & Algorithms Lab	0	0	3	3	1.5
04	PCL(CS/IT)305	IT Workshop (python/matlab)	0	0	3	3	1.5
05	CLA(IT)-3	Comprehensive Laboratory Assessment	0	0	0	0	1
TOTAL			**15**	**1**	**12**	**28**	**23**

4th SEMESTER

SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT

THEORY

01	BS(CS/IT)408	Discrete Mathematics	3	1	0	4	4
02	ES(CS/IT)409	Communication Engineering	3	0	0	3	3
03	PC(CS/IT)406	Design & Analysis of Algorithm	3	0	0	3	3
04	PC(CS/IT)407	Formal Language and Automata Theory	3	1	0	4	4
05	PC(CS/IT)408	Computer Architecture	3	1	0	4	4

SESSIONAL/PRACTICAL

01	ESL(CS/IT)410	Communication Engineering Lab	0	0	3	3	1.5
02	PCL(CS/IT)409	Algorithm Lab	0	0	3	3	1.5
03	PCL(CS/IT)410	Programming Lab using C++	0	0	3	3	1.5
04	CLA(IT)-3	Comprehensive Laboratory Assessment	0	0	0	0	1

MANDATORY COURSE

01	MC(CS/IT)401	Environmental Sciences	2	0	0	2	0
TOTAL			**17**	**3**	**9**	**29**	**23.5**

5th SEMESTER

SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT

THEORY

01	PC(CS/IT)511	Operating Systems	3	1	0	4	4

02	PC(CS/IT)512	Database Management System	3	1	0	4	4
03	PC(CS/IT)513	Object Oriented Programming	3	1	0	4	4
04	PEC(IT)501	Elective-I	3	0	0	3	3
05	MC(CS/IT)502	Constitution of India/ (Essence of Indian Traditional Knowledge)	2	0	0	2	0
SESSIONAL/PRACTICAL							
01	PCL(CS/IT)514	Operating System Lab	0	0	3	3	1.5
02	PCL(CS/IT)515	Database Management System Lab	0	0	3	3	1.5
03	PCL(CS/IT)516	Programming Lab using Java	0	0	3	3	1.5
03	CLA(IT)-5	Comprehensive Laboratory Assessment	0	0	0	0	1
TOTAL			**14**	**3**	**9**	**26**	**20.5**

6th SEMESTER							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
THEORY							
01	PC(CS/IT)617	Computer Networks	3	1	0	4	4
02	PC(CS/IT)618	Compiler Design	3	0	0	3	3
03	PEC(IT)602	Elective-II	3	0	0	3	3
04	OEC(IT/CS)601	Open Elective-I	3	0	0	3	3
05	HS(CS/IT)604	Industrial Management (Organizational Behavior/ Finance & Accounting	3	0	0	3	3
SESSIONAL/PRACTICAL							
01	PCL(CS/IT)619	Computer Network lab	0	0	3	3	1.5
02	PROJ(IT)601	Project 1	0	0	6	6	3
03	CLA(IT)-6	Comprehensive Laboratory Assessment	0	0	0	0	1

TOTAL			15	1	9	25	21.5

7th SEMESTER							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
THEORY							
01	PEC(IT)703	Elective-III	3	0	0	3	3
02	PEC(IT)704	Elective-IV	3	0	0	3	3
03	OEC(IT/CS)702	Open Elective II	3	0	0	3	3
SESSIONAL/PRACTICAL							
01	PROJ(IT)702	Project 2	0	0	12	12	6
02	PEC(IT)704 (A/B/C/D)L	Elective-IV Lab.	0	0	3	3	1.5
03	INDTR(IT)701	Industrial Training	0	0	0	0	1
04	CLA(IT)-7	Comprehensive Laboratory Assessment	0	0	0	0	1
TOTAL			11	0	15	24	18.5
8th SEMESTER							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
THEORY							
01	PEC(IT)805	Elective-V	3	0	0	3	3
02	OEC(IT/CS)803	Open Elective-III	3	0	0	3	3
SESSIONAL/PRACTICAL							
01	PROJ(IT)803	Project 3	0	0	16	16	8
02	CVV(IT)802	Comprehensive Viva Voce	0	0	0	0	1
TOTAL			6	0	16	22	15

