

## Sapthagiri NPS University, BENGALURU-560057.

**B.E. in Artificial Intelligence & Data Science; Scheme of Teaching and Examinations 2024 batch**  
Outcome Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2024-25)

### I SEMESTER – E Cycle

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1.	HS	<b>24BEELY101A/B</b>	Kannada samskruthi/ Kannada Kalli	TD: HS PSB: HS	1	0	0	01	50	50	100	1
2.	BS	<b>24BEELY102</b>	Linear algebra and calculus	TD: BS PSB: BS	3	0	2	05	50	50	100	4
3.	HS	<b>24BEELY103</b>	Environment science and engineering	TD: HS PSB: HS	1	0	0	01	50	50	100	1
4.	ES	<b>24BEELY104</b>	Basics of electrical and electronics engineering	TD: ES PSB: ES	3	0	2	05	50	50	100	4
5.	ES	<b>24BEELY105</b>	Problem solving using C	TD: ES PSB: ES	3	0	2	05	50	50	100	4
6.	ES	<b>24BEELY106</b>	Fundamentals of data structures	TD: ES PSB: ES	3	0	2	05	50	50	100	4
7.	ES	<b>24BEELY107</b>	Fundamentals of data science	TD: ES PSB: ES	3	0	0	03	50	50	100	3
8.	AE	<b>24BEELY108</b>	Indian constitution	TD: HS PSB: HS	1	0	0	01	50	50	100	1
<b>Total</b>								<b>400</b>	<b>400</b>	<b>800</b>	<b>22</b>	

**PC:** Professional Course, **UV:** Universal Human Value Course, **MC:** Mandatory Course (Non-credit), **AE:** Ability Enhancement Course, **L:** Lecture, **T:** Tutorial, **P:** Practical **CIE:** Continuous Internal Evaluation, **SEE:** Semester End Evaluation.

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### II SEMESTER

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	AE	24BTPHY201	Professional Communication-I	TD: HS PSB: HS	1	0	0	01	50	50	100	1
2	BS	24BTPHY202	Computational Mathematics	TD: BS PSB: BS	3	0	2	05	50	50	100	4
3	BS	24BTPHY203	Engineering Physics	TD: BS PSB: BS	2	0	2	04	50	50	100	3
4	ES	24BTPHY204	Programming in Python	TD: ES PSB: ES	3	0	2	05	50	50	100	4
5	ES	24BTPHY205	Computer Organization and Architecture	TD: ES PSB: ES	3	0	0	03	50	50	100	3
6	ES	24BTPHY206	Fundamentals of AI& ML	TD: ES PSB: ES	3	0	0	03	50	50	100	3
7	ES	24BTPHY207	Computer Aided Engineering and Graphics	TD: ES PSB: ES	2	0	2	04	50	50	100	3
8	AE	24BTPHY208	Intellectual Property Rights (IPR)	TD: AE PSB: AE	1	0	0	01	50	50	100	1
<b>Total</b>								<b>400</b>	<b>400</b>	<b>800</b>	<b>22</b>	

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### III SEMESTER

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	BS	24BEADS301	Probability and Statistics	TD: BS PSB: BS	4	0	0	04	50	50	100	4
2	PC	24BEADS302	Object Oriented Programming	TD: AI&DS PSB: AI&DS	2	0	2	03	50	50	100	3
3	PC	24BEADS303	Design and Analysis of Algorithms	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
4	PC	24BEADS304	Operating Systems	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
5	PC	24BEADS305	Data Analysis and Data Visualization	TD: AI&DS PSB: AI&DS	2	0	2	03	50	50	100	3
6	PC	24BEADS306	Data Base Management Systems	TD: AI&DS PSB: AI&DS	3	0	2	03	50	50	100	4
7	PC	24BEADS307	Computer Networks	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
8	AE	24BEADS308	Life Skills for Engineers	TD: AI&DS PSB: AI&DS	1	0	0	01	50	50	100	1
9	UV	24BEADS309	Out Reach Activity 1	Any Department	0	0	0	01	100	---	100	1
10	BS	24BEADS310	Maths-Dip (for Lateral entry)	TD: BS PSB: BS	3	0	0	03	50	--	50	-
<b>Total</b>								<b>550</b>	<b>400</b>	<b>950</b>	<b>25</b>	

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### IV SEMESTER

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1.	BS	24BEADS401	Discrete Mathematical Structure	TD: Maths PSB: Maths	4	0	0	04	50	50	100	4
2.	PC	24BEADS402	Web Technology	TD: AI&DS PSB: AI&DS	3	0	2	03	50	50	100	4
3.	PC	24BEADS403	R- Programming for Data Science	TD: AI&DS PSB: AI&DS	2	0	2	03	50	50	100	3
4.	PC	24BEADS404	Fundamentals of IoT	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
5.	PC	24BEADS405	Machine Learning	TD: AI&DS PSB: AI&DS	2	0	2	03	50	50	100	3
6.	PC	24BEADS406	Software Engineering	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
7.	PE	24BEADS41x	Professional Elective - I	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
8.	AE	24BEADS407	Cyber Laws and Ethics	TD: AI&DS PSB: AI&DS	1	0	0	01	50	50	100	1
9.	UV	24BEADS408	Out Reach Activity - II	Any Department	0	0	0	01	100	---	100	1
<b>Total</b>								<b>500</b>	<b>400</b>	<b>900</b>	<b>25</b>	

