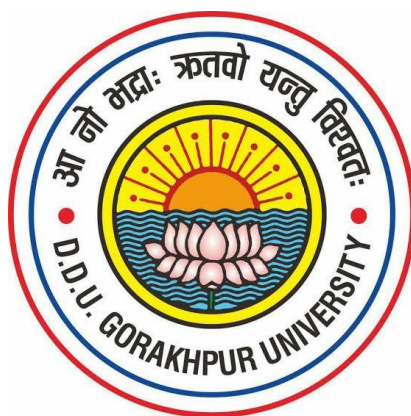**INSTITUTE OF ENGINEERING AND TECHNOLOGY**
Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur

INSTITUTE OF ENGINEERING AND TECHNOLOGY
DEEN DAYAL UPADHYAYA GORAKHPUR UNIVERSITY, GORAKHPUR
(दीन दयाल उपाध्याय गोरखपुर विश्वविद्यालय, गोरखपुर)

COURSE STRUCTURE
&
SYLLABUS

FOR

B. TECH.

Computer Science & Engineering

Based

on

AICTE MODEL CURRICULUM

[Effective from the Session: 2024-25]

University offers a pool of courses for Ability Enhancement Courses (AEC) and Skill Enhancement Courses (SEC). Student has to select one SEC course (repetition of courses are not allowed) in first, second and third semester respectively. Further student has to select one AEC course (repetition of courses are not allowed) in first, second, third and fourth semester respectively.

Curriculum for Bachelor of Technology
COMPUTER SCIENCE AND ENGINEERING
Course Structure & Semester-wise Credit Distribution

S.No.	Course Type	Credit
**Credit Distribution (Course Type) in B. Tech. (Computer Science & Engineering) Program**		
1	BSC	14
2	ESC	19
3	HMSC	10
4	PCC	69
5	PEC	18
6	Project work, Seminar and internship in industry or elsewhere	16
7	AEC offered by University	08
8	SEC offered by University	09
9	OEC	12
10	**Mandatory Non-Credit Courses** [ACITE-Mandatory Non-Credit (NC) Courses]	(02) **Non-Credit**
	Total Credit	175

Abbreviation:
BSC: Basic Science Course
ESC: Engineering Science Course
HMSC: Humanities & Social Science including Management Courses
PCC: Professional Core Course
PEC: Professional Elective Course
OEC: Open Elective Course

S. No.	Course Code	Course Title	Credits
**Basic Science Courses (BSC)**			
1.	ECHE101	Engineering Chemistry	3+0
2.	ECHE151	Engineering Chemistry Lab	0+1
3.	EPHY101	Engineering Physics	3+0
4.	EPHY151	Engineering Physics Lab	0+1
5.	EMAT101	Engineering Mathematics-I	3+0
6.	EMAT 102	Engineering Mathematics-II	3+0
		Total	**14**
Engineering Science Course (ESC)			
1.	ECE101	Basic Electronics Engineering	3+0
2.	ECE151	Basic Electronics Engineering Lab	0+1
3.	ECE102	Basic Electrical Engineering	3+0
4.	ECE152	Basic Electrical Engineering Lab	0+1
5.	ME101	Engineering Graphics & Design	0+2
6.	CSE101	Programming for Problem Solving	3+0
7.	CSE101	Programming for Problem Solving Lab	0+1
8.	ME102	Workshop Practices	0+2
9.	ME103	Fundamental of Mechanical Engineering and Mechatronics	3+0
		Total	**19**
Humanities and Social Sciences including Management Courses (HSMC)			
1.	HSM101	Professional Communication	3+0
2.	HSM301	Organization Behavior	3+0
3.	HUV102	Universal Human Values-II: Understanding Harmony And Ethical Human Conduct	3+0
4.	HSM151	Professional Communication Lab	0+1
		Total	**10**

