



Dr. Vishwanath Karad

**MIT WORLD PEACE  
UNIVERSITY** | PUNE

TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

## **SYLLABUS**

**DR VISHWANATH KARAD**  
**MIT - WORLD PEACE UNIVERSITY**

**FACULTY OF SCIENCE**

**Bachelor of Computer Applications**

**BCA**

**BATCH – 2021-2024**

**W.E.F A.Y. 2021-2022**

Prof. Sachin Bhoite  
Program Head,  
BCA  
SoCS

Dr. C.H. Patil  
HoS, School of  
Computer Science

Dr. Shubhalaxmi  
Joshi  
Associate Dean &  
BOS Chairman  
Faculty of Science

Dr. Prasad Khandekar  
In-charge, DIVISION I & Dean,  
Faculty of Engineering and  
Technology  
MIT-WPU

## **PROGRAMME STRUCTURE**

### **Preamble:**

At first year, BCA Program focuses on basic computer science concepts, C programming Database, Mathematics, Electronics and AECC Courses. Every trimester is having four theory subjects and a practical based on theory subject. Along with Computer Science practical courses mini projects are included to help in building a strong foundation.

At second year for each trimester has four courses of computer science focuses on Programming Languages like Java, Web Technologies, Python along with that Networking, Operating Sysytems. Practical course also includes project work which gives students hands on experience in solving a real world problem.

At third year, each trimester has four courses of computer science focuses on Machine Learning, Internet of Things and Artificial Intelligence. Practical course also includes project work which gives students hands on experience in solving a real world problem.

Intended philosophy of the syllabus is to meet following guidelines:

- Give strong foundation on core Computer Science and application courses.
- Expose student to emerging trends in a gradual and incremental way.
- Prepare student community for the demands of ICT industry.
- Offer specialization on a chosen area.
- Create research temper among students in the whole process.

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## **Vision and Mission of the Programme**

### **Vision:**

To contribute to the society through excellence in scientific and knowledge-based education utilizing the potential of computer science with a deep passion for wisdom, culture and values.

### **Mission:**

- To create knowledge, to disseminate knowledge, and to provide service to our society
- Provide quality undergraduate and graduate education in both the theoretical and applied foundations of computer science
- Train students to effectively apply this education to solve real-world problems thus amplifying their potential for lifelong high-quality careers
- To give them a competitive advantage in the ever-changing and challenging global work environment
- To achieve a distinguished position in Computer Science through innovative teaching learning methods and research.
- To develop strong fundamentals and habit of life-long learning in students to fulfill the needs of Industry

## **Programme Educational Objectives**

- Demonstrate proficiency in the analysis of complex problems and the synthesis of solutions to those problems
- Exhibit comprehension of modern software engineering principles
- Establish a breadth and depth of knowledge in the discipline of computer science
- Prove the ability to work effectively as a team member and/or leader in an ever-changing professional environment
- To apply design and development principles in the construction of software systems of varying complexity
- To focus on 'data science and technology' and 'software technology' to continue innovation in the future
- To prepare learners for higher positions in the IT industries
- To become successful professionals able to gain Employment and/or to be accepted into a Computer Science for post graduate programmes.

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## **Programme Specific Outcomes**

- A graduate with a BCA in Computer Science and Application will have the ability to communicate computer science concepts, designs, and solutions effectively and professionally
- Apply knowledge of computing to produce effective designs and solutions for specific problems
- Identify, analyze, and synthesize scholarly literature relating to the field of computer science
- Use software development tools, software systems, and modern computing platforms.
- Project work gives students hands on experience in solving a real world problem.
- Design dynamic website in the form of web programming.
- Develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

## **Program Outcomes**

PO1	An ability to apply fundamental knowledge of computing, mathematics, science and engineering appropriate to the discipline.
PO2	An ability to analyze a problem, identify and formulate the computing requirements appropriate to its solution.
PO3	An ability to design, implement, and evaluate a computer - based system, process, component, or program for various applications like public health, environmental safety, human resource management, economical sustainability, cross - cultural and societal needs.
PO4	An ability to formulate models, design and conduct experiments, as well as to analyze and interpret data.
PO5	An ability to use current techniques, skills, and modern tools necessary for computing practice.
PO6	An ability to analyze the local and global impact of computing on individuals, organizations, and society.
PO7	Knowledge of emerging technologies and current trends.
PO8	An understanding of professional, ethical, legal, security and social issues and responsibilities.
PO9	An ability to function effectively individually and on teams, including diverse and multidisciplinary, to accomplish a common goal.
PO10	Development of emphatic written and verbal communication skills.
PO11	Continuous professional development through long term learning.
PO12	An understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects.

