Sant Gadge Baba Amravati University, Amravati
FACULTY: Science and Technology
Teaching and Learning Scheme: for the Degree of Bachelor of Computer Application (BCA) with the Major: Artificial Intelligence
(Three Years- Six Semesters Bachelor's Degree Programme)

FIRST YEAR: SEMESTER – I

Mode of Teaching	Vertical No.	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major/Minor: Artificial Intelligence	Theory1	101200	Fundamentals of Computer	2	2	6
			Lab/Practical-1	101201	Laboratory on Office Automation Tools	2	4	
	b.	Major/Minor:	Theory1	101400	Programming with C	2	2	6
			Lab/Practical-1	101401	Laboratory on Programming with C	2	4	
	c.	Generic/ Open Elective	Theory1	-	Selection from University GOEC Basket	2	2	4
			Theory2	-	Selection from University GOEC Basket	2	2	
	d.	VSC	-	-	-	-	-	4
		SEC	Lab/Practical-3	101600	Laboratory on Information Communication Technology Tools	2	4	
	e.	AEC - English	Theory			1	1	6
		AEC –MIL	Theory			1	1	
		IKS-Generic	Theory			2	2	
		VEC	Theory			2	2	
	f.	CC	Outdoor			2	4	4
		TOTAL				**22**	**30**	**30**

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FIRST YEAR: SEMESTER – II

Mode of Teaching	Ver. No	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory2	101202	Programming with C++	2	2	6
			Lab/Practical-4	101203	Laboratory on Programming with C ++	2	4	
	b.	Minor:	Theory2	101402	Data Structures	2	2	6
			Lab/Practical-4	101403	Laboratory on Data Structures using C++	2	4	
	c.	Generic/ Open Elective	Theory3	-	Selection from University GOEC Basket	2	2	4
			Theory4	-	Selection from University GOEC Basket	2	2	
	d.	VSC	Lab/Practical-6	101601	Laboratory on E-Commerce	2	4	8
		SEC	Lab/Practical-7	101602	Laboratory on Web Publishing	2	4	
	e.	AEC - English	Theory			1	1	4
		AEC –MIL	Theory			1	1	
		VEC	Theory			2	2	
	f.	CC	Outdoor			2	4	4
		TOTAL				**22**	**32**	**32**

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FACULTY: SCIENCE AND TECHNOLOGY
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SECONOD YEAR: SEMESTER – III

Mode of Teaching	Ver. No	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory3	101204	Web Technologies	2	2	10
			Theory4	101205	RDBMS	2	2	
			Lab/Practical-8	101206	Laboratory on Web Technologies and RDBMS	2	4	
		IKS - SS	Theory	101700	IKS in Computational Sciences	2	2	
	b.	Minor: Artificial Intelligence	Theory3	101404	Fundamentals of Electronics in Computer	2	2	6
			Lab/Practical-9	101405	Laboratory on Fundamentals of Electronics in Computer	2	4	
	c.	Generic/ Open Elective	Theory5	-	Selection from University GOEC Basket	2	2	2
	d.	VSC	Lab/Practical-10	101603	Laboratory on My SQL	2	4	4
	e.	AEC - English	Theory			1	1	2
		AEC –MIL	Theory			1	1	
	f.	FP/CES	Project	101710	Project	2	4	8
		CC	Outdoor			2	4	
		TOTAL				**22**	**32**	**32**

Sant Gadge Baba Amravati University, Amravati
FACULTY: SCIENCE AND TECHNOLOGY
Teaching and Learning Scheme: for the Degree of Bachelor of Computer Application (BCA) with the Major: Artificial Intelligence
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SECOND YEAR: SEMESTER – IV