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		Professional Core Course (PCC)	
S.No.	**Course Code**	**Course Title**	**Credit**
1.	CSE201	Mathematics for Machine Learning	3+0
2.	CSE251	Mathematics for Machine Learning Lab	0+1
3.	ECE201	Digital Electronics & Logic Design	3+0
4.	ECE251	Digital Electronics & Logic Design Lab	0+1
5.	CSE202	Data Structure	4+0
6.	CSE252	Data Structure Lab	0+1
7.	CSE203	Python with Linux	2+0
8.	CSE253	Python with Linux Lab	0+1
9.	CSE204	Discrete Mathematics	4+0
10.	CSE205	Evolutionary Computing	3+0
11.	CSE255	Evolutionary Computing Lab	0+1
12.	CSE206	Computer Organization and Architecture	3+0
13.	CSE256	Computer Organization and Architecture Lab	0+1
14.	CSE207	Operating Systems	4+0
15.	CSE257	Operating System Lab	0+1
16.	CSE208	Software Engineering	3+0
17.	CSE258	Software Engineering Lab	0+1
18.	CSE209	Theory of Automata and Formal Languages	4+0
19.	CSE301	Artificial Intelligence	4+0
20.	CSE302	Database Management System	3+0
21.	CSE352	Database Management System Lab	0+1
22.	CSE303	Design and Analysis of Algorithms	4+0
23.	CSE353	Design and Analysis of Algorithm Lab	0+1
24.	CSE304	Computer Network	4+0
25.	CSE354	Computer Network Lab	0+1
26.	CSE305	Compiler Design	3+0
27.	CSE355	Compiler Design Lab	0+1
28.	CSE306	Machine Learning	4+0
29.	CSE356	Machine Learning Lab	0+1
30.	IT355	Internet Programming using Java	0+1
		Total	**69**

		Computer Science & Engineering Department Project Work, Seminar and Internship/Industrial Training in Industry or Elsewhere	
S.No.	**Course Code**	**Course Title**	**Credit**
1.	CSEP312	Project I	**0+3**
2.	CSEIND401	Industrial Training	**0+2**
3.	CSES401	Seminar	**0+2**
4.	CSEP402	Project II	**0+3**
5.	CSEP403	Project III	**0+6**
		Total	**16**

S.No.	Semester	PEC-Elective	Credit

S.No.	Semester	PEC-Elective	Credit
Professional Elective Course (PEC)			
1	V	Elective-I	3+0
2	VI	Elective-II	3+0
3	VI	Elective-II	3+0
4	VII	Elective-I	3+0
5	VII	Elective-I	3+0
6	VIII	Elective-II	3+0
Total			**18**
Student has to select unique course(s) either from Elective-I or from Elective-II in the semester. Repetition of courses is not allowed.			

Professional Elective Courses (from SWAYAM)
Discipline: Computer Science and Engineering, **Duration:** 12 Weeks, **Credit:** 3
Elective-1 (Odd Semester)

S.No.	Course Code	Course Id	Course Name	SME Name	Institute	Link
1.	ECSE101	noc23-cs127	Cyber Security and Privacy	Prof. Saji K Mathew	IITM	https://onlinecourses.nptel.ac.in/noc23_cs127/preview
2.	ECSE102	noc23-cs77	Computer Vision	Prof. Jayanta Mukhopadhyay	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs77/preview
3.	ECSE103	noc23-cs89	Cloud Computing	Prof. Soumya Kanti Ghosh	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs89/preview
4.	ECSE104	noc23-cs114	C-Based VLSI Design	Prof. Chandan Karfa	IITG	https://onlinecourses.nptel.ac.in/noc23_cs114/preview
5.	ECSE105	noc23-cs92	Artificial Intelligence : Search Methods For Problem Solving	Prof. Deepak Khemani	IITM	https://onlinecourses.nptel.ac.in/noc23_cs92/preview
6.	ECSE106	noc23-cs102	Parameterized Algorithms	Prof. Neeldhara Misra	noc23-cs102	https://onlinecourses.nptel.ac.in/noc23_cs102/preview
7.	ECSE107	noc23-cs107	Social Networks	Prof. Sudarshan Iyengar Prof. Yayati Gupta	IIT Ropar	https://onlinecourses.nptel.ac.in/noc23_cs107/preview
8.	ECSE108	noc23-cs111	Computational Complexity	Prof. Subrahmanyam Kalyanasundaram	IIT Hyderabad	https://onlinecourses.nptel.ac.in/noc23_cs111/preview
9.	ECSE109	noc23-cs68	Advanced Distributed Systems	Prof. Smruti Ranjan Sarangi	IITD	https://onlinecourses.nptel.ac.in/noc23_cs68/preview
10.	ECSE110	noc23-cs84	Statistical Learning For Reliability Analysis	Prof. Monalisa Sarma	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs84/preview
11.	ECSE111	noc23-cs75	Ethical Hacking	Prof. Indranil Sengupta	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs75/preview
12.	ECSE112	noc23-cs91	Software Testing	Prof. Meenakshi D'Souza	IIITB	https://onlinecourses.nptel.ac.in/noc23_cs91/preview
13.	ECSE113	noc23-cs126	Deep Learning for Computer Vision	Prof. Vineeth N Balasubramanian	IITH	https://onlinecourses.nptel.ac.in/noc23_cs126/preview
14.	ECSE114	noc23-cs69	Privacy And Security In Online Social Media	Prof. Ponnurangam Kumaraguru	IIITH	https://onlinecourses.nptel.ac.in/noc23_cs69/preview

Note: In case of changes in the above subjects (**Elective-1 (Even Semester) (from SWAYAM)),** Dean /Director/ HoD will issue separate list of subjects.

