

# BCA (AI & DS)

BCA - Year 2022-2025: Scheme of Studies as per Choice-Based Credit System (CBCS) and Learning Outcome-Based Curriculum Framework (LOCF)										SOET									
ODD SEMESTER										EVEN SEMESTER									
Year	SNo	Category	CourseCode	Course Title	L	T	P	C	EMP/ENT/SE/OP	SNo	Category	Course Code	Course Title	L	T	P	C	EMP/ENT/SE/OP	
First	1	PCC	ETCS105A	Overview of AI, Data Science, Ethics and Foundation of Data Analysis	2	0	0	2	EMP	1	ABCC	ETEC 124A	Introduction to Automation, Robotics and Drones	4	-	-	4	SE/OP	
	2	PCC	UCIT 131A	Introduction to Computers & IT, Office Automation	3	1	-	4	SE/OP	2	PCC	ETCS112A	Object Oriented Programming	3	1	-	4	SE/OP	
	3	PCC	ETCS106A	Clean Coding with Python	3	0	0	3	EMP	3	PCC	ETCS316A	Web Technologies	3	1	-	4	SE/EMP/OP	
	4	BS	ETMA163A	Basics of Mathematics	3	1	-	4	SE	4	PCC	ETCS108A	Data Analysis and Data Visualization using Python	2	0	0	2	EMP	
	5	MC	UCES125A	Environmental Studies	3	-	-	3	SE	5	PCC	ETCA 164A	Web Technologies Lab	-	-	2	1	SE/EMP/OP	
	6	MC	UCDM301A	Disaster Management	3	-	-	3	SE	6	PCC	ETCS166A	Object Oriented Programming Lab	-	-	2	1	SE/OP	
	7	PCC	UCIT 161A	Introduction to Computers & IT, Office Automation Lab	-	-	2	1	SE/OP	7	OEC	ETCS156A	Data Analysis and Data Visualization using Python	0	0	2	1	EMP	
	9	PCC	ETCS155A	Overview of AI, Data Science, Ethics and Foundation of Data Analysis Lab	0	0	2	1	EMP	8			Open Elective	4	-	-	4	SE	
	10	PCC	ETCS157A	Clean Coding with Python Lab	0	0	2	1	EMP										
	11			Open Elective	4	-	-	4	SE										
	<b>TOTAL</b>					<b>21</b>	<b>2</b>	<b>6</b>	<b>26</b>		<b>TOTAL</b>					<b>16</b>	<b>2</b>	<b>6</b>	<b>21</b>
Second	1	PCC	ETCS217A	Data Structures	3	1	-	4	SE/EMP	1	PCC	ETCS222A	Computer Organization & Architecture	3	1	-	4	SE	
	2	PCC	ETCS203A	Probabilistic Modelling and Reasoning with Python	2	-	-	2	SE	2	PCC	ETCS307A	Database Management Systems	3	1	-	4	EMP/ENT/OP	
	3	PCC	ETCS208A	R Programming for Data Science and Data Analytics	2	-	-	2	EMP	3	PCC	ETCA326A	Enterprise Computing in JAVA	3	1	-	4	EMP/ENT	
	4	PCC	ETCS 211A	Operating Systems	3	1	-	4	EMP/ENT/OP	4	PCC	ETCS209A	Foundation of Machine Learning	3	-	-	3	EMP	
	5	PCC	ETCS221A	Java Programming	3	1	-	4	SE/EMP/OP	5	PCC	ETCA228A	Mobile Application Development	4	-	-	4	EMP/ENT	
	6	PCC	ETCS 257A	Data Structures Lab	-	-	2	1	SE/EMP	6	PCC	ETCA366A	Enterprise Computing in JAVA Lab	-	-	2	1	EMP/ENT	
	7	PCC	ETCS367A	Java Programming Lab	-	-	2	1	SE/EMP/OP	7	PCC	ETCS 355A	Database Management Systems Lab	-	-	2	1	EMP/ENT/OP	
	8	PCC	ETCS255A	Operating System Lab	-	-	2	1	EMP/ENT/OP	8	PCC	ETCA264A	Mobile Application Development Lab	-	-	2	1	EMP/ENT	
	9	PCC	ETCS259A	Probabilistic Modelling and Reasoning with Python Lab	-	-	2	1	SE	9	PCC	ETCS274A	Foundation of Machine Learning Lab	-	-	4	2	EMP	
	10	PCC	ETCS261A	R Programming for Data Science and Data Analytics Lab	-	-	2	1	EMP	10		ETCS325A	Communication and Analytical Skills-II	2	-	-	2	SE	
	11	GE	ETMA215A	PROBABILITY AND STATISTICS	4	-	-	4	SE	11	HSMC	ETMC602A	Essentials of Organizational Behaviour	3	-	-	3	SE	
	12		ETCS228A	Communication and Analytical Skills-I	2	-	-	2											
<b>TOTAL</b>					<b>20</b>	<b>3</b>	<b>10</b>	<b>27</b>		<b>TOTAL</b>					<b>21</b>	<b>3</b>	<b>10</b>	<b>29</b>	