List of Electives (Professional and Open)

5TH SEMESTER

PEC(IT)501
A: Information Theory and Coding
B: Computer Graphics
C: Advanced Computer Architecture
D: Computational Geometry

6TH SEMESTER

PEC(IT)602
A: Software Engineering
B: Cryptography and Network Security
C: Multimedia Systems
D: Wireless Communication

OEC(IT/CS)601
A: Optimization Techniques
B: Digital Communication
C: Cyber Law and Security Policy
D: Control System

7TH SEMESTER

PEC(IT)703
A: Machine Learning
B: Distributed Systems
C: Cloud Computing
D: Real Time Operating Sys.

PEC(IT)704
A: Web Technology
B: Internetworking
C: Pattern Recognition
D: Natural Language Processing

OEC(IT/CS)702
A: VLSI Design and Algorithm
B: Digital Signal Processing
C: Management Information Sys.
D: Big Data Analytics

8TH SEMESTER

PEC(IT)805
A: E-Commerce
B: Data Mining
C: Mobile Communication
D: Internet of Things
E: Data Science

OEC(IT/CS)803
A: Image Processing
B: Software Project Management
C: Social Network Analysis
D: Quantum Computing
E: Bioinformatics

UG Course Structure for Ceramic Technology

1st Semester B. Tech Ceramic Technology

Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1	Basic Science course	BS(CT) 101	Mathematics – I	3	1	0	4
2	Basic Science course	BS(CT) 102	Chemistry	3	0	0	3
3	Basic Science course	ES(CT) 101	Programming for Problem solving	3	0	0	3
Sessional/Practical							
1	Basic Science course	BSL(CT) 103	Chemistry Lab	0	0	3	1.5
2	Engineering Science Course	ESL(CT) 102	Programming forProblem solving Lab	0	0	4	2
3	Engineering Science Course	ESL(CT) 103	Engineering Graphics & Design	1	0	4	3
4		CLA(CT)-1	Comprehensive Laboratory Assessment	-	-	-	1
					Total credits		**17.5**

2nd Semester B. Tech Ceramic Technology

Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1	Basic Science course	BS(CT) 204	Mathematics-II	3	0	0	3
2	Basic Science course	BS(CT) 205	Physics	3	1	0	4

				Sessional/Practical			
3	Engineering Science Course	ES(CT) 204	Basic Electrical Engineering	3	1	0	4
4	Humanities & Social Sciences including Management	HS(CT/IT/CS) 201	English	2	0	0	2
			Sessional/Practical				
1	Basic Science course	BSL(CT) 206	Physics Lab	0	0	3	1.5
2	Engineering Science Course	ESL(CT) 205	Basic Electrical Engineering Lab	0	0	2	1
3	Engineering Science Course	ESL(CT) 206	Workshop /Manufacturing Practices	1	0	4	3
4	Humanities & Social Sciences including Management	HSL(CT/IT/CS) 202	Language Lab	0	0	2	1
5		CLA(CT) 2	Comprehensive Laboratory Assessment	-	-	-	1
						Total credits	20.5

3rd Semester B. Tech Ceramic Technology							
Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
			Theory				
1.	Basic Science Course	BS(CT) 307	Engineering Mathematics	3	1	0	4
2.	Engineering Science Course	ES(CT) 307	Basic Mechanical Engineering	3	0	0	3
3.	Professional Core Course	PC(CT) 301	Ceramic Raw Materials	3	1	0	4

SI. No.	Type of course	Course Code	Course Title				
4.	Professional Core Course	PC(CT) 302	Unit Operation I	3	1	0	4
5.	Professional Core Course	PC(CT) 303	Energy Resources & Furnaces	4	0	0	4
6.	Engineering Science Course	ES(CT) 308	Chemical & Engineering Thermodynamics	3	1	0	4
Sessional/Practical							
1.	ProfessionalCore Course	PCL(CT) 304	Powder Preparation & Chemical Analysisof Ceramic Raw Materials and Products Lab	0	0	3	1.5
2.	Professional Core Course	PCL(CT) 305	Fuels Testing Lab	0	0	3	1.5
3.	Basic Science Course	BSL(CT)308	Numerical Methods Lab	0	0	2	1
4.	ComprehensiveLaboratory Assessment	CLA(CT) 3	All Labs	-	-	-	1
Mandatory Course							
1.	Mandatory course	MC(CT) 301	Environmental Sciences	2	0	0	0
					Total credits		**28**

