

# **FACULTY OF COMPUTER SCIENCE & IT**

## **SYLLABUS**

**of**

**Bachelor of Computer Applications**

**(Semester I-II)**

**(Under Credit Based Continuous Evaluation Grading System)**

**(Semester III-VI)**

**(Under Continuous Evaluation System)**

**Session: 2023-24**



**The Heritage Institution**

**KANYA MAHA VIDYALAYA  
JALANDHAR  
(Autonomous)**

# **PROGRAMME SPECIFIC OUTCOMES**

## **Bachelor of Computer Applications (Session 2023-24)**

### **Program Specific Outcomes**

- PSO1: Apply skills for development of software and websites for providing efficient solution to IT based problems
- PSO2: Comprehend development process in IT industry through ethical, defined and innovative techniques.
- PSO3: Achieve leadership role and team player role to be able to work in multidisciplinary areas at various job roles.
- PSO4: Identify and demonstrate the implementation of various tools and technologies involved in the field of Information Technology.
- PSO5: Demonstrate proficiency in the field of Programming, Web development and IT enabled services.

**Kanya Maha Vidyalaya, Jalandhar (Autonomous)**  
SCHEME AND CURRICULUM OF EXAMINATIONS OF TWO YEAR DEGREE PROGRAMME

**Bachelor of Computer Applications**  
Credit Based Continuous Evaluation Grading System (CBCEGS)  
(Session 2023-24)

Bachelor of Computer Applications Semester - I										
Course Code	Course Title	Course Type	Hours per week	Credit		Marks			Examination Time (in Hours)	
			L-T-P	L-T-P	Total	Total	Ext.			CA
							L	P		
BCAL-1421 / BCAL-1031/ BCAL-1431	Punjabi (Compulsory) / <sup>1</sup> Basic Punjabi/ <sup>2</sup> Punjab History and Culture	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAL-1102	Communication Skills in English	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAL-1113	Digital Electronics	C	3-1-0	3-1-0	4	100	80	-	20	3
BCAL-1114	Introduction to Programming – C	C	3-1-0	3-1-0	4	100	80	-	20	3
BCAL-1115	Introduction to Computers and Information Technology	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAP-1116	Lab on Programming – C	C	0-0-4	0-0-2	2	50	-	40	10	3
BCAP-1117	Lab on Office Package	C	0-0-4	0-0-2	2	50	-	40	10	3
AECD-1161	*Drug Abuse: Problem, Management and Prevention (Compulsory)	AC	2-0-0	2-0-0	2	50	40	-	10	3
SECF-1492	*Foundation Course	AC	2-0-0	2-0-0	2	50	40	-	10	1
	<b>Total</b>				28	700				

**Note:**

**C - Compulsory**

**AC - Audit Course**

<sup>1</sup> Special course in lieu of Punjabi (Compulsory)

<sup>2</sup> Special course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.

\*Credits/Grades Points of these courses will not be added in total, only grades will be provided.

**Kanya Maha Vidyalaya, Jalandhar (Autonomous)**  
SCHEME AND CURRICULUM OF EXAMINATIONS OF TWO YEAR DEGREE PROGRAMME

**Bachelor of Computer Applications**  
**Credit Based Continuous Evaluation Grading System (CBCEGS)**  
**(Session 2023-24)**