Note: Practical training will be of six weeks duration at the end of fourth Semester during summer break and the evaluation will be done during fifth Semester.

Third	1	PCC	ETCS308A	Big Data Analytics	3	-	-	3	EMP/ENT	1	PCC	ETCA314A	Mobile Computing	3	1	-	4	SE/PCC		
	2	PCC	ETCA227A	Web Based Programming using PHP	3	1	-	4	EMP	2	PCC	ETCS422A	Cloud Computing	4	-	-	4	EMP/ENT/PCC		
	3	PCC	ETCS332A	Data Visualization and Story Telling	2	-	-	2	SE	3	PCC	ETCS 202A	Software Engineering	3	1	-	4	EMP/ENT/OP/PCC		
	4	PCC	ETCS304A	Computer Networks	3	1	-	4	EMP/OP	4	PCC	ETCS401A	Artificial Intelligence	3	1	-	4	EMP/ENT/PCC		
	5	PCC	ETCS315A	Foundation of Neural Network and Deep Learning	2	-	-	2	EMP	5	PCC	ETCA362A	Cloud Computing Lab	-	-	2	1	EMP/ENT/PCC		
	6	PCC	ETCA267A	Web Based Programming Using PHP Lab	-	-	2	1	EMP	6	PCC	ETCS451A	Artificial Intelligence Lab	-	-	2	1	EMP/ENT/PCC		
	7		ETCS330A	Communication and Analytical Skills-III	2	-	0	2	EMP	7	PROJ	ETCS464A	Major Project	-	-	-	6	EMP/PROJ		
	8	PCC	ETCS364A	Big Data Analytics Lab	-	-	2	1	EMP/ENT	9	<b>Elective (with Lab)</b>									
	9	PROJ	ETCA367A	Practical Training	-	-	2	1	EMP	(i)	PEC	ETCA328A	Multimedia Technologies	3	1	-	4	SE		
	10	PCC	ETCS461A	Data Visualization and Story Telling Lab	-	-	2	1	SE		PEC	ETCA370A	Multimedia Technologies Lab	-	-	2	1	SE		
	11	PCC	ETCS359A	Foundation of Neural Network and Deep Learning Lab	-	-	2	1	EMP	(ii)	PEC	ETCA 336A	Network Security & Steganography	3	1	-	4	EMP/ENT		
	12	PCC	ETCS365A	Computer Networks Lab	-	-	2	1	EMP		PEC	ETCA378A	Network Security & Steganography Lab	-	-	2	1	EMP/ENT		
<b>TOTAL</b>					<b>15</b>	<b>2</b>	<b>12</b>	<b>23</b>		(iii)	PEC	ETCA 332A	Software Testing	3	1	-	4	EMP/ENT		
											PEC	ETCA374A	Software Testing Lab	-	-	2	1	EMP/ENT		
										<b>TOTAL</b>					<b>16</b>	<b>4</b>	<b>6</b>	<b>29</b>		
										<b>Total Credits [C]</b>										<b>155</b>

Value Added Courses			
VAC101	SELF DEVELOPMENT	2	-
VAC102	PREPARING STUDENTS FOR FUTURE ROLES	2	-
VAC103	UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHIC	2	-
VAC104	ETIQUETTE FOR PROFESSIONALS	2	-
VAC105	CITIES FOR PEOPLE	2	-
VAC106	INDIAN CONSTITUTION	2	-
VAC107	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE	2	-
VAC108	BOUTIQUE MANAGEMENT	2	-
VAC109	UNDERSTANDING ADOLESCENTS BEHAVIOR	2	-
VAC110	TIME MANAGEMENT	2	-