			4th Semester B. Tech Ceramic Technology				

SI. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1.	Basic Science Course	BS(CT) 409	Biology	2	0	0	2
2.	Professional Core Course	PC(CT) 406	Unit Operation II	3	0	0	3
3.	Engineering Science Course	ES(CT) 409	Engineering Materials Science	3	0	0	3
4.	Professional Core Course	PC(CT) 407	Processing of Ceramics	3	0	0	3
5.	Engineering Science Course	ES(CT) 410	Fundamentals of Metallurgy	3	0	0	3

6.	Professional Elective Course	PE(CT) 401	Process Calculations(A)/ Introduction to Industrial Ceramics(B)	2	0	0	2
7.	Humanities & Social Sciences including Management Courses	HS(CT) 403	Economics & Statistics	3	0	0	3
Sessional/Practical							
1.	Professional Core Course	PCL(CT)408	Physical Testing & Instrumental Methods of Analysisof Raw Materials & Products Lab	0	0	3	1.5
2.	Professional Core Course	PCL(CT)409	Unit Operation Lab	0	0	3	1.5
3.	Comprehensive Laboratory Assessment	CLA(CT) 4	All Labs	-	-	-	1
				Total credits			**23**

5th Semester B. Tech Ceramic Technology							
Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1.	Professional Core Course	PC(CT) 510	Refractories	3	0	0	3
2.	Professional Core Course	PC(CT) 511	Glass Science &Technology	3	0	0	3
3.	Professional Core Course	PC(CT) 512	Whitewares	3	0	0	3
4.	Professional Elective Course	PE(CT) 502	Bio Ceramics (A) / Nano Ceramics (B)	3	0	0	3

Sl. No.	Type of course	Course Code	Course Title	Lecture	Tutorial	Practical	Credits
5.	Open Elective Course	OE(CT) 501	DBMS (A) / Object Oriented Programming (B) / Operation Research (C)	3	0	0	3
Sessional/Practical							
1.	Professional Core Course	PCL(CT) 513	Refractories Lab	0	0	3	1.5
2.	Professional Core Course	PCL (CT) 514	Glass Lab	0	0	3	1.5
3.	Professional Core Course	PCL(CT) 515	Whitewares Lab	0	0	3	1.5
4.	Open Elective Course	OEL(CT)502	DBMS Lab (A) / Object Oriented Programming Lab (B) / OR Lab (C)	0	0	2	1
5.	Comprehensive Laboratory Assessment	CLA(CT) 5	All Labs	-	-	-	1
					Total credits		**21.5**

6th Semester B. Tech Ceramic Technology							
Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1.	Professional Core Course	PC(CT) 616	Cement, Concrete & Monolithic Refractories	4	0	0	4
2.	Professional Core Course	PC(CT) 617	Physical Ceramics	3	0	0	3
3.	Professional Core Course	PC(CT) 618	Advanced Ceramics	3	0	0	3
4.	Professional Elective Course	PE(CT) 603	Refractories for Ferrous Industries (A) / Refractories forNon -ferrous & Other Industries (B)	3	0	0	3

Sl. No.	Type of course	Course Code	Course Title	L	T	P	Credits
5.	Open Elective Course	OE(CT) 603	Total Quality Management (A) / Environment Engg.& Management (B)	3	0	0	3
6.	Professional Core Course	PC(CT) 619	Instrumentation & Process Control	4	0	0	4
Sessional/Practical							
1.	Professional Core Course	PCL(CT) 620	Cement, Concrete & Monolithics Lab	0	0	3	1.5
2.	Comprehensive Laboratory Assessment	CLA(CT) 6	All Labs	-	-	-	1
3.	Humanities & Social Sciences including Management Courses	HSL(CT).604	Group Discussions	0	0	2	1
Mandatory Course							
1.	Mandatory Course	MC(CT) 602	Indian Constitution	3	0	0	0
					Total credits		**23.5**