<b>Bachelor of Computer Applications Semester - II</b>										
<b>Course Code</b>	<b>Course Title</b>	<b>Course Type</b>	<b>Hours per week</b>	<b>Credit</b>		<b>Marks</b>				<b>Examination Time (in Hours)</b>
				<b>L-T-P</b>	<b>L-T-P</b>	<b>Total</b>	<b>Total</b>	<b>Ext.</b>		
									<b>L</b>	
BCAL-2421/ BCAL-2031/ BCAL-2431	Punjabi (Compulsory) <sup>1</sup> Basic Punjabi <sup>2</sup> Punjab History and Culture	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAM-2102	Communication Skills in English	C	3-0-2	3-0-1	4	100	50	30	20	3
BCAL-2113	Computer Architecture	C	3-1-0	3-1-0	4	100	80	-	20	3
BCAL-2114	Database Management System	C	3-1-0	3-1-0	4	100	80	-	20	3
BCAL-2115	Introduction to Object Oriented Programming-I	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAP-2116	Lab on Database Management System	C	0-0-4	0-0-2	2	50	-	40	10	3
BCAP-2117	Lab on Object Oriented Programming - I	C	0-0-4	0-0-2	2	50	-	40	10	3
SECM-2502	*Moral Education	AC	2-0-0	2-0-0	2	50	40	-	10	1
	<b>Total</b>				26	650				

**Note:**

**C - Compulsory**

**AC - Audit Course**

<sup>1</sup> Special course in lieu of Punjabi (Compulsory)

<sup>2</sup> Special course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.

\* Credits/Grades Points of these courses will not be added in total, only grades will be provided.

# Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

## Bachelor of Computer Applications

Session 2023-24

<b>Bachelor of Computer Applications Semester- III</b>							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BCAL-3111	Foundation of Data Science	C	75	60	-	15	3
BCAL-3112	Database Management System	C	75	60	-	15	3
BCAL-3113	Computational Problem Solving	C	75	60	-	15	3
BCAP-3114	Lab on Computational Problem Solving	C	50	-	40	10	3
BCAP-3115	Lab on Database Management System	C	25	-	20	5	3
AECE - 3221	* Environmental Studies (Compulsory)	AC	100	60	20	20	3
SECP - 3512	* Personality Development	AC	25	20	-	05	1
	Total		300				

**Note:**

**C - Compulsory**

**AC - Audit Course**

**\* Marks of these courses will not be added in total marks and only grades will be provided.**

# Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

## Bachelor of Computer Applications

Session 2023-24

Bachelor of Computer Applications Semester- IV							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BCAL-4111	Data Structures	C	75	60	-	15	3
BCAL-4112	Information Systems	C	75	60	-	15	3
BCAL-4113	Internet Applications	C	75	60	-	15	3
BCAL-4114	Computer Architecture	C	75	60	-	15	3
BCAP-4115	Lab on Data Structures	C	50	-	40	10	3
BCAP-4116	Lab on Internet Applications	C	50	-	40	10	3
SECS - 4522	* Social Outreach	AC	25	-	20	05	1
	Total		400				

**Note:**

**C - Compulsory**

**AC - Audit Course**

**\* Marks of these courses will not be added in total marks and only grades will be provided.**

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SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

## Bachelor of Computer Applications

Session 2023-24

Bachelor of Computer Applications Semester - V							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BCAL-5111	Computer Networks	C	75	60	-	15	3
BCAL-5112	Web Technologies (Full Stack Development)	C	75	60	-	15	3
BCAL-5113	Operating System	C	75	60	-	15	3
BCAL-5114	Object Oriented Programming -II	C	75	60	-	15	3
BCAP-5115	Lab on Object Oriented Programming- II	C	50	-	40	10	3
BCAP-5116	Lab on Full Stack Development	C	50	-	40	10	3
SECJ-5551	* Job Readiness Course	AC	25	20	-	5	1
	Total		400				

**Note:**

**C-Compulsory**

**AC - Audit Course**

\* Marks of these courses will not be added in total marks and only grades will be provided

\*\* An Internship of not less than 30 hours (either online or offline mode) in either of Semester V or VI.

The students will have to submit the Certificate of Completion to the department (No marks or credits).

# Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

## Bachelor of Computer Applications

Session 2023-24

Bachelor of Computer Applications Semester - VI							
Course Code	Course Name	Course Type	Marks				Examination Time (in Hours)
			Total	Ext.		CA	
				L	P		
BCAL-6111	Computer Graphics	C	75	60	-	15	3
BCAL-6112	Software Engineering	C	75	60	-	15	3
BCAP-6113	Lab on Computer Graphics	C	50	-	40	10	3
BCAD-6114	Project	C	300	-	240	60	3
	Total		500				

**Note:**

**C-Compulsory**

**\*\* An Internship of not less than 30 hours (either online or offline mode) in either of Semester V or VI.**

**The students will have to submit the Certificate of Completion to the department (No marks or credits).**



**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1421**  
**PUNJABI (COMPULSORY)**

**COURSE OUTCOMES**

CO1: ‘ਆਤਮ ਅਨਾਤਮ’ ਪੁਸਤਕ ਦੇ ਕਵਿਤਾ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ। ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO2: ‘ਗੱਦ ਪ੍ਰਵਾਹ’ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ) ਪੁਸਤਕ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

CO3: ਪੈਰਾ ਰਚਨਾ ਅਤੇ ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO4: ਧੁਨੀ ਵਿਉਂਤ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨ ਪ੍ਰਣਾਲੀ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL-1421**  
**PUNJABI (COMPULSORY)**

Examination Time: 3 Hours  
Credits L-T-P: 4-0-0

Max. Marks: 100  
Theory: 80  
CA: 20

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

**ਯੂਨਿਟ-I**

ਆਤਮ ਅਨਾਤਮ(ਕਵਿਤਾ ਭਾਗ),(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।  
(ਭਾਈ ਵੀਰ ਸਿੰਘ ,ਡਾ.ਜਸਵੰਤ ਸਿੰਘ ਨੇਕੀ,ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹੈ)

(ਸਾਰ, ਵਿਸ਼ਾ ਵਸਤੂ)

16 ਅੰਕ

**ਯੂਨਿਟ-II**

ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ), ਸੰਪਾ.ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ, ਜਸਪਾਲ ਸਿੰਘ ਰੰਧਾਵਾ,ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ,ਅੰਮ੍ਰਿਤਸਰ।

(ਸਾਰ, ਵਿਸ਼ਾ ਵਸਤੂ)

16 ਅੰਕ

**ਯੂਨਿਟ-III**

(ੳ) ਪੈਰਾ ਰਚਨਾ

(ਅ) ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ।

16 ਅੰਕ

**ਯੂਨਿਟ-IV**

(ੳ) ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ :ਪਰਿਭਾਸ਼ਾ ਤੇ ਉਚਾਰਨ ਅੰਗ

(ਅ) ਸਵਰ, ਵਿਅੰਜਨ

16 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।

4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

**Bachelor of Computer Applications Semester – I**

**Session 2023-24**

**COURSE CODE: BCAL-1031**

**BASIC PUNJABI**

**(IN THE LIEU OF PUNJABI (COMPULSORY))**

**Course outcomes**

**CO1:** ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦਾ ਮੌਕਾ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤਰਾਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

**CO2:** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ ਦੀ ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

**CO3:** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

**CO4:** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1031**  
**BASIC PUNJABI**  
**(IN THE LIEU OF PUNJABI (COMPULSORY))**

Examination Time: 3 Hours  
Credits L-T-P: 4-0-0

Max. Marks: 100  
Theory: 80  
CA: 20

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ।

16 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ)

16 ਅੰਕ

ਯੂਨਿਟ-III

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ।

16 ਅੰਕ

ਯੂਨਿਟ-IV

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਚੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ।

16 ਅੰਕ

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

3. ਹਚੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

**Bachelor of Computer Applications Semester – I**

**Session 2023-24**

**COURSE CODE: BCAL–1431**

**PUNJAB HISTORY AND CULTURE**

**COURSE OUTCOMES**

After completing Semester I and course on Punjab History and Culture students of History will be able to identify and have a complete grasp on the sources & writings of Ancient Indian History of Punjab

CO1: Identify and understand the sources and physical features of Punjab

CO 2: To study the earliest civilisation (Indus Valley Civilization) and original home of Aryans

CO 3: To examine the Social, Religious and Economic life during Early and Later Vedic Age

