

Integrated MCA Syllabus structure

Level 4.5 Semester - I

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-101 - T	BSC	Problem Solving and Programming in C	02	--	--	15	35	50	02	--	--	02
CA-102 - P		Lab course on CA-101 – T	--	--	04	15	35	50	--	--	02	02
CA-103 - T	BSC	Computer Organization & Architecture	02	--	--	15	35	50	02	--	--	02
CA-104 - P	VSEC	Lab course on CA-103 – T	--	--	04	15	35	50	--	--	02	02
CA-105 - T	BSC	Computational Mathematics I and Statistics	02	--	--	15	35	50	02	--	--	02
CA-106 - OE		Laboratory course on CA-105 – T	--	--	04	15	35	50	--	--	02	02
CA-107 -OE	OE	Software Tools for Office Administration	--	--	04	15	35	50	--	--	02	02
CA-108-VSEC	VSEC	HTML and Web Page Designing	--	--	04	15	35	50	--	--	02	02
CA – 109 – IKS	IKS Generic	Indian Knowledge System	02	--	--	15	35	50	02	--	--	02
CA – 110 - AEC	AEC	Business Communication	02	--	--	15	35	50	02	--	--	02
CA-111 - VEC	VEC	Course from College audit Basket	02	--	--	15	35	50	02	--	--	02
Total			14	00	16	165	385	550	14	00	08	22

Level 4.5 Semester - II

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-151 - T	BSC	Advanced C Programming	02	--	--	15	35	50	02	--	--	02
CA-152- P		Lab course on CA-151 – T	--	--	04	15	35	50	--	--	02	02
CA-153 - T	BSC	Introduction to Microcontrollers	02	--	--	15	35	50	02	--	--	02
CA-154 - P	VSEC	Lab course on CA-153 - T	--	--	04	15	35	50	--	--	02	02
CA-155 - T	MN	Computational Mathematics II	02	--	--	15	35	50	02	--	--	02
CA-156 - VSEC	VSEC	Laboratory course on CA-155 - T	--	--	04	15	35	50	--	--	02	02
CA-157- OE	OE	Introduction to Data Science	--	--	04	15	35	50	--	--	02	02
CA-158- OE		Software Tools for Business Communications	--	--	04	15	35	50	--	--	02	02
CA-156- AEC	AEC	Course from College Basket	02	--	--	15	35	50	02	--	--	02
CA – 160 - VEC	VEC	Course from College Basket/Essentials of Business etiquette	02	--	--	15	35	50	02	--	--	02
CA-161 - CC	CC	Course from College Basket	02	--	--	15	35	50	02	--	--	02
Total			12	00	20	165	385	550	12	00	10	22

Exit option: Award of UG Certification in Bachelor of Computer Application (BCA) with 44 credits and an additional 08 credits (for either courses by Microsoft/CCNA/Salesforce/Google/AWS/Oracle/ RedHat etc. or Swayam/ NPTEL/MKCL equivalent to core NSQF course or an Internship) or else Continue with Major and Minor

Level 5.0 Semester - III

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-201-T	BSC	Data Structures and Algorithms	02	--	--	15	35	50	02	--	--	02
CA-202-T		DBMS	02	--	--	15	35	50	02	--	--	02
CA-203-P		Lab course on CA 202 - T	--	--	04	15	35	50	--	--	02	02
CA-204-T		Object Oriented Programming with C++	02	--	--	15	35	50	02	--	--	02
CA-205-VSEC	VSEC	Lab course on CA 204 - T	--	--	04	15	35	50	--	--	02	02
CA-206-FP	FP	Field Project	--	--	04	15	35	50	--	--	02	02
CA-207-MN	MN	Programming with Python	--	--	04	15	35	50	--	--	02	02
CA-208-MN		Business Process Domain	02	--	--	15	35	50	02	--	--	02
CA-209-OE	OE	Data Science Using Spreadsheet Software	--	--	04	15	35	50	--	--	02	02
CA-210-VEC	VEC	Banking, Finance and Insurance	02	--	--	15	35	50	02	--	--	02
CA-211-CC	CC	Course from College Basket	02	--	--	15	35	50	02	--	--	02
Total			14	00	16	165	385	550	14	00	08	22

