Sant Gadge Baba Amravati University, Amravati

Scheme of Implementation for

Four Year Undergraduate Degree Programme in

Engineering and Technology

B.E. Information Technology

in the faculty of

Science and Technology

ACADEMIC EVALUATION SCHEME/CREDIT SYSTEM

Year: 2024-25

(Scheme of Teaching, Learning, Examination & Evaluation w.e.f. 2024-2025 and onwards)

	Scheme for First Year Four Year Undergraduate Engineering Degree Programme Information Technology Semester- I												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs.)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Applied Mathematics -I (BSC)	1AL100BS	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Engineering Physics (BSC)	1AL101BS	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Computer Programming (ESC)	1AL102ES	3	0	0	3	3	40	60			100	3.00 Hrs.
4	Engineering Mechanics (ESC)	1AL103ES	3	0	0	3	3	40	60			100	3.00 Hrs.
	Laboratory Courses												
5	Engineering Physics Lab (BSC)	1AL104BS	0	2	0	2	1			25	25	50	
6	Computer Programming Lab (ESC)	1AL105ES	0	2	0	2	1			25	25	50	
7	Engineering Mechanics Lab (ESC)	1AL106ES	0	2	0	2	1			25	25	50	
8	Workshop (ESC)	1AL107ES	0	2	0	2	1			25	25	50	
	Vocational and Skill Enhancement Courses (VSEC)												
9	Introduction to Web Technology	1CS108VS	1	2	0	3	2			50	-	50	
	Ability Enhancement Courses (AEC)												
10	Professional Communication	1AL109AE	1	2	0	3	2			25	25	50	
	Co-curricular Course (CC)												
11	Co-curricular Course (CC)	1AL110CC	0	4	0	4	2			50	-	50	
	TOTAL		14	16	0	30	**22**					**750**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

	Scheme for First Year Four Year Undergraduate Engineering Degree Programme Information Technology Semester -II												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs.)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Applied Mathematics -II (BSC)	2AL111BS	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Engineering Chemistry (BSC)	2AL112BS	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Basic Electrical Engineering (ESC)	2AL113ES	3	0	0	3	3	40	60			100	3.00 Hrs.
4	Engineering Graphics (ESC)	2AL114ES	2	0	0	2	2	40	60			100	3.00 Hrs.
	Laboratory Courses												
5	Engineering Chemistry Lab (BSC)	2AL115BS	0	2	0	2	1			25	25	50	
6	Basic Electrical Engineering Lab (ESC)	2AL116ES	0	2	0	2	1			25	25	50	
7	Engineering Graphics Lab (ESC)	2AL117ES	0	2	0	2	1			25	25	50	
	Vocational and Skill Enhancement Courses (VSEC)												
8	Computer Hardware & Networking	2CS118VS	1	2	0	3	2			50	-	50	
	Programme Core Course (PCC)												
9	Computer Fundamentals	2CS119PC	2	0	0	2	2	20	30			50	2.00 Hrs.
	Indian Knowledge System (IKS)												
10	Indian Traditional Knowledge	2AL120IK	2	0	0	2	2	20	30			50	2.00 Hrs.
	Co-curricular Course (CC)												
11	Co-curricular Course (CC)	2AL121CC	0	4	0	4	2			50	-	50	
	TOTAL		16	12	0	28	**22**					**750**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

Scheme for Multiple Entry and Exit

Exit option -1 (L4.5): Award of UG Certificate in Major with 44 credits and an additional 8 credits			
Exit Courses			
1	3IT241EC : Electronics Servicing and Maintenance	**Online certification Course**	**4**
2	3IT242EC : Assembly & Maintenance of Personal Computer		**4**
	OR		
3	3IT404EL: Two Month Internship at Industry (288-320 Hours)		**8**

	Scheme for Second Year Four Year Undergraduate Engineering Degree Programme B.E. in Information Technology (Semester -III)												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs.)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Discrete Structure & Graph Theory	3IT200PC	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Object Oriented Programming	3IT201PC	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Analog & Digital Electronics	3IT202PC	3	0	0	3	3	40	60			100	3.00 Hrs.
	Laboratory Courses												
4	Community Engagement Project* / Field Project **	3IT400EL	0	4	0	4	2			25	25	50	
5	Object Oriented Programming	3IT203PC	0	2	0	2	1			25	25	50	
6	Analog & Digital Electronics	3IT204PC	0	2	0	2	1			25	25	50	
	Multidisciplinary Minor												
7	Multidisciplinary Minor-I*	3IT205MD	2	0	0	2	2	20	30	-	-	50	2.00 Hrs.
	Open Elective other than a particular Program												
8	Open Elective -I	3IT206OE1/2/3	3	0	0	3	3	40	60	-	-	100	3.00 Hrs.
	HSSMC (Entrepreneurship/ Economics/ Management Course)												
9	Entrepreneurship Development	3IT207EM	2	0	0	2	2	20	30	-	-	50	2.00 Hrs.
	Value Education Course (VEC)												
10	Environmental Science	3SH208VE	2	0	0	2	2	20	30			50	2.00 Hrs.
	TOTAL		18	8	0	26	**22**					**700**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Open Elective I – i) 3IT206OE1: Cyber Law ii) 3IT206OE2: Web Technology iii) 3IT206OE3: Internet of Things (IOT)