CO 4: To comprehend the Buddhist, Jain and Hindu faith and their relevance in the modern times

**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1431**  
**PUNJAB HISTORY AND CULTURE**

**Examination Time: 3 Hours**  
**Credits L-T-P: 4-0-0**  
**Contact Hours: 4 Hrs/Week**

**Max. Marks: 100**  
**Theory: 80**  
**CA: 20**

**Instructions for the Paper Setter:**

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
3. Candidates shall attempt 5 questions in 1000 words, by at least selecting One Question from each Unit and the 5<sup>th</sup> question may be attempted from any of the four Units.
4. Each question will carry 16 marks

**Unit-I**

1. Physical features of the Punjab
2. Sources of the ancient history of Punjab

**Unit-II**

3. Harappan Civilization: social, economic and religious life of the Indus Valley People.
4. The Indo-Aryans: Original home

**Unit-III**

5. Social, Religious and Economic life during Early Vedic Age.
6. Social, Religious and Economic life during Later Vedic Age.

**UNIT-IV**

7. Teachings of Buddhism
8. Teachings of Jainism

**Suggested Readings**

- B.N. Sharma, Life in Northern India, Delhi. 1966.
- Budha Parkash, Glimpses of Ancient Punjab, Patiala, 1983.
- Chopra, P.N., Puri, B.N., & Das, M.N.(1974). A Social, Cultural & Economic History of India, Vol. I, New Delhi: Macmillan India.
- L. M Joshi (ed.), History and Culture of the Punjab, Art-I, Patiala, 1989 (3<sup>rd</sup> edition)
- L.M. Joshi and Fauja Singh (ed.), History of Punjab, Vol.I, Patiala 1977.



**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1102**  
**COMMUNICATION SKILLS IN ENGLISH**

**COURSE OUTCOMES**

At the end of this course, the students will develop the following Skills:

**CO 1:** Reading skills that will facilitate them to become an efficient reader

**CO 2:** Through reading skills, the students will have an ability to have a comprehensive understanding of the ideas in the text and enhance their critical thinking

**CO 3:** Writing skills of students which will make them proficient enough to express ideas in clear and grammatically correct English

**CO 4:** The skill to use an appropriate style and format in writing letters (formal and informal) and resume, memo, notices, agenda, minutes

**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1102**  
**COMMUNICATION SKILLS IN ENGLISH**

**L-T-P: 4-0-0**

**Credits: 4**

**Examination Time: 3 Hrs**

**Total Marks: 100**  
**Theory: 80**  
**CA: 20**

**Instructions for the paper setter and distribution of marks:**

**The question paper will consist of four sections. The candidate will have to attempt five questions in all selecting one from each section and the fifth question from any of the four sections. Each question will carry 16 marks. Each question can be sub divided into two parts.** **(16 x 5 = 80)**

**Section-A:** Two questions of theoretical nature will be set from Unit I.

**Section-B:** Two comprehension passages will be given to the students from Unit II.

**Section-C:** Two questions will be given from Unit III.

**Section-D:** Two questions will be set from Unit IV.

### **Unit I**

**Reading Skills:** Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings.

### **Unit II**

Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/ expressions.

**Activities:**

- Comprehension questions in multiple choice format
- Short comprehension questions based on content and development of ideas

### **Unit III**

**Writing Skills:** Guidelines for effective writing; writing styles for application, personal letter, official/business letter.

**Activities:**

- Formatting personal and business letters.
- Organizing the details in a sequential order

**Unit IV**

Resume, memo, notices, agenda, minutes, Tips for effective blog writing

**Activities:**

- Converting a biographical note into a sequenced resume or vice-versa
- Ordering and sub-dividing the contents while making notes.
- Writing notices for circulation/boards
- Writing blogs

**Recommended Books:**

- 1) *Oxford Guide to Effective Writing and Speaking* by John Seely.
- 2) *Business Communication*, by Sinha, K.K. Galgotia Publishers, 2003.
- 3) *Business Communication* by Sethi, A and Adhikari, B., McGraw Hill Education 2009.
- 4) *Communication Skills* by Raman, M. & S. Sharma, OUP, New Delhi, India (2011).