Mode of Teaching	Vertical No	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory5	101207	Computer Network	2	2	8
			Theory6	101208	Core Java Programming	2	2	
			Lab/Practical-11	101209	Laboratory on Core Java Programming	2	4	
	b.	Minor: Artificial Intelligence	Theory4	101406	Computer System and Interface	2	2	4
			Lab/Practical-12	101407	Laboratory on Computer System and Interface	2	2	
	c.	Generic/ Open Elective	Theory6	-	Selection from University GOEC Basket	2	2	2
	d.	VSC	Lab/Practical-13	101604	Laboratory on Windows Programming	2	4	8
		SEC	Lab/Practical-14	101605	Laboratory on Java Applet Programming	2	4	
	e.	AEC - English	Theory			1	1	2
		AEC –MIL	Theory			1	1	
	f.	FP/CES	Project	101711	Project	2	4	8
		CC	Outdoor			2	4	
		TOTAL				**22**	**32**	**32**

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FACULTY: SCIENCE AND TECHNOLOGY
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(Three Years- Six Semesters Bachelor's Degree Programme)

THIRD YEAR: SEMESTER – V

Mode of Teaching	Vertical. No	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory7	101210	Python Programming	2	2	20
			Theory8	101211	Soft Computing	2	2	
			Theory9	101212	Simulation and Modelling	2	2	
			Lab/Practical-15	101213	Laboratory on Python Programming	2	4	
			Lab/Practical-16	101214	Laboratory on Soft Computing	2	4	
		Major: Artificial Intelligence (Elective)	Theory1	101300	Programming with Prolog	2	2	
			Theory1	101301	R-Programming			
			Lab/Practical-17	101302	Laboratory on Programming with Prolog	2	4	
			Lab/Practical-17	101303	Laboratory on R-Programming			
	b.	Minor: Artificial Intelligence	Theory5	101408	Fundamentals of Cloud Computing	2	2	6
			Lab/Practical-18	101409	Laboratory on Cloud Computing	2	4	
	c.	Generic/ Open Elective	-	-	-	-	-	-
	d.	VSC	Lab/Practical-19	101606	Laboratory on VB .NET	2	4	4
		SEC	-	-	-	-	-	
	e.	VEC	-	-	-	-	-	0
	f.	FP/CES	Project	101712	-	2	4	4
		CC	-	-	-	-	-	-
		TOTAL				**22**	**34**	**34**

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(Three Years- Six Semesters Bachelor's Degree Programme)

THIRD YEAR: SEMESTER – VI

Mode of Teaching	Vertical. No	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory10	101215	Neural network	2	2	18
			Theory11	101216	Machine Learning	2	2	
			Lab/Practical-20	101217	Laboratory on Neural network	2	4	
			Lab/Practical-21	101218	Laboratory on Machine Learning	2	4	
		Major: Artificial Intelligence (Elective)	Theory2	101304	Deep Learning	2	2	
			Theory2	101305	Perl Programming			
			Lab/Practical-22	101306	Laboratory on Deep Learning	2	4	
			Lab/Practical-22	101307	Laboratory on Perl Programming			
	b.	Minor: Artificial Intelligence	Theory6	101410	PHP Programming	2	2	6
			Lab/Practical-23	101411	Laboratory on PHP Programming	2	4	
	c.	Generic/ Open Elective	-	-	-	-	-	0
	d.	VSE	Lab/Practical-24	101607	Laboratory on Open Source Software	2	4	4
	e.	VEC	-	-	-			
	f.	Internship / Apprenticeship	OJT	101713	-	4	8	8
		FP/CES	Project	101714	Project	-	-	
		-		-	-	-	-	-
		TOTAL				**22**	**36**	**36**

Sant Gadge Baba Amravati University, Amravati
FACULTY: SCIENCE AND TECHNOLOGY
Teaching and Learning Scheme: for the Degree of Bachelor of Computer Application (BCA) with the Major: Artificial Intelligence
(Four Years- Eight Semesters Bachelor's Degree Programme (Honors)

FOURTH YEAR: SEMESTER –VII

Mode of Teaching	Vertical Number	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory12	101219	Android Application Development	2	2	22
			Theory13	101220	Cloud Computing Essentials	2	2	
			Theory14	101221	Cyber Security	2	2	
			Theory15	101222	Software Testing	2	2	
			Theory16	101223	Full Stack Development	2	2	
			Lab/Practical-25	101224	Laboratory on Android Application Development	2	4	
			Lab/Practical-26	101225	Laboratory on Full Stack Development	2	4	
		Elective	Theory5	101308	Computer System Organization	2	2	
			Theory5	101309	Compiler Construction			
			Theory6	101310	Design and Analysis of Algorithms	2	2	
			Theory6	101311	Advance Database Management System			
		Research Methodology (RM)	Theory1	101715	Research Methodology	2	2	6
			Lab/Practical-27	101716	Laboratory on Research Methodology	2	4	
TOTAL		**TOTAL**				**22**	**28**	**28**

