

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI



THREE /FOUR YEAR DEGREE OF BACHELOR OF SCIENCE

Bachelor of Science

SUBJECT: Data Science and Analytics

FACULTY: SCIENCE AND TECHNOLOGY

(Courses effective from Academic Year 2026-2027)

Under Uniform NEP 2020

SCHEME

Semester I and II

Semester III and IV

Semester V and VI

Sant Gadge Baba Amravati University, Amravati

FACULTY: Science and Technology

Teaching and Learning Scheme: for the Degree of Bachelor of Science with the Major: Data Science and Analytics

(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: Data Science and Analytics	Theory1	135201	Fundamentals of Computer	2	2	6
			Lab/Practical-1	135202	Laboratory on Office Automation Tools	2	4	
	b.	Major/Minor:	-	-	-	4	6	6
	c.	Generic/ Open Elective	Theory1	135271	Information Communication Technology	2	2	4
			Theory2	135272	Business Data Processing	2	2	
	d.	VSC	-	-	-	-	-	4
		SEC	Lab/Practical-3	135281	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: Data Science and Analytics	Theory2	135203	Programming with C	2	2	6
			Lab/Practical-4	135204	Laboratory on Programming with C	2	4	
	b.	Minor: Data Science and Analytics	-	-	-	4	6	6
	c.	Generic/ Open Elective	Theory3	135273	E Business	2	2	4
			Theory4	135274	Website Design Principles	2	2	
	d.	VSC	Lab/Practical-6	135282	Laboratory on E-Commerce	2	4	8
		SEC	Lab/Practical-7	135283	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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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: Data Science and Analytics	Theory3	135205	Data Structure (DS)	2	2	10
			Theory4	135206	Relational Database Management System (RDBMS)	2	2	
			Lab/Practical-8	135207	Laboratory on DS and RDBMS	2	4	
		IKS – Major Specific	Theory	135208	IKS in Computational Sciences	2	2	
	b.	Minor: Data Science and Analytics	Theory3	135261	Data Structure and RDBMS	2	2	6
			Lab/Practical-9	135262	Laboratory on Data Structure and RDBMS	2	4	
	c.	Generic/ Open Elective	Theory5	135275	E Content Development	2	2	2
	d.	VSC	Lab/Practical-10	135284	Laboratory on MySQL	2	4	4
	e.	AEC - English	Theory	-	-	1	1	2
		AEC –MIL	Theory	-	-	1	1	
	f.	FP/CES	Project	135291	Field Project / Community Engagement Services in Computer Science: Phase-I	2	4	8
		CC	Outdoor	-	-	2	4	
		TOTAL				22	32	32

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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: Data Science and Analytics	Theory5	135209	OOP with C++	2	2	10
			Theory6	135210	Computer Networks	2	2	
			Theory	135211	Python Programming	2	2	
			Lab/Practical-11	135212	Laboratory on OOP with C++ and Python Programming	2	4	
	b.	Minor: Data Science and Analytics	Theory4	135263	C++ and Python Programming	2	2	6
			Lab/Practical-12	135264	Laboratory on C++ and Python Programming	2	4	
	c.	Generic/ Open Elective	Theory6	135276	Web Technologies	2	2	2
	d.	VSC	Lab/Practical-13	135285	Database using Access Laboratory	2	4	4
	e.	AEC - English	Theory	-	-	1	1	2
		AEC –MIL	Theory	-	-	1	1	
	f.	FP/CES	Project	135292	Field Project / Community Engagement Services in Computer Science: Phase-II	2	4	8
		CC	Outdoor	-	-	2	4	
		TOTAL				22	32	32

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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: Data Science and Analytics	Theory7	134213	System Analysis and Design	2	2	16
			Theory8	134214	ASP.net	2	2	
			Theory9	134215	Perl Programming	2	2	
			Lab/Practical-15	134216	Laboratory on ASP.net	2	4	
		Major: Data Science and Analytics (Elective)	Theory1	134217	Database Management Technologies	2	2	
			Theory1	134218	Database Security			
			Lab/Practical-17	134219	Laboratory on Database Management Technologies	2	4	
			Lab/Practical-17	134220	Laboratory on Database Security			
	b.	Minor: Data Science and Analytics	Theory5	134265	Management Information System	2	2	6
			Lab/Practical-18	134266	Laboratory on Management Information System	2	4	
	c.	Generic/ Open Elective	-		-	-	-	-
	d.	VSC	Lab/Practical-19	134286	Laboratory on PHP Programming	2	4	8
		SEC	Lab/Practical	134287	Laboratory on Perl Programming	2	4	
	e.	VEC	-		-	-	-	0
	f.	FP/CES	Project	134293	Project in Data Science and Analytics.	2	4	4
		CC	-		-	-	-	-
		TOTAL				22	34	34
			*Theory		Foundation of Artificial Intelligence	2	2	2

** Implementation of the Course of “Foundation of Artificial Intelligence” for the U.G. Programmes Under all the faculties. As per Extra-Ordinary Notification No. 241/2025 of SGBAU, dated 24/12/2025. Students will earn grade from written examination marks conducted by the concerning college.*

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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: Data Science and Analytics	Theory10	134221	Applied Statistics	2	2	16
			Theory11	134222	Data Science	2	2	
			Theory	134223		2	2	
			Lab/Practical-20	134224	Laboratory on Applied Statistics	2	4	
		Major: Data Science and Analytics (Elective)	Theory2	134225	Data Mining	2	2	
			Theory2	134226	Map Reduce and Hadoop Technology		2	
			Lab/Practical-22	134227	Laboratory on Data Mining Tools	2	4	
			Lab/Practical-22	134228	Laboratory on Map Reduce and Hadoop Technology		4	
	b.	Minor: Data Science and Analytics	Theory6	134267	Artificial Intelligence	2	2	6
			Lab/Practical-23	134268	Laboratory on Artificial Intelligence	2	4	
	c.	Generic/ Open Elective	-		-	-	-	-
	d.	VSC	Lab/Practical-24	134288	Laboratory on Mongo DB	2	4	4
	e.	VEC	-		-	-	-	-
	f.	Internship / Apprenticeship	OJT	134294	-	4	8	8
		FP/CES	Project	-	-	-	-	
		-			-	-	-	
		TOTAL				22	34	34

Notes:

- a. # Here mention the title of Degree. For example - Degree of Bachelor of Science with the Major: Data Science and Analytics Discipline / Subject Data Science and Analytics as Degree of Bachelor of Science (Data Science and Analytics)
- 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: Data Science and Analytics 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	XXXXX	2	30	2 Hrs	30

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

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

Outcomes:				
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.			