**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1113**  
**DIGITAL ELECTRONICS**

**Course Outcomes:**

After the completion of this course, the student will be able to:

CO1: Comprehend and apply the number systems.

CO2: Apply K-map for simplification of Boolean expressions and implement them with Logic Gates.

CO3: Design advanced and complex combinational and sequential circuits.

CO4: Demonstrate the internal structure of semiconductor memory.

**Bachelor of Computer Applications Semester – I**  
**Session 2023-24**  
**COURSE CODE: BCAL–1113**  
**DIGITAL ELECTRONICS**

**L-T-P: 3-1-0**

**Credits: 4**

**Examination Time: 3 Hours.**

**Max. Marks: 100**

**Theory: 80**

**CA: 20**

**Instructions for Paper Setter -**

Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT-I**

**Number System:** Introduction to number system (Binary, Octal, Decimal, Hexadecimal and Arbitrary), number conversion system, binary arithmetic. 1's and 2's complement.

**Representation of signed binary numbers, Non-weighted Codes:** BCD Code, Excess-3 Code, Grey Code, ASCII, Integer and floating point representation.

**UNIT- II**

**Logic Gates and Boolean algebra:** Logic gates, Universal Gates, Boolean Algebra Laws of Boolean Algebra, canonical forms of Boolean expressions, K-Map.

**UNIT-III**

**Combinational Circuits:** Half, Full, BCD and Parallel Adder, Half and full Subtractor, Multiplexers, Demultiplexers, Multiplexer Tree, Demultiplexer Tree, Decoder, Encoder: Priority and 7-segment Display, Parity Generator and Checker.

RAM and ROM Chips, Read and Write timing diagrams, Address Selection Logic, Design of Large memory using smaller chips.

**UNIT-IV**

**Sequential Circuits:** Introduction, RS-latch, Flip-flops (Truth Table, Internal Circuit, Excitation Table), clock and Triggering, Registers: SISO, SIPO, PISO, PIPO, Counters: Up, Down, Up/Down, Ring, Twisted Ring, Modulo and Decade.

## References / Textbooks:

1. M. Morris Mao, Digital Design, Pearson Publication (2018), 6<sup>th</sup> Edition.
2. Ronald J. Tocci, Digital Systems, Pearson (2009), 10<sup>th</sup> Edition.
3. Morris Mano, Digital Logic and Computer Design, Pearson Education (2004), 1<sup>st</sup> Edition.
4. V.K. Jain, Arti Agarwal, Digital Electronics, Genius Publications Pvt. Ltd. (2018), 1<sup>st</sup> Edition
5. K. Meena, Principles of Digital Electronics, Prentice Hall India Learning Private Limited (2009), 1<sup>st</sup> Edition
6. William H. Gothmann, Digital Electronics: An introduction to Theory and Practice, Prentice Hall India Learning Private Limited (1982), 2<sup>nd</sup> Edition

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–1114**  
**INTRODUCTION TO PROGRAMMING – C**

**Course Outcome:**

After passing course the student will be able to:

CO1: Comprehend the working of various programming constructs involved in C Programming.

CO2: Design C program and control its sequence using various control statements.

CO3: Apply programming concepts such as arrays, functions and strings to provide solution in different problem domains.

CO4: Work with pointers, structures and union.

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–1114**  
**INTRODUCTION TO PROGRAMMING – C**

**L-T-P: 3-1-0**  
**Credits: 4**  
**Examination Time: 3 Hours**

**Max. Marks: 100**  
**Theory: 80**  
**CA: 20**

**Instructions for Paper Setter -**

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT-I**

**Fundamentals:** Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants.

**Operations and Expressions:** Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions. Data Input and Output statements

**UNIT-II**

**Control Statements:** Preliminaries, While, Do-while and for statements, Nested loops, If-else, Switch, Break – Continue statements.

