

# **COURSE STRUCTURE AND SYLLABUS**

For

**B.Tech.**

## **COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)**

*(Applicable for batches admitted from 2024-25 onwards)*



## **PRAGATI ENGINEERING COLLEGE**

**(An Autonomous Institution)**

ADB Road, Surampalem, Kakinada District, Andhra Pradesh – 533 437

**(Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada)**

**(Recognized by UGC 2(f) and 12(b) under UGC act, 1956)**

**COURSE STRUCTURE****INDUCTION PROGRAMME**

<b>S.No.</b>	<b>Course Name</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0	0	6	0
2	Career Counselling	MC	2	0	2	0
3	Orientation to all branches -- career options, tools, etc.	MC	3	0	0	0
4	Orientation on admitted Branch -- corresponding labs, tools and platforms	EC	2	0	3	0
5	Proficiency Modules & Productivity Tools	ES	2	1	2	0
6	Assessment on basic aptitude and mathematical skills	MC	2	0	3	0
7	Remedial Training in Foundation Courses	MC	2	1	2	0
8	Human Values & Professional Ethics	MC	3	0	0	0
9	Communication Skills -- focus on Listening, Speaking, Reading, Writing skills	BS	2	1	2	0
10	Concepts of Programming	ES	2	0	2	0

### I YEAR – I SEMESTER

Sl. No	Category	Course Code	Course Title	L	T	P	Credits
1	BS&H		Communicative English	2	0	0	2
2	BS&H		Linear Algebra & Calculus	3	0	0	3
3	Engineering Science		Engineering Chemistry/ Chemistry	3	0	0	3
4	Engineering Science		Basic Civil & Mechanical Engineering	3	0	0	3
5	Engineering Science		Introduction to Programming	3	0	0	3
6	BS&H		Engineering Workshop	0	0	3	1.5
7	Engineering Science		Communicative English Lab	0	0	2	1
8	Engineering Science		Computer Programming Lab	0	0	3	1.5
9	Engineering Science		Engineering Chemistry/ Chemistry Lab	0	0	2	1
10	BS&H		Health and wellness, Yoga and sports	0	0	1	0.5
<b>Total Credits</b>							<b>19.5</b>

### I YEAR – II SEMESTER

Sl. No	Category	Course Code	Course Title	L	T	P	Credits
1	BS&H		Engineering Physics	3	0	0	3
2	BS&H		Differential equations & Vector Calculus	3	0	0	3
3	BS&H		Basic Electrical and Electronics Engineering	3	0	0	3
4	Engineering Science		Engineering Graphics	2	0	2	3
5	Professional Core		Data Structures	3	0	0	3
6	Engineering Science		Engineering Physics Lab	0	0	2	1
7	BS&H		Electrical and Electronics Engineering Workshop	0	0	3	1.5
8	Professional Core		Data Structures Lab	0	0	3	1.5
9	BS&H		IT Workshop	0	0	2	1
10	BS&H		NSS/NCC/Scouts & Guides/Community Service	0	0	1	0.5
<b>Total Credits</b>							<b>20.5</b>

**II YEAR I SEMESTER**

S.No	Category	Course Code	Course Title	Hours per Week			Credits
				L	T	P	C
1	BS&H		Discrete Mathematics & Graph Theory	3	0	0	3
2	BS&H		Universal Human Values 2- Understanding Harmony and Ethical Human Conduct	2	1	0	3
3	Engineering Science		Introduction to Data Science	3	0	0	3
4	Professional Core		Advanced Data Structures & Algorithms Analysis	3	0	0	3
5	Professional Core		Object-Oriented Programming Through JAVA	3	0	0	3
6	Professional Core		Data Science Lab	0	0	3	1.5
7	Professional Core		Object-Oriented Programming Through JAVA Lab	0	0	3	1.5
8	Skill Enhancement Course		Python programming	0	1	2	2
9	Audit Course		Environmental Science	2	0	0	-
<b>Total Credits</b>							<b>20</b>

**II YEAR II SEMESTER**

S.No	Category	Course Code	Course Title	Hours per Week			Credits
				L	T	P	C
1	Management Course- I		Optimization Techniques	2	0	0	2
2	Engineering Science/ Basic Science		Statistical methods for Data science	3	0	0	3
3	Professional Core		Data Engineering	3	0	0	3
4	Professional Core		DBMS	3	0	0	3
5	Professional Core		Computer Organization and Architecture	3	0	0	3
6	Professional Core		Data Engineering Lab	0	0	3	1.5
7	Professional Core		DBMS Lab	0	0	3	1.5
8	Skill Enhancement course		Exploratory Data Analysis with Python	0	1	2	2
9	BS&H		Design Thinking & Innovation	1	0	2	2
<b>Total Credits</b>							<b>21</b>
<b>Mandatory Community Service Project Internship of 08 weeks duration during summer vacation</b>							