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

*Please refer list of Multidisciplinary Minor courses attached separately

	Scheme for Second Year Four Year Undergraduate Engineering Degree Programme B.E. in Information Technology (Semester -IV)												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs.)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Data Structures	4IT209PC	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Data Communication & Networking	4IT210PC	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Computer Organization & Architecture	4IT211PC	2	0	0	2	2	40	60			100	3.00 Hrs.
	Laboratory Courses												
4	Data Structures	4IT212PC	0	2	0	2	1			25	25	50	
5	Data Communication & Networking	4IT213PC	0	2	0	2	1			25	25	50	
	Multidisciplinary Minor												
6	Multidisciplinary Minor -II*	4IT214MD	2	0	0	2	2	20	30	-	-	50	2.00 Hrs.
	Vocational and Skill Enhancement Courses												
7	Computer Skills-I	4IT215VS	1	2	0	3	2			50	-	50	
	Open Elective other than a particular Program												
8	Open Elective- II	4IT216OE1/2/3	2	0	0	2	2	20	30			50	2.00 Hrs.
	HSSMC (Entrepreneurship/ Economics/ Management Course)												
9	IT Ethics and Management	4IT217EM	2	0	0	2	2	20	30			50	2.00 Hrs.
	(Ability Enhancement Course (AEC)												
10	Modern Indian Language	4SH218AE	2	0	0	2	2			25	25	50	.
	Value Education Course (VEC)												
11	Universal Human Value & Ethics	4SH219VE	2	0	0	2	2	20	30			50	2.00 Hrs.
	TOTAL		19	06	0	25	**22**					**700**	

L: Lecture **P: Practical** **T: Tutorial** **ESE: End Semester Exam** **IE: Internal Evaluation** **INT: Internal** **EXT: External**

Open Elective II – i) 4IT216OE1: Intellectual Property Right ii) 4IT216OE2: Artificial Intelligence iii) 4IT216OE3: E-Commerce

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

*Please refer list of Multidisciplinary Minor courses attached separately

Scheme for Multiple Entry and Exit

Exit option -2 (L5.0): Award of UG Diploma in Major with 88 credits and an additional 8 its cred			
Exit Courses			
1	5IT243EC: NPTEL Course on Operating Systems	**Online certification Course**	**4**
	AND		
2	5IT244EC : NPTEL Course on Database Management Systems		**4**
	OR		
3	5IT2405EL: Two Month Internship at Industry (288-320 Hours)		**8**

	Scheme for Third Year Four Year Undergraduate Engineering Degree Programme B.E. in Information Technology (Semester -V)												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs.)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Database Management Systems	5IT220PC	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Operating Systems	5IT221PC	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Theory of Computation	5IT222PC	3	0	0	3	3	40	60			100	3.00 Hrs.
4	Program Elective Course -I	5IT223PE	3	0	0	3	3	40	60			100	3.00 Hrs.
	Laboratory Courses												
5	Database Management Systems	5IT224PC	0	2	0	2	1			25	25	50	
6	Operating Systems	5IT225PC	0	2	0	2	1			25	25	50	
7	Programme Elective Course -I	5IT226PE	0	2	0	2	1			25	25	50	
	Multidisciplinary Minor												
8	Multidisciplinary Minor -III *	5IT227MD	2	0	0	2	2	20	30			50	2.00 Hrs.
9	Multidisciplinary Minor -IV*	5IT228MD	2	0	0	2	2	20	30			50	2.00 Hrs.
10	Multidisciplinary Minor Lab-I*	5IT229ML	0	2	0	2	1			25	25	50	
	Open Elective other than a particular Program												
11	Open Elective- III	5IT230OE	2	0	0	2	2	20	30			50	2.00 Hrs.
	TOTAL		18	08	0	26	**22**					**750**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Program Elective Course I – i) Information Security Systems ii) Data Science & Statistics iii) Internet of Things