**Program Structure Storage Class:** Storage Classes- Auto, extern, register and static about library functions.

**UNIT-III**

**Functions:** Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion.

**Arrays:** Defining, processing an array, passing arrays to a function, multi-dimensional arrays.

**Strings:** String declaration, string functions and string manipulation

**UNIT-IV**

**Structures & Unions:** Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, Unions.

**Pointers:** Fundamentals, pointer declaration, passing pointer to a function, pointer and one dimensional arrays, operation on pointers, pointers & multi-dimensional arrays of pointers, passing functions, other functions, more about pointer declarations.

**References/Textbooks:**



1. E Balagurusamy, Programming in ANSI C, Tata McGraw-Hill, 2002.
2. Byron Gottfried, Schaum's Outline Programming with C, McGraw Hill, 1996.
3. Brian W. Kernighan, Dennis M. Ritchie, The C Programming language, Prentice Hall, 1988.
4. Stephen G. Kochan, Programming in C, Pearson Education, 2015.

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–1115**  
**INTRODUCTION TO COMPUTERS AND INFORMATION TECHNOLOGY**

**Course Outcome:**

After passing course the student will be able to:

CO1: comprehend about computer hardware, operating system concepts and various system software.

CO2: Identify various input, output and memory devices.

CO3: Apply word processing software to create professional and academic documents.

CO4: Create effective and well-formatted presentation.

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–1115**  
**INTRODUCTION TO COMPUTERS AND INFORMATION TECHNOLOGY**

**L-T-P: 4-0-0**  
**Credits: 4**  
**Examination Time: 3 Hours**

**Max. Marks: 100**  
**Theory: 80**  
**CA: 20**

**Instructions for Paper Setter -**

Eight questions of equal marks (16 Marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT-I**

**Fundamentals of Computer:** Introduction to computer, Applications of computer, Components of computers (Input unit, Output Unit, Memory Unit & CPU).

**Software:** Application Software, Service software, System software, booting a System.

**Memories:** Primary Memory -RAM (Working and Its types), ROM (Types of ROM). Secondary Memory - Hard Disk (Structure of a hard disk, working, concept of tracks, sectors, clusters, cylinders).

**UNIT-II**

**Input Devices:** Keyboards, Mouse, Joystick, Light Pen and Data Scanning devices (scanner, OCR, OMR, MICR, Bar Code Reader, Card Reader)

**Output Devices:** Monitor, Printers (laser printer, dot matrix printer, ink jet printer)

**Word Processing:** Introduction to Office, word processing & its features, Parts of window of word (Title bar, menu bar, status bar, and ruler), understanding the Ribbon, Use of Office Button and Quick Access Toolbar, Creation of new documents, opening document, insert a document into another document.

**UNIT-III**

**Word Processing:** Page setup, margins, gutters, font properties, Alignment, page breaks, header & footer, deleting, moving, replace, editing text in document, saving a document, spell checker, printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height, width of row/column. Editing, deleting Rows, columns in table. Adding picture, page colors and Watermarks, Borders, shading, Templates, wizards, drawing objects.

**Presentation:** Introduction to PowerPoint, Exploring menus, starting a new slide, saving presentation, moving/rearranging slides, printing slides. Applying theme to presentation, Views (slide View, slide sorter, notes view, outline view), Formatting & enhancing text formatting. Displaying slide show, adding multimedia. Slide transitions, applying Animation, Timing slide display, adding movies & sounds.