7th Semester B. Tech Ceramic Technology							
Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1.	Professional Core Course	PC(CT) 721	Computational Materials Science	3	0	0	3
2.	Professional Core Course	PC(CT) 722	Characterization ofMaterials	2	0	0	2
3.	Professional Elective Course	PE(CT) 704	Non-oxide Ceramics(A)/ Composites (B)	2	0	0	2
4.	Open Elective Course	OE(CT) 704	Artificial Intelligence & Robotics (A)/ Internet of Things(B)/ Machine Learning (C)	2	0	0	2

5.	Humanities & Social Sciences including ManagementCourses	HS(CT) 705	Fundamentals ofBusiness Management	3	0	0	3
			Sessional/Practical				
1.	Humanities & Social Sciences including Management Courses	HSL(CT) 706	Seminar	0	0	2	1
2.	Project	PROJECT (CT) 701	Project Work I	0	0	08	4
3.	Industrial Training	INDTRG(CT)701	Training Proficiency	-	-	-	1
					Total credits		18

8th Semester B. Tech Ceramic Technology							
Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
			Sessional/Practical				
1.	Professional Elective Course	PEL(CT) 805	Ceramic Plant & Equipment Design(A)/ Furnace & Kilns Design (B)	0	0	3	1.5
2.	Project	PROJECT(CT)802	Project Work II	0	0	10	5
3.	Comprehensiv eViva Voce	PCL(CT) 823	Comprehensi veViva Voce	-	-	-	1.5
					Total credits		8

UG Course Structure for Computer Science and Engineering

<table>
<tr><th colspan="8">1st Semester for CSE/IT</th></tr>
</table>

SI. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
Theory							
1	Basic Science course	BS(CS/IT) 101	Mathematics - I	3	0	0	3
2	Basic Science course	BS(CS/IT) 102	Physics	3	1	0	4
3	Engineering Science Course	ES(CS/IT) 101	Basic Electrical Engineering	3	1	0	4
Sessional							
1	Basic Science course	BSL(CS/IT) 103	Physics Laboratory	0	0	3	1.5
2	Engineering Science Course	ESL(CS/IT) 102	Basic Electrical Engineering Laboratory	0	0	2	1
3	Engineering Science Course	ESL(CS/IT) 103	Engineering Graphics & Design	1	0	4	3
Practical							
1		CLA(CS/IT)1	Comprehensive Laboratory Assessment	-	-	-	1
					Total credits		17.5

1st Semester for CSE/IT

Mandatory Induction Program- 3 weeks duration

Theory

Sessional

Practical

Total credits 17.5

**2nd semester for CSE/IT**

Sl. No.	Type of course	Course Code	Course Title	Hours per week			Credits
				Lecture	Tutorial	Practical	
**Theory**
1	Basic Science course	BS(CS/IT) 204	Chemistry	3	0	0	3
2	Basic Science course	BS(CS/IT) 205	Mathematics-II	3	1	0	4
3	Engineering Science Course	ES(CS/IT) 204	Programming for Problem Solving	3	0	0	3
4	Humanities & Social Sciences including Management	HS(CT/IT/CS) 201	English	2	0	0	2
**Sessional**
1	Basic Science course	BSL(CS/IT) 206	Chemistry Laboratory	0	0	3	1.5
2	Engineering Science Course	ESL(CS/IT) 205	Programming for Problem SolvingLaboratory	0	0	4	2
3	Engineering Science Course	ESL(CS/IT) 206	Workshop /Manufacturing Practices	1	0	4	3
4	Humanities & Social Sciences including Management	HSL(CT/IT/CS) 202	Language Lab	0	0	2	1
**Practical**
1		CLA(CS/IT) 2	Comprehensive Laboratory Assessment	-	-	-	1
						Total credits	**20.5**