Professional Elective Courses (from Department of CSE)
Elective-1 (Odd Semester)

S.No.	Course Code	Course Name	Credit
1.	ECSE115	Data Mining and Data Warehousing	3+0
2.	ECSE116	Advanced Database Management System	3+0
3.	ECSE117	Design and Analysis of Parallel Algorithms	3+0
4.	ECSE118	Computational Intelligence	3+0
5.	ECSE119	Parallel and Distributed Computing	3+0
6.	ECSE120	Natural Language Processing	3+0
7.	ECSE121	High Performance Computing	3+0
8.	ECSE122	Design & Development of Applications	3+0
9.	ECSE123	Introduction to Software Testing	3+0
10.	ECSE124	Distributed System	3+0
11.	ECSE125	Mobile Computing	3+0
12.	ECSE126	Wireless Network Systems	3+0

Note:
- Instead of adopting courses from Elective-I in Vth Semester, student may adopt "Internet Programming using Java (IT305)" offered by department of Information Technology.
- Students may take subjects from Elective-1 (from SWAYAM) and/or Elective-1(from Department of CSE)
- Repetition of courses is not allowed.
- Execution of the courses offered by the department depends on the availability of faculty persons.

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Elective-2 (Even Semester) (from SWAYAM)
Discipline: Computer Science and Engineering, **Duration:** 12 Weeks, **Credit:** 3

S.No.	Course Code	Course Id	Course Name	SME Name	Institute	Link
1.	ECSE201	noc23-cs07	Advanced Computer Architecture	Prof. Smruti R.Sarangi	IITD	https://onlinecourses.nptel.ac.in/noc23_cs07
2.	ECSE202	noc23-cs59	Hardware Security	Prof. Debdeep Mukhopadhyay	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs59
3.	ECSE203	noc23-cs61	GPU Architectures And Programming	Prof. Soumyajit Dey	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs61
4.	ECSE204	noc23-cs62	Foundations of Cyber Physical Systems	Prof. Soumyajit Dey	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs62
5.	ECSE205	noc23-cs63	Selected Topics in Algorithms	Prof. Palash Dey	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs63
6.	ECSE206	noc23-cs36	Affective Computing	Prof. Jainendra Shukla Prof. Abhinav Dhall	IIITD	https://onlinecourses.nptel.ac.in/noc23_cs36
7.	ECSE207	noc23-cs51	Introduction To Internet Of Things	Prof. Sudip Misra	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs51
8.	ECSE208	noc23-cs08	Data Analytics with Python	Prof. A. Ramesh	IITR	https://onlinecourses.nptel.ac.in/noc23_cs08
9.	ECSE209	noc23-cs03	Foundations of Cryptography	Prof. Ashish Choudhury	IIIT Bangalore	https://onlinecourses.nptel.ac.in/noc23_cs03
10.	ECSE210	noc23-cs23	Reinforcement Learning	Prof. Balaraman Ravindran	IITM	https://onlinecourses.nptel.ac.in/noc23_cs23
11.	ECSE211	noc23-cs24	Deep Learning	Prof. Sudarshan Iyengar	IIT Ropar	https://onlinecourses.nptel.ac.in/noc23_cs24
12.	ECSE212	noc23-cs45	Natural Language Processing	Prof. Pawan Goyal	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs45
13.	ECSE213	noc23-cs47	Blockchain and its Applications	Prof. Sandip Chakraborty Prof. Shamik Sural	IITKGP	https://onlinecourses.nptel.ac.in/noc23_cs47

Note: In case of changes in the above subjects (**Elective-2 (Even Semester) (from SWAYAM)),** Dean /Director/ HoD will issue separate list of subjects.