Sant Gadge Baba Amravati University, Amravati
FACULTY: SCIENCE AND TECHNOLOGY
Teaching and Learning Scheme: for the Degree of Bachelor of Computer Application (BCA) with the Major: Artificial Intelligence
(Four Years- Eight Semesters Bachelor's Degree Programme (Honors)

FOURTH YEAR: SEMESTER –VIII

Mode of Teaching	Vertical Number	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory17	101226	Operating System Algorithms	2	2	22
			Theory18	101227	Network Security	2	2	
			Theory19	101228	Mobile Computing	2	2	
			Theory20	101229	Big Data Analysis	2	2	
			Theory21	101230	Natural Language Processing	2	2	
			Lab/Practical-28	101231	Laboratory on Operating System Algorithms	2	4	
			Lab/Practical-29	101232	Laboratory on Mobile Computing	2	4	
		Elective	Theory7	101312	Theory of Computation	2	2	
			Theory7	101313	Computer Graphics			
			Theory8	101314	Distributed Systems	2	2	
			Theory8	101315	Blockchain Technology			
		OJT	Lab/Practical-30	101717	-	6	12	12
TOTAL						**22**	**34**	**34**

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FACULTY: SCIENCE AND TECHNOLOGY
Teaching and Learning Scheme: for the Degree of Bachelor of Computer Application (BCA) with the Major: Artificial Intelligence
(Four Years- Eight Semesters Bachelor's Degree Programme (Honors with Research)

FOURTH YEAR: SEMESTER –VII

Mode of Teaching	Vertical Number	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory12	101219	Android Application Development	2	2	22
			Theory13	101220	Cloud Computing Essentials	2	2	
			Theory14	101221	Cyber Security	2	2	
			Theory15	101222	Software Testing	2	2	
			Theory16	101223	Full Stack Development	2	2	
			Lab/Practical-25	101224	Laboratory on Android Application Development	2	4	
			Lab/Practical-26	101225	Laboratory on Full Stack Development	2	4	
		Elective	Theory5	101308	Computer System Organization	2	2	
			Theory5	101309	Compiler Construction			
			Theory6	101310	Design and Analysis of Algorithms	2	2	
			Theory6	101311	Advance Database Management System			
		Research Project(RP)	Project	101718	Project	4	8	8
		TOTAL				**22**	**30**	**30**

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FACULTY: SCIENCE AND TECHNOLOGY
Teaching and Learning Scheme: for the Degree of Bachelor of Computer Application (BCA) with the Major: Artificial Intelligence
(Four Years- Eight Semesters Bachelor's Degree Programme (Honors with Research))

FOURTH YEAR: SEMESTER –VIII

Mode of Teaching	Vertical Number	The Vertical	Type of Course	Course Code	Course Name	Credits	Workload (Hrs/Week)	Vertical Workload (Hrs/Week)
Classroom Teaching/ Lab Work (Practical)/ Outdoor / Field	a.	Major: Artificial Intelligence	Theory17	101226	Operating System Algorithms	2	2	22
			Theory18	101227	Network Security	2	2	
			Theory19	101228	Mobile Computing	2	2	
			Theory20	101229	Big Data Analysis	2	2	
			Theory21	101230	Natural Language Processing	2	2	
			Lab/Practical-28	101231	Laboratory on Operating System Algorithms	2	4	
			Lab/Practical-29	101232	Laboratory on Mobile Computing	2	4	
		Elective	Theory7	101312	Theory of Computation	2	2	
			Theory7	101313	Computer Graphics			
			Theory8	101314	Distributed Systems	2	2	
			Theory8	101315	Blockchain Technology			
		Research Project(RP)	Project	101719	Project	6	12	12
TOTAL		**TOTAL**				**22**	**34**	**34**