Open Elective III – i) 5IT230OE1: Fundamentals of Cyber Security ii) 5IT230OE2: Design Thanking & Innovation iii) 5IT230OE3: Principals of Management

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42Hours)

*Please refer list of Multidisciplinary Minor courses attached separately

	Scheme for Third Year Four Year Undergraduate Engineering Degree Programme B.E. in Information Technology (Semester -VI)												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs.)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Compiler Design	6IT231PC	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Design & Analysis of Algorithm	6IT232PC	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Artificial Intelligence	6IT233PC	3	0	0	3	3	40	60			100	3.00 Hrs.
4	Program Elective Course -II	6IT234PE	3	0	0	3	3	40	60			100	3.00 Hrs.
5	Program Elective Course -III	6IT235PE	3	0	0	3	3	40	60			100	3.00 Hrs.
	Laboratory Courses												
6	Compiler Design	6IT236PC	0	2	0	2	1			25	25	50	
7	Design & Analysis of Algorithm	6IT237PC	0	2	0	2	1			25	25	50	
8	Artificial Intelligence	6IT238PC	0	2	0	2	1			25	25	50	
	Multidisciplinary Minor												
9	Multidisciplinary Minor -V *	6IT239MD	2	0	0	2	2	20	30			50	2.00 Hrs.
	Vocational and Skill Enhancement Courses												
10	Computer Skills - I	6IT240VS	1	2	0	3	2			50	-	50	
	TOTAL		18	08	0	26	**22**					**750**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Program Elective Course –II i) Cryptography ii) Network Security ii) Big Data Analytics

Program Elective Course –III i) Cyber Security ii) Cognitive Technology iii) Software Testing

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

*Please refer list of Multidisciplinary Minor courses attached separately

Scheme for Multiple Entry and Exit

Exit option -3 (L5.5): Award of B-Voc in Major with 132 credits and an additional 8 credits			
Exit Courses			
1	7IT246EC: Certified Database Engineer (Oracle, DB2)	**Online certification Course**	**4**
	AND		
2	7IT247EC: Certified Cloud Engineer (AWS,AZURE)		**4**
	OR		
3	7IT2406EL: Two Month (288-320 Hours) Internship at Industry		**8**

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	Scheme for Fourth Year Four Year Undergraduate Engineering Degree Programme B.E. in Information Technology (Semester -VII)												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Software Engineering	7IT300PC	3	0	0	3	3	40	60			100	3.00 Hrs.
2	Object Oriented Analysis & Design	7IT301PC	3	0	0	3	3	40	60			100	3.00 Hrs.
3	Program Elective Course -IV	7IT302PE	3	0	0	3	3	40	60			100	3.00 Hrs.
4	Program Elective Course -V	7IT303PE	3	0	0	3	3	40	60			100	3.00 Hrs.
5	Program Elective Course -VI	7IT304PE	3	0	0	3	3	40	60			100	3.00 Hrs.
	Laboratory Courses												
6	Software Engineering	7IT305PC	0	2	0	2	1			25	25	50	
7	Object Oriented Analysis & Design	7IT306PC	0	2	0	2	1			25	25	50	
	Multidisciplinary Minor												
8	Multidisciplinary Minor -VI*	7IT307MD	2	0	0	2	2	20	30			50	2.00 Hrs.
9	Multidisciplinary Minor Lab -II *	7IT308ML	0	2	0	2	1			25	25	50	.
	Project												
10	Project	7IT401PR	0	4	0	4	2			50	50	100	
	TOTAL		17	10	0	27	**22**					**800**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Program Elective Course –IV i) Machine Learning ii) Dataware Housing & Data Mining iii) Blockchain Fundamentals

Program Elective Course –V i) Business Intelligence ii) Cloud Computing iii) Digital Forensics

Program Elective Course –VI i) Mobile Computing ii) Embedded System iii) Virtual & Augmented Reality

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

*Please refer list of Multidisciplinary Minor courses attached separately

	Scheme for Fourth Year Four Year Undergraduate Engineering Degree Programme B.E. in Information Technology (Semester -VIII)												
Sr No.	**Course Name**	**Code**	**Course Plan per Week (Hrs.)**				**Credits**	**Theory Evaluation**		**Practical Evaluation**		**Total**	**ESE Time Hrs)**
			L	**P**	**T**	**Hrs.**		**IE**	**ESE**	**INT**	**EXT**		
	Core Courses												
1	Research Methodology	8IT309RM	4*			4	4	40	60			100	3.00 Hrs.
2	Industry Internship	8IT402EL	0	24	0	24	12			100	200	300	--
3	Project	8IT403PR	0	4	0	4	2			50	50	100	--.
	TOTAL		4	28	0	32	18					**500**	