Level 5.0 Semester – IV

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-251-T	BSC	Advance Database Management Systems	02	--	--	15	35	50	02	--	--	02
CA-252-P		Lab course on CA-251 – T	--	--	04	15	35	50	--	--	02	02
CA-253-T		Advance Python Programming	02	--	--	15	35	50	02	--	--	02
CA-254-P		Lab course on CA-253 – T	--	--	04	15	35	50	--	--	02	02
CA-255-SEC	SEC	Technical Seminar	--	--	04	15	35	50	--	--	02	02
CA-256-CEP	CEP	Community Project	--	--	04	15	35	50	--	--	02	02
CA – 257 – MN	MN	Introduction to Artificial Intelligence and Machine Learning	02	--	--	15	35	50	02	--	--	02
CA – 258 – MN		Lab course on CA – 257 – MN	--	--	04	15	35	50	--	--	02	02
CA – 259 – OE	OE	Introduction to Artificial Intelligence	--	--	04	15	35	50	--	--	02	02
CA-260-AEC	AEC	Startup and Entrepreneurship	02	--	--	15	35	50	02	--	--	02
CA-261-CC	CC	Course from College Basket	02	--	--	15	35	50	02	--	--	02
Total			10	00	24	165	385	550	10	00	12	22

Exit option: Award of UG Diploma in Bachelor of Computer Application (BCA) with 88 credits and an additional 08 credits (for either courses by Microsoft/CCNA/Salesforce/Google/AWS/Oracle/ RedHat etc or Swayam/ NPTEL/MKCL equivalent to core NSQF courses or an Internship) or else Continue with Major and Minor

Level 5.5 Semester – V

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits				
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total	
CA-301-T	BSC	Software Engineering and Agile Technologies	02	--	--	15	35	50	02	--	--	02	
CA-302-T		Software Testing Quality and Assurance	02	--	--	15	35	50	02	--	--	02	
CA-303-P		Lab course on CA-302-T	--	--	04	15	35	50	--	--	02	02	
CA-304-T		Computer Networking	02	--	--	15	35	50	02	--	--	02	
CA-305-E1	PEC	Data Warehousing and Data Mining	02	--	--	15	35	50	02	--	--	02	
CA-306-E1P		Lab course on CA - 306- E1	--	--	04	15	35	50	--	--	02	02	
OR													
CA-307-E2		Cloud Computing	02	--	--	15	35	50	02	--	--	02	
CA-308-E2P		Linux and Windows Administration Commands	--	--	04	15	35	50	--	--	02	02	
OR													
CA-309-E3		Fundamentals of Cyber Security	02	--	--	15	35	50	02	--	--	02	
CA-310-E3P		Linux and Windows Administration Commands	--	--	04	15	35	50	--	--	02	02	
CA-311-VSC	VSEC	Core JAVA Programming	02	--	--	15	35	50	--	--	--	02	
CA-312-VSC-P		Lab course on CA-312-VSC	--	--	04	15	35	50	--	--	02	02	
CA-313-FP	FP	Field Project	--	--	04	15	35	50	--	--	02	02	
CA-314-MN	MN	Embedded System and Internet of Things (IOT)	--	--	04	15	35	50	--	--	02	02	
CA-315-MN		User Interface and User Experience (UI-UX) Design	--	--	04	15	35	50	--	--	02	02	
Total			10	00	24	165	385	550	08	00	12	22	

