

## DEPARTMENT OF COMPUTER SCIENCE

### PREAMBLE

**UG** : Programme Profile and Syllabi of courses offered in V & VI semesters along with evaluation components III & IV (With effect from 2018-2021 batch onwards).

### PROGRAMME PROFILE B.Sc Computer Science

#### PROGRAMME SPECIFIC OUTCOMES (PSO)

**Upon Completion of the Programme, the Students will able to**

- Understand, analyze, design, develop and optimize solutions related to Computer programming languages.
- Apply the concepts in core areas related to computer programming for efficient design of computer-based systems of varying complexity.
- Test the technical issues in Software Engineering and deliver a quality product for business success.
- Innovate and develop new technologies.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/Week	Credit Min/Max
I	I	Language	UTAL105/ UTAL106/ UHIL101/ UFRL101	Basic Tamil-I/ Advanced Tamil-I/ Hindi-I/ French-I	-	4	2/3
	II	English	UENL107/ UENL108	General English-I/ Advanced English-I	-	5	3/4
	III	Core I	UCSM106/ UCAM107	Programming in C	UCSM104	6	5
	III	Core II	UCSM107/ UCAM108	Fundamental of Computer Science	UCSM105	5	4
			UCSM108/ UCAM109	Advanced Computer Science	UCSM106		
	III	Core III	UCSR109/ UCAR105	Programming in C - Practical	UCSR107	3	2
	III	Allied I	UMAA113	Statistical Methods	-	5	4
IV	Value Education				2	1	
<b>Total</b>						<b>30</b>	<b>21/23</b>
II	I	Language	UTAL205/ UTAL206/ UHIL201/ UFRL201	Basic Tamil-II/ Advanced Tamil-II/ Hindi-II/ French-II	-	4	2/3
	II	English	UENL207/ UENL208	General English-II/ Advanced English-II	UENL205/ UENL206	5	3/4
	III	Core IV	UCSM206/ UCAM205	Data Structures	UCSM205	6	6
	III	Core V	UCSR206/ UCAR204	Data Structures - Practical	UCSR204	4	3

	III	Allied II	UMAA210	Mathematics for Computer Science	-	5	4
	IV	Non Major Elective				4	2
	IV	Soft Skill				2	1
	V	Extension Programme / Physical Education/ NCC				-	1/2
<b>Total</b>						<b>30</b>	<b>22/25</b>
III	I	Language	UTAL305/ UTAL306	Basic Tamil-III / Advanced Tamil-III	-	4	2/3
			UHIL301/ UFRL301	Hindi-III / French-III	-		
	II	English	UENL307/ UENL308	General English-III/ Advanced English-III	UENL305/ UENL306	5	3/4
	III	Core VI	UCSM305/ UCAM310	Java Programming	UCSM304	5	5
	III	Core VII	UCSM306	Microprocessor and its Applications	UCSM608	4	4
	III	Core VIII	UCSR308/ UCAR304	Java Programming – Practical	UCSR305	4	3
	III	Allied III	UPHA304	Digital Electronics	UPHA303	3	3
	III	Allied IV	UPHR304	Digital Electronics – Practical	-	3	2
	IV	Value Education				2	1
<b>Total</b>						<b>30</b>	<b>23/25</b>
IV	I	Language	UTAL405/ UTAL406	Basic Tamil-IV / Advanced Tamil-IV	-	4	2/3
			UHIL401/ UFRL401	Hindi-IV / French-IV	-		
	II	English	UENL407/ UENL408	General English-IV / Advanced English-IV	UENL405/ UENL406	5	3/4
	III	Core IX	UCSM408	Graphics & Multimedia	UCSM608/ UCSM610	6	6
	III	Core X	UCSM409/ UCSM609	Operating System	UCSM506	5	5
	III	Core XI	UCSR411	Operating System & Graphics Lab	UCSR606	5	3
	IV	Online courses		NPTEL/SPOKEN TUTORIAL/SWAYAM		3	1/2
		Soft skill				2	1
V	Extension Programme / Physical Education				-	0/2	
<b>Total</b>						<b>30</b>	<b>21/26</b>
V	III	Core XII	UCSM506	Middleware Technologies	-	5	5
	III	Core XIII	UCSM509	Database Systems	UCSM407	5	4
	III	Core XIV	UCSM510	Computer Networks	UCSM506	5	5
	III	Core XV	UCSM511	Software Engineering	UCSM504	5	4