L: Lecture P: Practical T: Tutorial ESE: End Semester Exam IE: Internal Evaluation INT: Internal EXT: External

Note : Suitable number of hours per week are allotted for continuous evaluation process for above subjects. (Total contact hours per week= 42 Hours)

***The course on Research Methodology may be completed by the student in Online mode (Swayam, MOOC's, any other platform approved by AICTE OR on the LMS platform offered by the Institute).**

Note: The Multi-Disciplinary Minors (MDMs) offered by the Department of Information Technology are open to all students from all engineering deciplines **Except** the i. Information Technology , ii. Computer Science & Engineering , iii. Computer Engineering , iv. Computer Science & Engineering (Data Science) , v.Artificial Intelligence & Data Science (AIDS) vi, allied disciplines.

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Annexure I

Multidisciplinary Minor Subjects offered by Information Technology

Sem	MDM	Course Code	Credit		Course Name
			T	P	
III	MDM-I	3IT205MD	2	0	Introduction to Data Structures
IV	MDM-II	4IT214MD	2	0	Introduction to Operating Systems
V	MDM-III	5IT227MD	2	0	Computer Networks
	MDM-IV	5IT228MD	2	0	Object Oriented Programming
	MDM-Lab I	5IT229ML	0	1	Object Oriented Programming Lab
VI	MDM-V	6IT239MD	2	0	Software Project Management
VII	MDM-VI	7IT307MD	2	0	Database Management System
	MDM-Lab II	7IT308ML	0	1	Database Management System Lab
			12	02	

List of Courses for Double Minor / Honours in " Advanced Databases'

To be offered as Honours for Information Technology Discipline for other major discipline it may be offered as Double Minor

Track: Advanced Databases (Honours / Double Minor)				
Semester	Subject Code	Subject Title	Credits	T/P
III	3IT245DH1	Introduction to Databases	4	T
IV	4IT246DH1	SQL and NoSQL Databases	4	T
V	5IT247DH1	Big Data and Data Lakes	4	T
VI	6IT248DH1	Databases with Java	4	T
VII	7IT407DH1	Mini Project	2	P
			18	

List of Courses for Double Minor / Honours in " Data Science And Analytics"

To be offered as Honours for Information Technology Discipline for other major discipline it may be offered as Double Minor

Track: Data Science and Analytics (Honours / Double Minor)				
Semester	Subject Code	Subject Title	Credits	T/P
III	3IT245DH2	Data Science	4	T
IV	4IT246DH2	Natural Language Processing	4	T
V	5IT247DH2	Big Data Analytics	4	T
VI	6IT248DH2	Intelligent Systems	4	T
VII	7IT407DH2	Mini Project using Intelligent Systems, Computational Learning, DL, BDA, DS or NLP Concepts	2	P
			18	

List of Courses for B.E. Information Technology Honours with Research Degree

Sr. No.	Course Code	Proposed in Semester	Credits	Course name
1	7IT408HR	VII	9	Research Project (Part 1) Problem Identification and definitions, Literature Review, Experimental Work
2	8IT409HR	VIII	9	Research Project (Part 2) Prototype Development, Data Analysis, Publication
		Total	**18**	

Nomenclature: Name of Department offering the courses

Acronym	Discipline of engineering/Department offering the course
SH	Science and Humanities
ME	Mechanical Engineering
EE	Electrical Engineering
CS	Computer Science and Engineering
CE	Civil Engineering
IT	Information Technology
ET	Electronics & Telecommunication Engg.
TX	Textile Engineering
EP	Electrical (Electronics & Power) Engg.
AD	Artificial Engineering and Data Science
CH	Chemical Engineering
DS	CSE (Data Science)

Acronym	**Course/Subject Vertical**
BS	Basic Science Course
BL	Basic Science Laboratory
ES	Engineering Science Course
EL	Experiential Learning
PC	Program Course
PL	Program Laboratory
PE	Program Elective Course
MD	Multidisciplinary Minor Course
ML	Multidisciplinary Minor Laboratory
OE	Open Elective
EC	Exit Course
DH	Double Minor / Hons. Courses

Acronym	**Course/Subject Vertical**
VS	Vocational Skill Enhancement Course
AE	Ability Enhancement Course
EM	Entrepreneurship/Economics/Management Course
IK	Indian Knowledge System
VE	Value Education Course
RM	Research Methodology
FP	Field Project
II	Industry Internship
PR	Project
CC	Co-curricular Course
AL	All (Common for all Branches)
HR	Honours with Research