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### **Programme Structure:**

- (a) Programme duration: 3 years full time.
- (b) System followed: Trimester
- (c) Credits System:
  - (i) Per Year
    - First Year – 36
    - Second Year – 42
    - Third Year - 42
  - (ii) Total in the programme – 120
- (d) Credits for activities other than academics: NA
- (e) Internship: NA.
- (f) Assessment Criteria: Minimum 50% credits of first year are required to take admission in second year.
- (g) Branches or Specializations: NA
- (h) Medium of Instruction and Examination: English
- (i) Eligibility criteria for admission to the programme: In order to be eligible for admission to Bachelor of Computer Applications a candidate must have passed. HSC (10+2) from Science Stream with English as passing Subject with minimum 50% marks (45% for Reservation category) in aggregate (OR) Three years Diploma of Board of Technical Education or its equivalent.

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**Bachelor of Computer Application**  
**2021-22**

**A. Definition of Credit:-**

3Hr.Lecture 1 Tutorial per week	2 credits
3HoursPractical(Lab) per week	1 credit

**B. Credits:-**

Total number of credits for three-year undergraduate BCA Programme would be **120**.

**C. Structure of Credits for Undergraduate BCA Program:-**

S. No.	Category	Suggested Breakup of
1	Humanities and Social Sciences and Peace Programmes including Management courses	10
2	Professional core courses including Laboratory/Mini Project Work	84
3	Professional Elective courses	14
4	Full Time Industrial Training	12
	<b>Total</b>	<b>120</b>

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**D. Course code and definition:-**

<b>Course code</b>	<b>Definitions</b>
L	Lecture
T	Tutorial
WP	Humanities and Social Sciences and Peace Programs
SEC	Skill Enhancement Courses
BCA	Bachelor of Computer Application

**E. Grading Scheme:**

<b>Grades &amp; Grade Points Marks Out of 100</b>	<b>Grade</b>	<b>Grade Point</b>
80-100	O: Outstanding	10
70-79	A+: Excellent	9
60-69	A: Very Good	8
55-59	B+: Good	7
50-54	B: Above Average	6
45-49	C: Average	5
40-44	Pass	4
0-39	Fail	0
Ab	Absent	NA

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***B. C. A. Science (First Year) (Batch 2021-24) (w.e.f. 2021)***  
**Trimester – I**

Sr. No	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment, Marks			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA101B	Programming in C	Core	3		2		50		50	100
2	BCA102B	Database Management System	Core	3		2		50		50	100
3	BCA103B	Introduction to Digital Electronics	Core	3		2		50		50	100
4	BCA104B	Lab on Programming in C & DBMS	Core		6		2		50	50	100
5	BCA105B	Business communication	AECC	3		2		50		50	100
6	WPC101A	World Famous Philosophers, Sages/Saints and Great Kings	SEC	3		2		70		30	100
		Total :		15	06	10	02	270	50	280	600

Weekly Teaching Hours: 21  
Total Credits Trimester I: 12

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Programme Head,  
BCA

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HoS , SoCS

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Faculty of Science

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**Trimester – II**

Sr. No	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks **			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA106B	Advanced C	Core	3		2		50		50	100
2	BCA107B	Relational Database Management System	Core	3		2		50		50	100
3	BCA108B	Discrete Mathematics	Core	3		2		50		50	100
4	BCA109B	Computer Organization & Introduction to Microprocessor	Core	3		2		50		50	100
5	BCA110B	Lab on Advanced C & RDBMS	Core		6		2		50	50	100
6	BIB111B	Environmental Science	AECC	3		2		50		50	100
		<b>Total :</b>		15	06	10	02	250	50	300	600

Weekly Teaching Hours: 21  
Total Credits Trimester II: 12

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Programme Head,  
BCA

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HoS , SoCS

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**Trimester – III**

Sr. No	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA112B	Data Structures using C	Core	3		2		50		50	100
2	BCA113B	Fundamentals of Web Technologies	Core	3		2		50		50	100
3	BCA114B	Operation Research	Core	3		2		50		50	100
4	BCA115B	Software Engineering	Core	3		2		50		50	100
5	BCA116B	Lab on Data Structure & Fundamentals of Web Technologies	Core		6		2		50	50	100
6	WPC102A	Study of Languages, Peace in Communications and Human Dynamics	SEC	3		2		70		30	100
		Total :		15	06	10	02	270	50	280	600