<table>
<tr><td colspan="8">3rd SEMESTER</td></tr>
<tr><td colspan="8">THEORY</td></tr>
<tr><td>SL. NO.</td><td>PAPERCODE</td><td>PAPERNAME</td><td>L</td><td>T</td><td>P</td><td>CONTACT HRs./WEEK</td><td>CREDIT</td></tr>
<tr><td>01</td><td>BS(CS/IT)307</td><td>Mathematics- III</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>02</td><td>ES(CS/IT)307</td><td>Digital Electronics</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>03</td><td>PC(CS/IT)301</td><td>Computer Organization</td><td>3</td><td>1</td><td>0</td><td>4</td><td>4</td></tr>
<tr><td>04</td><td>PC(CS/IT)302</td><td>Data structure & Algorithms</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>05</td><td>HS(CS/IT)303</td><td>Economics for Engineers</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td colspan="8">SESSIONAL/PRACTICAL</td></tr>
<tr><td>01</td><td>ESL(CS/IT)308</td><td>Digital Electronics Lab</td><td>0</td><td>0</td><td>3</td><td>3</td><td>1.5</td></tr>
<tr><td>02</td><td>PCL(CS/IT)303</td><td>Computer Organization Lab</td><td>0</td><td>0</td><td>3</td><td>3</td><td>1.5</td></tr>
<tr><td>03</td><td>PCL(CS/IT)304</td><td>Data structure & Algorithms Lab</td><td>0</td><td>0</td><td>3</td><td>3</td><td>1.5</td></tr>
<tr><td>04</td><td>PCL(CS/IT)305</td><td>IT Workshop (python/matlab)</td><td>0</td><td>0</td><td>3</td><td>3</td><td>1.5</td></tr>
<tr><td>05</td><td>CLA(CS)-3</td><td>Comprehensive Laboratory Assessment</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td colspan="3">TOTAL</td><td>15</td><td>1</td><td>12</td><td>28</td><td>23</td></tr>
</table>

<table>
<tr><td colspan="8">4th SEMESTER</td></tr>
<tr><td colspan="8">THEORY</td></tr>
<tr><td>SL. NO.</td><td>PAPERCODE</td><td>PAPERNAME</td><td>L</td><td>T</td><td>P</td><td>CONTACT HRs./WEEK</td><td>CREDIT</td></tr>
<tr><td>01</td><td>BS(CS/IT)408</td><td>Discrete Mathematics</td><td>3</td><td>1</td><td>0</td><td>4</td><td>4</td></tr>
<tr><td>02</td><td>ES(CS/IT)409</td><td>Communication Engineering</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>03</td><td>PC(CS/IT)406</td><td>Design&Analysisof Algorithm</td><td>3</td><td>0</td><td>0</td><td>3</td><td>3</td></tr>
<tr><td>04</td><td>PC(CS/IT)407</td><td>FormalLanguage andAutomata Theory</td><td>3</td><td>1</td><td>0</td><td>4</td><td>4</td></tr>
</table>

05	PC(CS/IT)408	Computer Architecture	3	1	0	4	4
SESSIONAL/PRACTICAL							
01	ESL(CS/IT)410	Communication Engineering Lab	0	0	3	3	1.5
02	PCL(CS/IT)409	Algorithm Lab	0	0	3	3	1.5
03	PCL(CS/IT)410	Programming Lab using C++	0	0	3	3	1.5
04	CLA(CS)-3	Comprehensive Laboratory Assessment	0	0	0	0	1
MANDATORY COURSE							
01	MC(CS/IT)401	Environmental Sciences	2	0	0	2	0
TOTAL			17	3	9	29	23.5

5th SEM							
THEORY							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRS./WEEK	CREDIT
01	PC(CS/IT)511	Operating Systems	3	1	0	4	4
02	PC(CS/IT)512	Database Management System	3	1	0	4	4
03	PC(CS/IT)513	Object OrientedProgramming	3	1	0	4	4
04	PEC(CS)501	Elective-I A: Advanced Algorithms B: Soft Computing C: Embedded Systems	3	0	0	3	3
05	MC(CS/IT)502	Constitution of India/ Essence of Indian Traditional Knowledge	2	0	0	2	0 (non-credit according to AICTE)
SESSIONAL/PRACTICAL							
01	PCL(CS/IT)514	Operating System Lab	0	0	3	3	1.5