Professional Elective Courses (from Department of CSE)
Elective-2 (Even Semester)

S.No.	Course Code	Course Name	Credit
1.	ECSE214	Randomized Algorithms	3+0
2.	ECSE215	Programming for Embedded Systems	3+0
3.	ECSE216	Introduction to Deep Learning	3+0
4.	ECSE217	Service Oriented Architecture	3+0
5.	ECSE218	Quantum Computing	3+0
6.	ECSE219	Introduction to Cloud Computing	3+0
7.	ECSE220	Blockchain Architecture Design	3+0
8.	ECSE221	Distributed Algorithms	3+0
9.	ECSE222	High Speed Networks	3+0
10.	ECSE223	Software Defined Network	3+0
11.	ECSE224	Pervasive Computing	3+0
12.	ECSE225	Middleware Technologies	3+0

Note:
- Instead of adopting courses from Elective-II in VIth Semester, student may adopt **"Neural Networks (ITE115)"** and **"Advanced Topics in Data Mining (IT308)"** offered by department of Information Technology.
- Students may take subjects from Elective-2 (from SWAYAM) and/or Elective-2(from Department of CSE)
- Repetition of courses is not allowed.
- Execution of the courses offered by the department depends on the availability of faculty persons.

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ACITE-Mandatory Non-Credit (NC) Courses

S. No.	Course Code	Course Title	Credits
1.	-----------------------	Induction Program (3-weeks)	----------------
2.	ENV201	Environment & Ecology	2+0

AICTE Mandatory 3-Week Student Induction Program

The Essence and Details of Induction program can also be understood from the 'Detailed Guide on Student Induction program', as available on AICTE Portal.
(Link: https://www.aicte-india.org/sites/default/files/Model_Curriculum/UG-1/ug-vol1.pdf).

Induction Program (mandatory)	Three-week duration
Induction Program for students to be offered right at the start of the first year.	Physical activity
	Creative Arts
	Universal Human Values-I
	Literary
	Proficiency Modules
	Lectures by Eminent People
	Visits to local Areas
	Familiarization to Dept./Branch & Innovations

AEC and SEC Offered by the University for Implementation of NEP2020
(University Mandatory Course)

University offers a pool of courses for AEC and SEC to implement NEP2020. Student has to select one course under SEC category in first, second and third semester (repetition of courses are not allowed). In the same context, student has to select one course under AEC category in first, second, third and fourth semester (repetition of courses are not allowed).

As per NEP2020, year wise credit requirements for the award of "Certificate in Computer Science & Engineering", "Diploma in Computer Science & Engineering", "Bachelor of Vocation (B. Voc.) in Computer Science & Engineering" and "B. Tech. in Computer Science & Engineering" are given below:

First Year: After earning 47 credits in first year (*25 credits in first semester and 22 credits in second semester*), student will be eligible for **"Certificate in Computer Science & Engineering"**.

Second Year: After earning 95 credits *(47 credits from first year and 48 credits in second year (25 credits in third semester and 23 credits in fourth semester)),* student will be eligible for the award of "**Diploma in Computer Science & Engineering"**.

Third Year: After earning 144 credits *(47 credits from first year and 48 credits in second year and 49 credits in third year (25 credits in fifth semester and 24 credits in sixth semester)),* student will be eligible for the award of "**Bachelor of Vocation** (**B. Voc.) in Computer Science & Engineering"**.

Fourth Year: After earning 175 credits *(47 credits from first year and 48 credits in second year ,49 credits in third year and 31 credit in fourth year (16 credits in seventh semester and 15 credits in eighth semester)),* student will be eligible for the degree of **"B. Tech. in Computer Science & Engineering"**.

Table1: Year wise credit requirement for award of Certificate, Diploma, B. Voc., and B. Tech. Degree in Department of Computer Science & Engineering under the light of NEP2020.

After Year	Credit Requirement	Eligibility of
1st	47	"Certificate in Computer Science & Engineering"
2nd	95	"Diploma in Computer Science & Engineering"
3rd	144	"Bachelor of Vocation (B. Voc.) in Computer Science & Engineering"
4th	175	"B. Tech. in Computer Science & Engineering"

Skill Enhancement Course offered by Department of Computer Science & Engineering

1. Department of Computer Science & Engineering offers a course on "**Introduction to 3D Printing Technology (SEC-CSE01)"** with credit **03** under **Skill Enhancement Course category**.