EMP	Employability
SE	Skill Enhancement
ENT	Entrepreneurship
OP	Open Elective

HSMC	Humanities, Social Science and Management Course
BS	Basic Science
ESC	drawing, basics of electrical/mechanical/computer etc
MC	Mandatory Courses
OEC	Open Elective
PROJ	Projects / Industrial Training/ Seminar
PEC	Professional Elective Courses
PCC	Professional Core Courses

  
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**Sohna Road, Gurugram, (Haryana)**

<b>ETCS464A</b>	<b>Major Project</b>	L	T	P	C
<b>Version 1.0</b>		-	-	-	6
<b>Pre-requisites/Exposure</b>	--				
<b>Co-requisites</b>	--				

The course is designed to provide an opportunity to students to demonstrate the ability to devise, select and use a range of methodologies and tools to the Chosen/Given project, applying the theoretical knowledge to a real life situation. Experiential Learning outside classroom through self-exploration, practical experience, Industry, field experience, live experience, research, design projects etc.

The learning process in the Project seeks out and focuses attention on many latent attributes, which do not surface in the normal class room situations. These experiential learning attributes through project includes Intellectual ability, Professional judgment and decision making ability, Inter-disciplinary approach, Skills for data handling, Ability in written and oral presentation, Sense of responsibility Developing professional Skills Application of theory, concepts in given industry /practical / field scenario.

### Course Outcomes

On completion of this course, the students will be able to

CO1. Use applied scientific knowledge to identify and implement relevant principles of mathematics and computer science.

CO2. Use the relevant tools necessary for engineering practice.

CO3. Define overall needs and constraints to solve a problem and develop/ design a prescribed engineering sub-system.

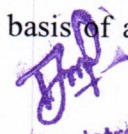
CO4. Communicate effectively and learn to be a team player.

### Catalog Description

Students are expected make a project based on the latest advancements related to the parent branch of Engineering. Students may opt for an in-disciplinary project (if feasible).

The project may be a complete hardware or a combination of hardware and software under the guidance of a Supervisor from the Department. This is expected to provide a good training for the student(s) in technical aspects

Student will be continuously evaluated during the semester in form of Project Progress Seminars. At the end of the semester, assessment of the research/project work of each student will be made by the board of examiners including supervisors on the basis of a viva-voce examination and the report submitted by the student.

  
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## Course Content

The assignment to normally include:

1. Review and finalization of the Approach to the Problem relating to the assigned topic.
2. Preparing an Action Plan for conducting the investigation, including team work.
3. Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed.
4. Final development of product/process, testing, results, conclusions and future directions.
5. Preparing a report in the standard format for being evaluated by the Department.
6. Final project presentation before a Departmental Committee.

**Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination**

**Examination Scheme:**

Components	Quiz	Attendance	Mid Term Exam	Presentation/ Assignment/ etc.	End Term Exam
Weightage (%)	10	10	20	10	50


**Relationship between the Course Outcomes (COs) and Program Outcomes (POs)**

Mapping between COs and POs		
	Course Outcomes (COs)	Mapped Program Outcomes
CO1	Use applied scientific knowledge to identify and implement relevant principles of mathematics and computer science.	PO3
CO2	Use the relevant tools necessary for engineering practice.	PO5
CO3	Define overall needs and constraints to solve a problem and develop/ design a prescribed engineering sub-system.	PO3
CO4	Communicate effectively and learn to be a team player.	PO10

  
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	Ethical and Professional Issues	PS O3	-
	Project Management	PS O2	-
	Application of Concepts	PS O1	3
	Life-long Learning	PO 12	-
	Project management and finance	PO 11	-
	Communication	PO 10	3
	Individual or team work	PO 9	-
	Ethics	PO 8	-
	Environment and sustainability	PO 7	-
	The engineer and society	PO 6	-
	Modern tool usage	PO 5	2
	Conduct investigations of complex problems	PO 4	-
	Design/development of solutions	PO 3	3
	Problem analysis	PO 2	-
	Engineering Knowledge	PO 1	-
		Course Title	Maj or Proj ect
Course Code			ETCS4 62A

1=weakly mapped  
2= moderately mapped  
3=strongly mapped

  
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