Level 5.5 Semester – VI

Course Code	Course Type	Course Name	Teaching Scheme Hrs /Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-351-T	BSC	Software Project Management	02	--	--	15	35	50	02	--	--	02
CA-352-T		Web Programming using PHP	02	--	--	15	35	50	02	--	--	02
CA-353-P		Lab course on CA-352-T	--	--	04	15	35	50	--	--	02	02
CA-354-T		Operating system & Shell Programming	02	--	--	15	35	50	02	--	--	02
CA-355-P		Lab course on CA-354-T	--	--	04	15	35	50	--	--	02	02
CA-356-MN	MN	Advanced JAVA Programming	02	--	--	15	35	50	02	--	--	02
CA-357-MN		Lab course on CA-356-MN	--	--	04	15	35	50	--	--	02	02
CA-358-E1	PEC	Big Data and Analytics	02	--	--	15	35	50	02	--	--	02
CA-359-E1P		Lab course on CA-358-E1	--	--	04	15	35	50	--	--	02	02
OR												
CA-360-E2		Advanced Cloud Computing	02	--	--	15	35	50	02	--	--	02
CA-361-E2P		Lab course on CA-360-E2	--	--	04	15	35	50	--	--	02	02
OR												
CA-362-E3		Cyber Crime Investigation and Ethical Hacking	02	--	--	15	35	50	02	--	--	02
CA-363-E3P	Lab course on CA-362-E3	--	--	04	15	35	50	--	--	02	02	
CA-364-OJT	OJT	On Job Training	--	--	08	30	70	100	--	--	04	04
Total			10	00	24	165	385	550	10	00	12	22

Exit option: Award of Bachelor of Computer Application (BCA) with multidisciplinary minor with 132 credits OR else Continue with Major and Minor

Level 6.0 BCA Hon. with Research and Multidisciplinary Minor Semester – VII

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits				
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total	
CA-401-T	BSC	Full Stack Development using NodeJs, React	04	--	--	30	70	100	04	--	--	04	
CA-402-P		Lab course on CA-401-T	--	--	04	15	35	50	--	--	02	02	
CA-404-T		Mobile Application Development	04	--	--	30	70	100	04	--	--	04	
CA-405-P		Lab course on CA-404-T	--	--	04	15	35	50	--	--	02	02	
CA-406-T		Design Thinking	04	--	--	30	70	100	04	--	--	04	
CA-407-P		Digital Marketing	04	--	--	30	70	100	04	--	--	04	
CA-408-E1	PEC	Big Data Architectures	02	--	--	15	35	50	02	--	--	02	
CA-409-E1P		Lab course on CA-408-E1	--	--	04	15	35	50	--	--	02	02	
OR													
CA-410-E2		Web Services	02	--	--	15	35	50	02	--	--	02	
CA-411-E2P		Lab course on CA-410-E2	--	--	04	15	35	50	--	--	02	02	
OR													
CA-412-E3		Cryptography for Cyber Security	02	--	--	15	35	50	02	--	--	02	
CA-413-E3P	Lab course on CA-412-E3	--	--	04	15	35	50	--	--	02	02		
Total			18	00	12	180	420	600	18	00	06	24	

* Bridge course for Non- Lateral Entry students.

**Level 6.0 BCA Hon. with Research and Multidisciplinary Minor Level 6.0
Semester – VIII**

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-451- T	BSC	Managerial Skills and Leadership	04	--	--	30	70	100	04	--	--	04
CA-452- P		Optimization Techniques	04	--	--	30	70	100	04	--	--	04
CA-453-T		Green Computing	04	--	--	30	70	100	04	--	--	04
CA-454- RM	RM	Fundamentals of Scientific Research	04	--	--	30	70	100	04	--	--	04
OR												
CA-455- E1	PEC	Deep Learning	04	--	--	30	70	100	04	--	--	04
CA-456- E1P		Lab course on CA-455-E1	--	--	04	15	35	50	--	--	02	02
CA-457- E1P		Nosql/ MongoDB	--	--	04	15	35	50	--	--	02	02
OR												
CA-458- E2	PEC	DevOps	04	--	--	30	70	100	04	--	--	04
CA-459- E2		Lab course on CA-458-E2	--	--	04	15	35	50	--	--	02	02
CA-460- E2		Serverless Computing	--	--	04	15	35	50	--	--	02	02
OR												
CA-461- E3	PEC	Information Security and Audit	04	--	--	30	70	100	04	--	--	04
CA-462- E3		Emerging Trends and Technologies 1	04	--	--	30	70	100	04	--	--	04
Total			20	00	08	180	420	600	20	00	04	24

Award of BCA Hon. with Research and Multidisciplinary Minor with 176 credits or The PG Diploma may be awarded to a student provided they have earned the requisite credits in one year including on-the-job training of 04 credits during summer break, after completion of the second semester of the first year in the respective Major Subject.