02	PCL(CS/IT)515	Database Management System Lab	0	0	3	3	1.5
03	PCL(CS/IT)516	Programming Lab using Java	0	0	3	3	1.5
		SESSIONAL					
01	CLA(CS)-5	Comprehensive Laboratory Assessment	0	0	0	0	1
		TOTAL	14	3	9	26	20.5

6th SEM							
THEORY							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRS./WEEK	CREDIT
01	PC(CS/IT)617	Computer Network	3	1	0	4	4
02	PC(CS)618	Compiler Design	3	0	0	3	3
03	PEC(CS)602	Elective-II A. Real Time System B. Information and Coding Theory C. Software Engineering D. AI in Bioinformatics E. Digital Signal Processing F. Cyber Security	3	0	0	3	3
04.	PEC(CS)603	Elective-III A. Machine Learning B. Operation Research C. Cryptography D. Advance Architecture E. Cloud Computing F. Ad-Hoc Sensor Network	3	0	0	3	3
05	HS(CS/IT)604	Industrial Management	3	0	0	3	3

		SESSIONAL/PRACTICAL					
01	PCL(CS/IT)619	Computer Network lab	0	0	3	3	1.5
02	PROJ(CS)601	Project 1	0	0	6	6	3
03	CLA(CS)-6	Comprehensive Laboratory Assessment	0	0	0	0	1
		TOTAL	15	1	9	25	21.5

7th SEM							
THEORY							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRS./WEEK	CREDIT

01	OEC(CS/IT)701	Open Elective I
		    A. History of Science and Engineering
		    B. Organizational Behavior
			3	0	0	3	3

02	OEC(CS/IT)702	Open Elective II
		    A. Economic Policies in India
		    B. Soft Skills and Interpersonal Communication
			3	0	0	3	3

03	OEC(CS/IT)703	Open Elective III
		    A. Programming and Application of Advanced Microprocessors
		    B. Control System
		    C. Mobile Computing
			3	0	0	3	3

04	PEC(CS)704	Elective-IV
		    A. Web & Internet
		    B. Artificial Intelligence
		    C. Introduction to Deep Learning
		    D. Digital Image processing
		    E. Big Data Analytics
			3	0	0	3	3

05	PEC(CS)705	Elective-V
		    A. Internet of Things
		    B. Distributed Database
		    C. Computer Graphics
		    D. Introduction to Quantum Computing
		    E. Data Mining
			3	0	0	3	3

SESSIONAL/PRACTICAL							
01	PROJ(CS)702	Project 2	0	0	15	15	7.5
		SESSIONAL					

01	INDTR(CS)1	Industrial Training Evaluation	0	0	0	0	1
		TOTAL	15	0	15	30	23.5

8th SEM							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRS./WEEK	CREDIT
PRACTICAL							
01	PROJ(CS)803	Project 3	0	0	16	16	08
		SESSIONAL					
01	CVV(CS)	Comprehensive Viva Voce	0	0	0	0	2
		TOTAL	0	0	16	16	10

Details of Projects for B.Tech. in Computer Science and Engineering

Name of the course	Project 1
Course Code: PROJ(CS)601	Semester: 6th
Duration: 6 months	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: 6 hours/week	Internal Evaluation: 80 Marks
Credit Points: 3	End Semester (External) Exam: 20 Marks

Objective:	
1.	To provide with the basic understanding of computer science and knowledge of proficient different techniques.
2.	Familiar with technical documentations and research articles related to some engineering problem.
3.	Put in order a systematic literature survey on some engineering problem and existing solutions.
4.	Evaluate the scholarly articles.

Pre-Requisite:

(As required)

Learning Resources:

(As required)

Course Outcomes:

After completion of this Project 1 the students will be able to -

CO1	Analyze technical documentations and research articles related to some engineering problem.
CO2	Evaluate the scholarly articles with peer members as a team.
CO3	Organize a systematic literature survey on some engineering problem and existing solutions
CO4	Demonstrate the knowledge, skills and attitudes of a professional engineer during presentation.
CO5	Defend the arguments of research articles cited in survey report during presentations.