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Engineering Open Elective Courses

S. No.	Department	Course Code	Course Title	Credits	Category
1.	ECE	ECOE01	Introduction to Microprocessors and Embedded Systems	3+0	Engineering Open Elective Course-1
	IT	ITOE01	Introduction to OOP in C++		
	CSE	CSEOE01	Web Technology		
	ME	MEOE01	Renewable Energy Resources		
2.	ECE	ECOE02	Introduction to MEMs	3+0	Engineering Open Elective Course-2
	IT	ITOE02	Introduction to Virtualization and Cloud Computing		
	CSE	CSEOE02	Web Application Development using Python		
	ME	MEOE02	Robotics		
3.	ECE	ECOE03	Digital VLSI Design	3+0	Engineering Open Elective Course-3
	IT	ITOE03	Cyber Law and Ethics		
	CSE	CSEOE03	Front End Technologies		
	ME	MEOE03	Finite Element Method		
4.	ECE	ECOE04	Wireless Communication and Network	3+0	Engineering Open Elective Course-4
	IT	ITOE04	Internet of Things		
	CSE	CSEOE04	Back-End Technologies		
	ME	MEOE04	Operation Research		

Note:
- Students of the department may choose Engineering Open Elective Courses offered by CSE department or other departments also.
- Execution of the courses offered by the department depends on the availability of faculty persons.

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Credit Distribution (Semester wise) (Minimum Common Programme)

S.No.	Semester Number	Credit
1	Semester I	25
2	Semester II	22
3	Semester III	25
4	Semester IV	23
5	Semester V	25
6	Semester VI	24
7	Semester VII	16
8	Semester VIII	15
Total Credit		**175**

Note: Students, who have joined the job/internship/ summer training, can earn credits from MOOCS courses in the semesters.

Course Structure

Branch/Course: Computer Science & Engineering
Semester-I (First Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Basic Science Course	EPHY101	Engineering Physics	3+0
2.	Basic Science Course	EPHY151	Engineering Physics Lab	0+1
3.	Basic Science Course	EMAT 101	Engineering Mathematics-I	3+0
4.	Basic Engineering Course	CSE101	Programming for Problem Solving	3+0
5.	Basic Engineering Course	CSE151	Programming for Problem Solving Lab	0+1
6.	Basic Engineering Course	ECE102	Basic Electrical Engineering	3+0
7.	Basic Engineering Course	ECE152	Basic Electrical Engineering Lab	0+1
8.	Basic Engineering Course	ME102	Workshop Practices	0+2
9.	Basic Engineering Course	ME103	Fundamental of Mechanical Engineering and Mechatronics	3+0
10.	SEC Course	SEC-x	SEC Course	03
11.	AEC Course	AEC-x	AEC Course	02
12.	Induction Program	----------------------		------------
Total Credit				**25**

Semester-II (First Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Basic Science Course	ECHE101	Engineering Chemistry	3+0
2.	Basic Science Course	ECHE151	Engineering Chemistry Lab	0+1
3.	Basic Science Course	EMAT102	Engineering Mathematics-II	3+0
4.	Humanities and Social Sciences including Management Course	HSM101	Professional Communication	3+0
5.	Humanities and Social Sciences including Management Course	HSM151	Professional Communication Lab	0+1
6.	Basic Engineering Course	ECE101	Basic Electronics Engineering	3+0
7.	Basic Engineering Course	ECE151	Basic Electronics Engineering Lab	0+1
8.	Basic Engineering Course	ME101	Engineering Graphics & Design	0+2
9.	SEC Course	SEC-x	SEC Course	03
10.	AEC Course	AEC-x	AEC Course	02
Total Credit				**22**

Note: After earning 47 credits in first year (*25 credits in first semester and 22 credits in second semester*), student will be eligible for **"Certificate in Computer Science & Engineering"**.

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Branch/Course: Computer Science & Engineering
Semester-III (Second Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Professional Core Course	CSE201	Mathematics for Machine Learning	3+0
2.	Professional Core Course	CSE202	Data Structure	4+0
3.	Professional Core Course	CSE203	Python with Linux	2+0
4.	Professional Core Course	CSE204	Discrete Mathematics	4+0
5.	Professional Core Course	ECE202	Digital Electronics & Logic Design	3+0
6.	Professional Core Course	CSE251	Mathematics for Machine Learning Lab	0+1
7.	Professional Core Course	CSE252	Data Structure Lab	0+1
8.	Professional Core Course	CSE253	Python with Linux Lab	0+1
9.	Professional Core Course	ECE252	Digital Electronics & Logic Design Lab	0+1
10.	Mandatory Non-Credit-Course	ENV201	Environment & Ecology	2+0**(Non-Credit)**
11.	SEC Course	SEC-x	SEC Course	03
12.	AEC Course	AEC-x	AEC Course	02
Total Credit				**25**