Level 6.5 Semester – IX

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-501-T	BSC	Robotic Process Automation	04	--	--	30	70	100	04	--	--	04
CA-502-P		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
CA-503-P		Augmented Reality (AR) and Virtual Reality (VR)	--	--	04	15	35	50	--	--	02	02
OR												
CA-504-E1	PEC	Golang	04	--	--	30	70	100	04	--	--	04
CA-505-E1		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
CA-506-E1		Emerging Trends and Technologies 2	04	--	--	30	70	100	04	--	--	04
CA-507-E1		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
OR												
CA-508-E2	PEC	Low Code No Code Platforms	04	--	--	30	70	100	04	--	--	04
CA-509-E1		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
CA-510-E3		Emerging Trends and Technologies 3	04	--	--	30	70	100	04	--	--	04
CA-511-E1		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
OR												
CA-512-E1	PEC	Blockchain	04	--	--	30	70	100	04	--	--	04
CA-513-E1		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
CA-514-E1		Emerging Trends and Technologies4	04	--	--	30	70	100	04	--	--	04
CA-515-E1		Lab course on CA-501-T	--	--	04	15	35	50	--	--	02	02
CA-516-RP	RP	Research Project Work	--	--	12	60	140	200	--	--	06	06
Total			12	00	28	210	490	700	12	00	14	26



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Shree Chanakya Education Society's

Indira College of Engineering and Management

Affiliated to Savitribai Phule Pune University

And Approved by AICTE Delhi

Level 6.5 Semester – X

Course Code	Course Type	Course Name	Teaching Scheme Hrs/Week			Examination Scheme and Marks			Credits			
			TH	TU	PR	CE	EE	Total	TH	TU	PR	Total
CA-551-MOOC1	MOOC	Self-Learning Course MOOC	02	--	--	15	35	50	--	02	--	02
CA-552-MOOC2	MOOC	Self-Learning Course MOOC	02	--	--	15	35	50	--	02	--	02
CA-553-MOOC3	MOOC	Self-Learning Course MOOC	02	--	--	15	35	50	--	02	--	02
CA-554-MOOC	PROJ	Industrial Internship/Entrepreneurship/IPR	--	--	24	200	250	450	--	--	24	12
Total			06	00	12	245	355	600	00	04	18	18



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Indira College of Engineering and Management

Affiliated to Savitribai Phule Pune University

And Approved by AICTE Delhi

**List of Open Elective (OE) Courses offered
in Integrated MCA
to other Disciplines / Faculty**

Sr. No.	Semester	Course Code	Course Name	Credits		
				TH	PR	Total
1.	I	CA -107-OE	Software Tools for Office Administration	00	02	02
2.	II	CA-157-OE	Introduction to Data Science	00	02	02
3.	II	CA-158- OE	Software Tools for Business Communication	00	02	02
4.	III	CA-209-OE	Data Science Using Spreadsheet Software	00	02	02
5.	IV	CA-259-OE	Introduction to Artificial Intelligence	00	02	02



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Type of Course	Abbreviations
Major (Core) Subject comprising Mandatory	MM
Minor Subject	MN
Department Specific Core	DSC
School Specific Core	SSC
Indian Knowledge System	IKS
Board of Studies	BoS
Ability Enhancement Courses	AEC
Value Education Courses	VEC
Co-curricular Courses	CC
Vocational and Skill Enhancement Courses	VSEC
Vocational Skill Courses	VSC
Skill Enhancement Courses	SEC
Open Elective	OE
Generic Elective	GE
Program Core	PCC
Basic Science	BSC
Field Project	FP
Program Elective	PEC
On-job Training	OJT
Entrepreneurship, Economics and Management	EEM