Name of the course	Project 2
Course Code: PROJ(CS)702	Semester: 7th
Duration: 6 months	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: 15 hours/week	Internal Evaluation: 80 Marks
Credit Points: 7.5	End Semester (External) Exam: 20 Marks

Objective:	
1.	To apply the concept related to mathematics and computer Sc.
2.	Express a sound technical knowledge to undertake problem identification and solution methodology on project topic.
3.	To demonstrate the techniques those have been used to implement the idea.
4.	Propose work solutions to intricate problems exploiting a systematic approach.

Pre-Requisite

(As required)

Learning Resources:

(As required)

Course Outcomes:	
After completion of this Project 2 the students will be able to -	
CO1	Demonstrate a sound technical knowledge to undertake problem identification and solution approach on project topic.
CO2	Demonstrate the ability to locate and use technical information from multiple sources.
CO3	Design engineering solutions to complex problems utilizing a systematic approach.
CO4	Perform as a team-member and to focus on getting a working project done on time.
CO5	Communicate effectively in speech and writing to make presentation and prepare technical document.

Name of the course	Project 3
Course Code: PROJ(CS)803	Semester: 8th
Duration: 6 months	Maximum Marks: 100
Teaching Scheme	Examination Scheme
Theory: 16 hours/week	Internal Evaluation: 80 Marks
Credit Points: 8	End Semester (External) Exam: 20 Marks
Objective:	
1.	Design the solution with suitable techniques, resources and modern tools revealing reliability and ethical behaviour in industrial practice.
2.	To apply the concept related to mathematics and computer Sc.
3.	To demonstrate the techniques those have been used to implement the idea.
4.	Discuss the experimental results
Pre-Requisite	
(As required)	
Learning Resources:	
(As required)	
Course Outcomes:	
After completion of this Project 3 the students will be able to -	
CO1	Design the solution with appropriate techniques, resources and contemporary tools exhibiting integrity and ethical behavior in engineering practice.
CO2	Manage project schedule, resources, and work assignments to ensure timely completion.
CO3	Perform professionally as a team member, accepting responsibility, taking initiative, and providing leadership necessary to ensure Project success.
CO4	Perform formal and informal Communication with team members to prepare presentation and technical documentation (report).
CO5	Defend the performance of the implemented project and the implication of the solution.

PG Course Structure for Ceramic Technology

1st Semester							
Theory							
Code	Subject	Contact period/ week				Full Marks	Credit
		L	T	P	Total		
M(CT) 101	Applied Mathematics	3	1	0	4	100	4
M(CT) 102	Str. & Prop. of Engg. Materials	4	0	0	4	100	4
M(CT) 103	Phase Equil. & transf. in Ceramic Systems	4	0	0	4	100	4
M(CT) 104	Adv. Process Tech. of Ceramics	4	0	0	4	100	4
M(CT) 105	Elect-I A. Environmental Engineering & Occupational Health and Safety B. Separation Technology C. Statistical Pros. Cont. in Ceramics	4	0	0	4	100	4
	Total Theory				**20**	**500**	**20**
Practical							
M(CT) 191	Charat. of Ceram. Raw Materials	0	0	3	3	100	2
M(CT) 192	Powder Processing & Characterization	0	0	3	3	100	2
	Total Practical				**6**	**200**	**4**
Sessional							
M(CT) 183	Seminar	0	2	0	2	100	2
	Total Credit of First Semester				**28**	**800**	**26**