Semester-IV (Second Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Professional Core Course	CSE205	Evolutionary Computing	3+0
2.	Professional Core Course	CSE206	Computer Organization & Architecture	3+0
3.	Professional Core Course	CSE207	Operating Systems	4+0
4.	Professional Core Course	CSE208	Software Engineering	3+0
5.	Professional Core Course	CSE209	Theory of Automata and Formal Languages	4+0
6.	Professional Core Course	CSE255	Evolutionary Computing Lab	0+1
7.	Professional Core Course	CSE256	Computer Organization &Architecture Lab	0+1
8.	Professional Core Course	CSE257	Operating System Lab	0+1
9.	Professional Core Course	CSE258	Software Engineering Lab	0+1
10.	AEC Course	AEC-x	AEC Course	02
Total Credit				**23**

Note: After earning 95 credits *(47 credits from first year and 48 credits in second year (25 credits in third semester and 23 credits in fourth semester)),* student will be eligible for the award of "**Diploma in Computer Science & Engineering**".

Branch/Course: Computer Science & Engineering
Semester-V (Third Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Professional Core Course	CSE301	Artificial Intelligence	4+0
2.	Professional Core Course	CSE302	Database Management System	3+0
3.	Professional Core Course	CSE303	Design and Analysis of Algorithm	4+0
4.	Professional Core Course	CSE304	Computer Network	4+0
5.	Professional Elective Courses		**Elective-I** (from SWAYAM/ Department of CSE)	3+0
6.	Humanities & Social Science including Management Courses	HSM301	Organization Behavior	3+0
7.	Professional Core Course	CSE352	Database Management System Lab	0+1
8.	Professional Core Course	CSE353	Design and Analysis of Algorithm Lab	0+1
9.	Professional Core Course	CSE354	Computer Network Lab	0+1
10.	Professional Core Course	IT355	Internet Programming using Java	0+1
	Total Credit			**25**

Semester-VI (Third Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Professional Core Course	CSE305	Compiler Design	3+0
2.	Professional Core Course	CSE306	Machine Learning	4+0
3.	Professional Elective Course		**Elective-II**(from SWAYAM/ Department of CSE)	3+0
4.	Professional Elective Course		**Elective-II** (from SWAYAM/ Department of CSE)	3+0
5.	Open Elective Course		**Open Elective-I**	3+0
6.	Humanities & Social Science including Management Courses	HUV102	Universal Human Values-II: Understanding Harmony and Ethical Human Conduct	3+0
7.	Professional Core Course	CSE355	Compiler Design Lab	0+1
8.	Professional Core Course	CSE356	Machine Learning Lab	0+1
9.	Professional Core Course	CSEP312	Project-I	0+3
	Total Credit			**24**

Note: After earning 144 credits *(47 credits from first year and 48 credits in second year and 49 credits in third year (25 credits in fifth semester and 24 credits in sixth semester)),* student will be eligible for the award of "**Bachelor of Vocation (B. Voc.) in Computer Science & Engineering**".

Branch/Course: Computer Science & Engineering
Semester-VII (Fourth Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Professional Elective Course		**Elective-I**(from SWAYAM/ Department of CSE)	3+0
2.	Professional Elective Course		**Elective-I**(from SWAYAM/ Department of CSE)	3+0
3.	Open Elective Courses		**Open Elective-II**	3+0
4.	Professional Core Course	CSES401	Seminar	0+2
5.	Professional Core Course	CSEIND401	Industrial Training	0+2
6.	Professional Core Course	CSEP402	Project-II	0+3
	Total Credit			**16**

Semester-VIII (Fourth Year) Curriculum

S. No.	Type of Course	Course Code	Course Title	Credit
1.	Professional Elective Courses		**Elective-II** (from SWAYAM/ Department of CSE)	3+0
2.	Open Elective Courses		**Open Elective-III**	3+0
3.	Open Elective Courses		**Open Elective-IV**	3+0
4.	Professional Core Subject	CSEP403	Project-III	0+6
	Total Credit			**15**

Note: After earning 175 credits *(47 credits from first year and 48 credits in second year ,49 credits in third year and 31 credit in fourth year (16 credits in seventh semester and 15 credits in eighth semester)),* student will be eligible for the degree of **"B. Tech. in Computer Science & Engineering"**.