### Professional Elective 1

24BEADS411	Cryptography and Network Security	24BEADS412	Mobile Application Development	24BEADS413	UI/UX Design
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**Integrated Professional Core Course (IPCC):** Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching– Learning hours (L: T: P) can be considered as (3: 0: 2) or (2: 2: 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23 may please be referred.

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#### V SEMESTER

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1.	PC	24BEADS501	Cloud Computing	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
2.	IPCC	24BEADS502	Big Data Tools & Techniques	TD: AI&DS PSB: AI&DS	3	0	2	03	50	50	100	4
3.	PC	24BEADS503	Principles of Artificial Intelligence	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
4.	IPCC	24BEADS504	Data Mining and Wrangling	TD: AI&DS PSB: AI&DS	2	0	2	03	50	50	100	3
5.	PE	24BEADS51X	Professional Elective-II	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
6.	PE	24BEADS52X	Professional Elective-III	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
7.	PE	24BEXXXXXX	Management and Entrepreneurship	Any Department	3	0	0	03	50	50	100	3
8.	UV	24BEADS505	Professional Ethics and Human Values	Any Department	1	0	0	01	50	50	100	1
9.	NC	24BEADS506	Value Added Program-I	Any Department	-	-	-	01	---	---	---	---
<b>Total</b>								<b>400</b>	<b>400</b>	<b>800</b>	<b>23</b>	

#### Professional Elective - II

24BEADS511	Introduction to Cyber Security	24BEADS512	Business Intelligence & Data Warehousing	24BEADS513	Applied Machine Learning
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#### Professional Elective - III

24BEADS521	Cloud Security	24BEADS522	Time Series Analysis	24BEADS523	Deep Learning
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### VI SEMESTER

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1.	IPCC	24BEDAS601	Natural Language Processing	TD: AI&DS PSB: AI&DS	3	0	2		03	50	50	100	4
2.	PC	24BEDAS602	Generative AI	TD: AI&DS PSB: AI&DS	2	0	2		03	50	50	100	3
3.	IPCC	24BEDAS603	Reinforcement Learning	TD: AI&DS PSB: AI&DS	3	0	0		03	50	50	100	3
4.	IPCC	24BEDAS604	Robotic Process Automation	TD: AI&DS PSB: AI&DS	2	0	2		03	50	50	100	3
5.	PE	24BEDAS61X	Professional Elective-IV	TD: AI&DS PSB: AI&DS	3	0	0		03	50	50	100	3
6.	PE	24BEDAS62X	Professional Elective-V	TD: AI&DS PSB: AI&DS	3	0	0		03	50	50	100	3
7.	OE	24BEDAS605	Digital Marketing	Any Department	3	0	0		03	50	50	100	3
8.	PW	24BEDAS606	Mini Project		-	-	-		01	50	50	100	2
9.	NC	24BEDAS607	Value Added Program-II	Any Department	-	-	-		01	---	---	---	---
<b>Total</b>									<b>400</b>	<b>400</b>	<b>800</b>	<b>24</b>	

#### Professional Elective - IV

24BEADS611	Ethical Hacking	24BEADS612	AI for Smart Cities	24BEADS613	Human-Centered AI & UX Design
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#### Professional Elective - V

24BEADS621	AI for Cyber Security	24BEADS622	AI for Healthcare	24BEADS623	Block chain and its Applications
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### VII SEMESTER

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					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1.	OE	24BEADS71X	Open Elective/MOOC/NPTEL-I	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
2.	OE	24BEADS72X	Open Elective/MOOC/NPTEL-II	TD: AI&DS PSB: AI&DS	3	0	0	03	50	50	100	3
3.	IS	24BEADS703	Summer Internship		0	0	0	-	50	50	100	2
4.	IS	24BEADS704	Technical Seminar		0	0	0	-	50	50	100	1
5.	PW	24BEADS705	Project Phase-I		-	-	-	-	50	50	100	3
<b>Total</b>								<b>250</b>	<b>250</b>	<b>500</b>	<b>12</b>	

#### Open Elective - I

24BEADS711	Introduction to Artificial Intelligence	24BEADS712	Introduction to Data Visualization	24BEADS713	Web Development for Beginners
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#### Open Elective - II

24BEADS721	Power BI for Business Intelligence	24BEADS722	Introduction to Cloud Computing	24BEADS723	Mobile App Design without Coding
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### VIII SEMESTER

SN	Course Type	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P	S					
1.	PW	24BEADS801	Project Phase-II		-	-	-		-	50	50	100	9

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