	III	Core XVI	UCSR509	Middleware Technologies – Practical	-	4	3
	III	Core XVII	UCSR511	Database Systems-Practical	UCSR404	4	3
	IV	Value Education				2	1
				<b>Total</b>		<b>30</b>	<b>25</b>
VI	III	Core XVIII	UCSM612	Cloud Computing	-	5	5
	III	Core XIX	UCSM613	Open Source Technology	UCSM508	5	5
	III	Core XX	UCSM610	Big Data Tools	-	4	4
	III	Core XXI	UCSR607	Open Source Technology-Practical	UCSR508	4	3
	III	Core XXII	UCSP601	Project		5	5
	III	Major-Elective	(UCSO606/UCAO606)/UCSO607/UCSO608	Network Security / Mobile Computing /Internet of Things	-	5	4
	III	Viva – Voce	UCSM611	Comprehensive Viva Voce	-	-	1
	IV	Soft skill				2	1
	V	Extension Programme / Physical Education/ NCC				-	0/2
				<b>TOTAL</b>		<b>30</b>	<b>28/30</b>
				<b>GRAND TOTAL</b>		<b>180</b>	<b>140/154</b>

### ALLIED COURSES OFFERED TO OTHER DEPARTMENTS

Class & Major	Semester	Category	Course Code	New Course Title	Previous Course Code	Contact Hrs/Week	Credit Min/Max
B.Com with Computer Applications	I	Allied	UCSA104	C Programming	-	3	3
	I	Allied Practical	UCSR110	C Programming Lab	-	3	2
	II	Allied	UCSA204	Object Oriented Programming	-	3	3
	II	Allied Practical	UCSR207	Object Oriented Programming – Lab	-	3	2
	III	Allied	UCSA305	Fundamentals of Blockchain Technology	-	3	3
	III	Allied Practical	UCSR309	Blockchain Technology Using Solidity – Lab	-	3	2
	IV	Allied	UCSA406	Digital Marketing Analytics	-	3	3
	IV	Allied Practical	UCSR412	Web Design - Lab	-	3	2
	V	Allied	UCSA509	Business Analytics and Intelligence.	UCSA508	3	3
	V	Allied Practical	UCSR512	Business Analytics and Intelligence using SAS - Lab	UCSR511	3	2

BBA, B.Com and Economics	IV	Allied	UCSA407	Cyber Security in Finance	-	3	3
	IV	Allied Practical	UCSR413	Cyber Security Lab	-	3	2
Tamil	V	Allied	UCSA505	Tamil Kanini	-	3T+2P	5
Maths	III	Allied	UCSA304	Mathematical Programming using C	-	3	3
	III	Allied Practical	UCSR307	Mathematical Programming using C – Lab	-	3	2
	V	Allied	UCSA507	Object Oriented Programming using Java	-	3	3
	V	Allied Practical	UCSR508	Object Oriented Programming using Java - Lab	-	3	2
Physics	III	Allied	UCSA306	Computational Physics with Python	-	3	3
	III	Allied Practical	UCSR310	Computational Physics with Python – Lab	-	3	3

### NON-MAJOR ELECTIVE

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/week	Credit Min/Max
II	IV	Non Major Elective	UCSE206	Tableau Programming	UCSE202	2T+2P	2
			UCSE207	Python Programming	UCSE203	4P	2
			UCSE208	R Programming	UCSE204	4P	2
			UCSE209	Arduino Programming	UCSE205	4P	2

### EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course Code	Course Title	Contact Hrs/week	Credit	
						Min	Max
II	III	Core	UCSI201	Summer Internship / Working Model	-	-	1
IV	III	Core	UCSI401	Summer Internship	-	-	1
V	III	Self Study Paper	UCSS501	Python Programming	2	1	1
V	III	Self Study Paper	UCSS502/ UCAS502	Android Applications	2	1	1
VI	III	Self Study Paper	UCSS601/ UCAS601	Angular JS	2	1	1
VI	III	Self Study Paper	UCSS602/ UCAS602	Green Computing	2	1	1

## Inclusion of Experiential Learning

### A. Experiential Learning (Mandatory)

Course Mapping				Collaborating Agency - MSME		
Sem	Course Code	Course Title	Assessment	Course Title	Hours/Days /Month	Mode of Evaluation
VI	UCSM610	Big Data Tools	Component IV	Data Analytics certification	4 Days	Reflection

### B. Skill Orientation Programme (Only for Interested students) – Extra Credit Earning Provision

Sem	Category	Course Code	Course Title	Collaborating Agency	Hours/ Days/Month	Mode of Evaluation	Credits (Min/Max)
V	Core	UCST501	Robotics Process Automation	MSME	4 Days	Reflection	1

### III and IV Evaluation Components of CIA

Semester	Part	Category	Course Code	Course Title	Component III	Component IV
V	III	Core IX	UCSM506	Middleware Technologies	Assignment	Seminar
	III	Core XIII	UCSM509	Database Systems	Query writing	ER Diagram
	III	Core XIV	UCSM510	Computer Networks	Assignment	Seminar
	III	Core XV	UCSM511	Software Engineering	Project Designing	Seminar
	III	Core Practical VII	UCSR509	Middleware Technologies – Practical	DPA	Viva Voce
	III	Core XVII	UCSR511	Database Systems-Practical	DPA	Viva-voce
VI	III	Core XVIII	UCSM612	Cloud Computing	Assignment	Seminar
	III	Core XIX	UCSM613	Open Source Technology	App Development	Seminar
	III	Core XIV	UCSM610	Big Data Tools	Assignment	Seminar
	III	Core XXI	UCSR607	Open Source Technology-Practical	DPA	Viva-voce

## ALLIED COURSES OFFERED TO OTHER DEPARTMENTS

Semester	Part	Category	Course Code	Course Title	Component III	Component IV
V	III	Allied	UCSA509	Business Analytics and Intelligence.	Assignment	Seminar
	III	Allied Practical	UCSR512	Business Analytics and Intelligence using SAS - Lab	DPA	Viva-voce
	V	Allied	UCSA507	Object Oriented Programming using Java	Program Writing	Assignment
	V	Allied Practical	UCSR508	Object Oriented Programming using Java - Lab	DPA	Viva-voce

### COURSE PROFILE M.Phil (Computer Science)

#### PROGRAMME SPECIFIC OUTCOMES (PSO)

Upon Completion of the Programme, the Students will able to

- Ability to analyze and apply the latest technologies in the concepts of key areas in computer science.
- Critical analysis of problems and thorough evaluation of potential benefits of alternative solution in designing software and/or hardware systems.
- Ability to analyze and synthesize computing systems through quantitative and qualitative techniques.
- Ability to use knowledge in various domains to identify research gaps and provide solution to new ideas and innovations.

Semester	Category	Course Code	Course Title	Contact Hrs/Week	Credit Min/Max
I	Core Paper I	MCSM108	Research Methodology	6	5
	Core Paper II	MCSM109	Advanced Topics in Computer Science	6	5
	Core Paper III	MCSM107	Special Area Study	6	5
	Elective	MRPE101	Research publication and ethics	2	2
II	Core Paper IV	MCSD201	Dissertation & Viva-voce	30	13

## DEPARTMENT OF COMPUTER PPLICATIONS

### PREAMBLE

UG : Programme profile and the syllabi of courses in the V & VI semesters along with evaluation components III & IV (with effect from 2018-2021 batch onwards)

### PROGRAMME PROFILE: BCA

#### PROGRAMME SPECIFIC OUTCOMES (PSO)

Upon Completion of the Programme, the Students will able to

- Understanding of the key concepts and principles of programming languages.
- Capacity to analyze a problem, identify the computing requirements and using procedures find a solution.
- Development of practical skills to solve problems and provide solutions using current trends in the discipline of Computer Applications.
- Ability to apply the algorithmic principles, mathematical foundations and Computer science theory for designing Computer-based systems.