Notes:

a. # Here mention the title of Degree. For example - Degree of Bachelor of Science with the Major: Computer Science Discipline / Subject Computer Science as Degree of Bachelor of Science (Computer Science)

b. The strength of the batch of the Practical for UG Classes shall be 16 with an addition of 10% with the permission of Hon'ble Vice Chancellor. However, for Music Discipline the batch size shall be of 7 students. The number of the students required to constitute a batch or calculate the workload shall be in accordance with the relevant Government Resolution in force at the time, applicable to specific time, region, course type, mode of instruction, and other pertinent factors.

c. 1 Credit shall mean 1 Hour Teaching per Week per Semester (Total 15 Hrs/ Semester), the duration of 1 Teaching Period will be 60 Minutes. For Practical 1 Credit shall mean 2 Hour Teaching per Week per Semester (Total 30 Hrs/ Semester).

d. For Examination and Evaluation of Theory Courses, 40 % Marks shall be assigned to Internal Examination and 60% Marks shall be assigned to end-semester external university examination.

e. **Co-curricular Courses:** Health and wellness, Yoga Education, Sports and Fitness, Cultural Activities, NSS/NCC, Fine/Applied/Visual/Performing Arts During Semester I, II, III, IV, V and VI**.** These courses may be taught by Physical Education Director or may be assigned to Language Teacher by the Principal of HEI based on the expertise of the concerned.

f. Value Education Courses to be selected from the Basket of Courses provided by the University. These courses may be assigned to the Language Teacher by the Principal of HEI based on the expertise of the concerned.

g. **Generic / Open Elective Courses (GE/OE):** Courses to be selected from the Basket of Courses provided by the University

h. **Abbreviations:** Department Specific Core: DSC, Department Specific Elective: DSE, FSC: Faculty Specific Core, FSE: Faculty Specific Elective, Indian Knowledge System: IKS, Inter Faculty Specific Core: IFSC, Inter Faculty Specific Elective: IFSE, Theory : Th, Practical/Practicum: Pr, Environment Studies: ES, Pre-requisite Course mandatory if applicable: Prq, Laboratory: Lab (Practical), Generic/ Open Electives: OE; Vocational Skill and Skill Enhancement Courses: VSEC; Vocational Skill Courses: VSC; Skill Enhancement Courses: SEC; Ability Enhancement Courses: AEC; Value Education Courses: VEC; OJT: On Job Training: Internship/ Apprenticeship; Field projects: FP; Community Engagement and Service: CES; Co-curricular Courses: CC; RM: Research Methodology; Research Project: RP; MIL: Modern Indian Language

Curriculum Design:

Each theory paper of Major: Computer Science shall be of 2 Credits comprising of 4 Units with Teaching Hours as mentioned in the table. The pattern of theory papers shall be as per following template –

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
4.5	I	101200	Diversity of Lower Plant	2	30	2 Hrs	30

The Curriculum of any Course shall be designed as per following template:

Course Objectives:	
Course Outcomes:	As per Blooms Taxonomy (4 to 6)

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted	Incorporation of Pedagogies
Unit I	Detailed pointwise contents with at least four points	8 Hrs	8 Marks	BoS shall recommend suitable pedagogical strategies, both classical and contemporary innovations, for integration into the Teaching, Learning, and Evaluation (T, L, & E) Processes. These strategies should be tailored to enhance the delivery and comprehension of the course content within each Unit, ensuring that they align with the educational objectives and learning outcomes.
Unit II	Detailed pointwise contents with at least four points	7 Hrs	7 Marks	
Unit III	Detailed pointwise contents with at least four points	8 Hrs	8 Marks	
Unit IV	Detailed pointwise contents with at least four points	7 Hrs	7 Marks	
References:	Study Materials in the form of - Reference Books, Text Books, Research Articles, Digital Resources like Weblinks, E- Contents, Educational Software, Databases, etc.			
Model Questions:	Short Type (At least 8), Long Type (At least 4) and MCQs for Internal Assessment (At least 8) wherever applicable as the need of curriculum.			