Weekly Teaching Hours: 21  
Total Credits Trimester III: 12

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HoS , SoCS

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**B. C. A. Science (Second Year) (Batch 2021-24) (w.e.f. 2021)**  
**Trimester – IV**

Sr. No	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA201B	Object Oriented Programming using C++	Core	3		2		50		50	100
2	BCA202B	Advanced Web Technologies	Core	3		2		50		50	100
3	BCA203B	Computer Networks	Core	3		2		50		50	100
4	BCA204B	Operating Systems	Core	3		2		50		50	100
5	BCA205B	Lab on C++ & Advanced Web Technologies	Core		6		2		50	50	100
6	BCA204B	MOOC	Elective			2		100			100
7	BCA205B	Open Elective	Elective	3		2		50		50	100
		Total :		18	06	12	02	350	50	300	700

Weekly Teaching Hours: 24  
 Total Credits Trimester IV: 14

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 BCA

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**Trimester – V**

Sr. No	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA206B	Programming in JAVA	Core	3		2		50		50	100
2	BCA207B	Python	Core	3		2		50		50	100
3	BCA208B	Network Security	Core	3		2		50		50	100
4	BCA209B	Artificial Intelligence	Core	3		2		50		50	100
5	BCA210B	Object Oriented Software engineering	Core	3		2		50		50	100
6	BCA211B	Lab on Java & Python	Core		6		2		50	50	100
7	WPC103A	Philosophy of Science and Religion/Spirituality	SEC	3		2		70		30	100
Total :				18	06	12	02	320	50	330	700

Weekly Teaching Hours: 24  
Total Credits Trimester V: 14

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**Trimester – VI**

Sr. No	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA212B	ASP. NET	Core	3		2		50		50	100
2	BCA213B	Advanced Java	Core	3		2		50		50	100
3	BCA214B	Software Project Management	Core	3		2		50		50	100
4	BCA215B	Lab on ASP. NET & Advanced Java	Core		6		2		50	50	100
5	BCA216B	Discipline Specific Elective - I	Elective	3		2		50		50	100
6	BCA217B	UML Tools for Software Development	Core		6		2		50	50	100
7	WPC104A	Humanities -Ethical, Moral and Social Sciences	SEC	3		2		70		30	100
		Total :		15	12	10	04	270	100	330	700

Weekly Teaching Hours: 27  
Total Credits Trimester VI: 14

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**Trimester – VII**

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA301B	Mobile Application Development- I	Core	3		2		50		50	100
2	BCA302B	Angular	Core	3		2		50		50	100
3	BCA303B	Information Security	Core	3		2		50		50	100
4	BCA304B	Lab on Mobile Application Development- I & Angular	Core		6		2		50	50	100
5	BCA305B	Discipline Specific Elective - II	Elective	3		2		50		50	100
6	BCA306B	Mini Project	Core		6		2		50	50	100
7	WPC105A	Indian tradition, Culture and Heritage	SEC	3		2		70		30	100
		<b>Total :</b>		15	12	10	04	320	100	330	700

Weekly Teaching Hours: 27  
Total Credits Trimester VII: 14

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**Trimester – VIII**

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA307B	Mobile Application Development- II	Core	3		2		50		50	100
2	BCA308B	Internet of Things	Core	3		2		50		50	100
3	BCA309B	Introduction to Machine Learning	Core	3		2		50		50	100
4	BCA310B	Lab on Mobile Application Development-II & ML	Core		6		2		50	50	100
5	BCA311B	Discipline Specific Elective - III	Elective	3		2		50		50	100
6	BCA312B	Open Elective	Elective	3		2		50		50	100
7	BCA238B	Mini Project	Core		6		2		50	50	100
		<b>Total :</b>		15	12	10	04	250	100	350	700

Weekly Teaching Hours: 27  
Total Credits Trimester VIII: 14

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**Trimester – IX**

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	BCA313B	Full Time Industry Project / Internship	Core			36		12		50	50	100
2	BCA314B	MOOC	Elective				2		100			100
		<b>Total :</b>				36	2	12	100	50	50	200

Weekly Teaching Hours: 40  
Total Credits Trimester IX: 14

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### Discipline Specific Elective (DSE):

Sr. No	Course code	Course Name
1	Elective – I	Data Mining and Warehousing
2		Agile Frameworks
3		Advanced Database Management System
4	Elective – II	Introduction to Data Science
5		Automation Testing-I
6		Database Administration – I
7	Elective – III	Cloud Computing
8		Automation Testing II
9		Database Administration – II

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