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/Week	Credit Min/Max
I	I	Language	UTAL105/ UTAL106/ UHIL101/ UFRL101	Basic Tamil-I/ Advanced Tamil-I/ Hindi-I/ French-I	-	4	2/3
	II	English	UENL107/ UENL108	General English-I/ Advanced English-I	-	5	3/4
	III	Core I	UCAM107/ UCSM106	Programming in C	UCAM105	6	5
	III	Core II	UCAM108/ UCSM108 UCAM109/ UCSM109	Fundamental of Computer Science/ Advanced Computer Science	UCAM106	5	4
	III	Core Practical I	UCAR105/ UCSR108	Programming in C- Practical	UCAR104	3	2
	III	Allied I	UMAA110	Mathematical Methods-I	-	5	4
	IV	Value Education				2	1
<b>Total</b>						<b>30</b>	<b>21/23</b>
II	I	Language	UTAL205/ UTAL206/ UHIL201/ UFRL201	Basic Tamil-II/ Advanced Tamil-II/ Hindi-II/ French-II	-	4	2/3
	II	English	UENL207/ UENL208	General English-II/ Advanced English-II	-	5	3/4
	III	Core III	UCAM205/ UCSM206	Data Structures	UCAM204	6	6
	III	Core Practical II	UCAR204/ UCSR205	Data Structures - Practical	UCAR203	4	3
	III	Allied II	UMAA216	Mathematical Methods-II	-	5	4

	IV	Non - Major Elective				4	2
	IV	Soft Skill				2	1
	V	Extension Programme/ Physical Education/NCC				-	1
<b>Total</b>						<b>30</b>	<b>22/25</b>
III	III	Core IV	UCAM310/ UCSM305	Java Programming	UCAM307	5	5
	III	Core V	UCAM308	MIS and ERP	-	5	4
	III	Core VI	UCAM311	Data Communication Networks	UCAM309/ UCAM405	6	5
	III	Core Practical III	UCAR304/ UCSR308	Java Programming - Practical	UCAR303	4	3
	III	Allied III	UCOA303	Financial Accounting	-	5	5
	IV	Online course		NPTEL/Spoken Tutorial/Swayam	-	3	1/2
	IV	Value Education				2	1
<b>Total</b>						<b>30</b>	<b>24/25</b>
IV	III	Core VII	UCAM404	Database Management System	-	6	5
	III	Core VIII	UCAM403	Object Oriented Analysis and Design	-	5	4
	III	Core IX	UCAM407	Python Programming	UCAM406	6	5
	III	Core Practical IV	UCAR402	Database Management System - Practical	-	3	2
	III	Core Practical V	UCAR404	Python Programming- Practical	UCAR403	3	2
	III	Allied IV	UCOA403/ UCOR403	Accounting Package	-	5	5
	IV	Soft skill				2	1
	V	Extension Programme/ Physical Education				-	2
<b>Total</b>						<b>30</b>	<b>24/26</b>
V	III	Core X	UCAM507	Operating System	UCAM506/ UCAM606	5	5
	III	Core XI	UCAM509	Software Engineering	UCAM504	5	4
	III	Core XII	UCAM505	Web Programming	-	6	5
	III	Core XIII	UCAM508	Open Source Technology	UCAM501	6	5
	III	Core Practical VI	UCAR506	Open Source Technology - Practical	UCAR504	3	2
	III	Core Practical VII	UCAR505	Web Programming - Practical	-	3	2
	IV	Value Education				2	1
<b>Total</b>						<b>30</b>	<b>24</b>
VI	III	Core XIV	UCAM609	Data Mining	UCAM606	5	4
	III	Core XV	UCAM610	Computer Graphics	UCAM607	5	4
	III	Core XVI	UCAM611	Basics of IOT	UCAM608	4	3
	III	Core Practical VII	UCAR602	Data Mining - Practical	UCAR602	4	3