2nd Semester			
Theory			
Code	Subject	Contact period/ week	Full	Credit

Code	Subject	L	T	P	Total	Marks	
M(CT) 201	Glass Sc. & Technology	4	0	0	4	100	4
M(CT) 202	New Generation Refractories	4	0	0	4	100	4
M(CT) 203	Nano Ceramics	4	0	0	4	100	4
M(CT) 204	Elect-II A. Bio Ceramics B. Tech. Ceramics C. Ceramic Composite	4	0	0	4	100	4
M(CT) 205	Elect-III A. Electronic ceramics B. Simulation & Optimization C. Thin Film Ceramics	4	0	0	4	100	4
	Total Theory				**20**	**500**	**20**
Practical							
M(CT) 291	Fabrication & Testing of Ceramic Products	0	0	3	3	100	2
M(CT) 292	Design of Kilns & Furnaces	0	0	3	3	100	2
	Total Practical				**6**	**200**	**4**
Sessional							
M(CT) 283	Comprehensive Viva Voce					100	4
	Total Credit of Second Semester				**26**	**800**	**28**

3rd Semester							
Theory							
Code	Subject	Contact period/ week				Full	Credit
		L	T	P	Total	Marks	
M(CT) 301	Technology Management	4	0	0	4	100	4
M(CT) 302	Research Methodology	4	0	0	4	100	4
M(CT) 381	Dissertation I				20	100	16
	Total Credit of Third Semester				**28**	**300**	**24**

4th Semester							
Sessional							
Code	Subject	Contact period/ week				Full Marks	Credit
		L	T	P	Total		
M(CT) 481	Dissertation II				28	200	22
	Total Credit of Fourth Semester				**28**	**200**	**22**
	Grand Total of Credit						**100**

PG Course Structure for Information Technology

SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
1st SEMESTER							
THEORY							
01	ITPC101	Advanced Engineering Mathematics	3	1	0	4	4
02	ITPC102	Advanced Computer Architecture	3	1	0	4	4
03	ITPC103	Computer Network	3	1	0	4	4
04	ITPEC101	A: Internet and Web Technology B: Advanced Software Engineering C: Advanced Data Structures	3	0	0	3	3
05	ITPEC102	A: Information Theory and Coding B: Pattern Recognition C: Digital Signal Processing D: Cloud Computing	3	0	0	3	3
06	ITAUD101	A: Indian Constitution B: Value Education C: Pedagogy Studies D: Stress Management by Yoga	2	0	0	2	0
SESSIONAL/PRACTICAL							
01	ITPCL101	PC Lab. I	0	0	3	3	1.5
02	ITPEC101(A/B/C)L	PEC101 Lab.	0	0	3	3	1.5
03	ITASGN101	Seminar	0	0	0	0	1
TOTAL			**17**	**3**	**6**	**26**	**22**
2nd SEMESTER							
THEORY							
01	ITPC204	Advanced Operating System	3	1	0	4	4
02	ITPC205	Database Design	3	1	0	4	4
03	ITPC206	Advanced Algorithm	3	1	0	4	4
04	ITPEC203	A: Image and video Processing B: Machine Learning C: Soft Computing	3	0	0	3	3
05	ITPEC204	A: Mobile Computing B: IoT and Its Application C: Data Mining	3	0	0	3	3
06	ITRES201	Research Methodology and IPR	2	0	0	2	2
SESSIONAL/PRACTICAL							
01	ITPCL202	PC Lab. II	0	0	3	3	1.5
02	ITPEC203(A/B/C)L	ITPEC203 Lab.	0	0	3	3	1.5

03	ITPRJ201	Dissertation (Part 1)	0	0	4	4	2
TOTAL			**17**	**3**	**10**	**30**	**25**

3rd SEMESTER							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
THEORY							
01	ITOEC301	A: Quantum Computing B: Big Data Analytics C: Software Project Management D: Information and System Security E: Social Network Analysis	3	0	0	3	3
SESSIONAL/PRACTICAL							
01	ITPRJ302	Dissertation (Part 2)	0	0	18	18	9
02	ITASGN302	Comprehensive Viva-voce	0	0	0	0	1
TOTAL			**3**	**0**	**18**	**21**	**13**

4th SEMESTER							
SL. NO.	PAPER CODE	PAPER NAME	L	T	P	CONTACT HRs./WEEK	CREDIT
SESSIONAL/PRACTICAL							
01	ITPRJ403	Dissertation (Part 3)	0	0	24	24	12
TOTAL			**0**	**0**	**24**	**24**	**12**