	III	Core Project	UCAP601	Project		5	5
	III	Major-Elective	UCAO606/ UCAO604	Fundamentals of Security/ Cloud Computing	UCAO605	5	4
	III	Viva-Voce	UCAM601	Comprehensive Viva Voce	-	-	1
	IV	Soft Skill				2	1
	V	Extension Programme/ Physical Education/NCC				-	2
<b>Total</b>						<b>30</b>	<b>25/27</b>
<b>Grand Total</b>						<b>180</b>	<b>140/150</b>

### NON-MAJOR ELECTIVE

Semester	Part	Category	Course Code	Course Title	Previous Course Code	Contact Hrs/week	Credit
II	IV	Non Major Elective	UCAE207	Data Science Using R	-	4P	2
			UCAE208	Cyber Forensics	-	4T	2
			UCAE209	PyMOL	-	4P	2
			UCAE210	Qlik View	-	4P	2

### EXTRA CREDIT EARNING PROVISION

Semester	Part	Category	Course Code	Course Title	Contact/Week	Credit
II	III	Summer Internship	UCAI201	Summer Internship	-	1
I V	III	Summer Internship	UCAI401	Summer Internship	-	1
V	III	Self Study	UCSS501/ UCAS501	Python Programming	2	1
V	III	Self Study	UCSS502/ UCAS502	Android Applications	2	1
V I	III	Self Study	UCSS601/ UCAS601	Angular JS	2	1
V I	III	Self Study	UCSS602/ UCAS602	Green Computing	2	1

### Inclusion of Experiential Learning

#### A. Experiential Learning (Mandatory)

Course Mapping				Collaborating Agency - MSME		
Sem	Course Code	Course Title	Assessment	Course Title	Hours/ Days / Month	Mode of Evaluation
II	UCAM310	Java Programming	Component III	Java Programming	4 Days	Reflection
II	UCAM407	Python Programming	Component III	Python Programming	4 Days	Reflection

				Training		
III	UCAM505	Web Programming	Component III	Web designing Certification	4 Days	Reflection
III	UCAM610	Computer Graphics	Component III	Computer Graphics Certification	4 Days	Reflection

**C. Skill Orientation Programme (Only for Interested students) – Extra Credit Earning Provision**

Sem	Category	Course Code	Course Title	Collaborating Agency	Hours/ Days/Month	Mode of Evaluation	Credits (Min/Max)
V	Core	UCAT501	Excel Analytics with R-Language	MSME	4 Days	Reflection	1

**III and IV Evaluation Components of CIA**

Semester	Part	Category	Course Code	Course Title	Component III	Component IV
V	III	Core X	UCAM507	Operating System	Case Study	Seminar using ICT Technique
	III	Core XI	UCAM509	Software Engineering	System Modeling	Seminar using ICT Technique
	III	Core XII	UCAM505	Web Programming	Program Writing	Webpage Design
	III	Core XIII	UCAM508	Open Source Technology	Problem Solving	Developing Web pages
	III	Core Practical VI	UCAR506	Open Source Technology Practical	DPA	Viva-voce
	III	Core Practical VII	UCAR505	Web Programming Practical	DPA	Viva-Voce
VI	III	Core XIV	UCAM609	Data Mining	Database Design	Seminar using ICT Technique
	III	Core XV	UCAM610	Computer Graphics	Simple Animation	Seminar
	III	Core XVI	UCAM611	Basics of IOT	Working Model	Simple programs
	III	Core Practical VII	UCAR602	Data Mining Practical	DPA	Viva-voce
	III	Major-Elective	UCAO606	Fundamentals of Security	Case Study	Seminar
	III	Major-Elective	UCAO604	Cloud Computing	Working Model	Seminar