#### UNIT-IV

**Spreadsheet:** Introduction to Worksheet/Spreadsheets, creating a simple Worksheet, Computations in a Worksheet, Printing the Worksheet, Graphs, Data Sorting, Filling, Filtering data. **Functions and Formulas:** Applying Formulas. Inserting and Editing a Function, Auto Calculate and Manual Calculation, Defining Names, Using and Managing Defined Names, Displaying and Tracing Formulas, Understanding Formula Errors, Using Logical Functions (IF), Using Financial Functions (PMT), Using Database Functions (DSUM), Using Lookup Functions (VLOOKUP), User Defined and Compatibility Functions, Date & Time Functions, Math & Trig Functions, Statistical Functions, Text Functions, Logical Functions. **Working with Pivot Tables:** Creating a PivotTable, Specifying PivotTable Data, changing a PivotTable's Calculation, Filtering and Sorting a PivotTable, working with PivotTable Layout, Grouping PivotTable Items, updating a PivotTable, formatting a PivotTable, creating a PivotChart.

#### References/Textbooks:

1. Joyce Cox, Joan Lambert and Curtis Frye, Microsoft office Professional 2010 Step by Step, Microsoft Press, 2010.
2. V. Rajaraman, Neeharika Adabala, Fundamentals of Computers, PHI Learning, 2015.
3. P.K. Sinha, Computer Fundamentals, BPB Publications, 2004.
4. Anshuman Sharma, A book of Fundamentals of Information Technology, Lakhanpal Publishers, 5<sup>th</sup> Edition.
5. Peter Norton, Peter Norton's Computing Fundamentals, McGraw-Hill Technology Education, 2006.

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: BCAP–1116**  
**LAB ON PROGRAMMING – C**

**L-T-P: 0-0-2**  
**Credits: 2**  
**Examination Time: 3 Hours**

**Max. Marks: 50**  
**Practical:40**  
**CA: 10**

Lab based on course code BCAL-1114

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: BCAP–1117**  
**LAB ON OFFICE PACKAGE**

**L-T-P: 0-0-2**  
**Credits: 2**  
**Examination Time: 3 Hours**

**Max. Marks: 50**  
**Practical:40**  
**CA: 10**

Lab based on course code BCAL-1115

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: AECD-1161**  
**DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION (COMPULSORY)**

**Course Outcome:**

After completing the course the students will be able to:

- CO1. Learn how to include factual data about what substance abuse is; warning signs of addiction; information about how alcohol and specific drugs affect the mind and body;
- CO 2. Learn how to be supportive during the detoxification and rehabilitation process.
- CO3. Focus on substance abuse education- is teaching individuals about drug and alcohol abuse and how to avoid, stop, or get help for substance use disorders.
- CO 4. Understand that substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: AECD-1161**  
**DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION (COMPULSORY)**

**L-T-P: 2-0-0**  
**Credits: 2**  
**Examination Time: 3 Hours**

**Max. Marks: 50**  
**Practical:40**  
**CA: 10**

Instructions for the Paper Setter:

Eight questions of equal marks (8 marks each) are to be set, two in each of the four Sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any Section.

### **UNIT-I**

**Meaning of Drug Abuse:** Meaning, Nature, Types and Extent of Drug Abuse in India and Punjab.

**Consequences of Drug Abuse for:**

Individual : Education, Employment, Income.

Family : Violence.

Society : Crime , Social Disorganization

### **UNIT-II**

**Prevention of Drug abuse:** Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

**School:** Counselling, Teacher as role-model. Parent-teacher-Health Professional Coordination, Random testing on students

**Media:** Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program

### **UNIT-III**

**Management of Drug Abuse**

**Medical management:** medication for treatment and to withdrawal effects.

### **UNIT-IV**



**Psychiatric Management:** Counselling, Behavioural and Cognitive therapy.

**Social Management:** Family, Group therapy and Environmental Intervention.

**Legislation:** NDPs act, Statutory warnings, Policing of Borders, Checking supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials

**Suggested Readings:**

1. Ahuja, Ram (2003), Social Problems in India, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. The Drug Crime Connection. Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) Drug epidemic among Indian Youth, New Delhi: Mittal Pub.
5. Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: Rawat Publication.
6. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
7. Sain, Bhim 1991, Drug Addiction Alcoholism, Smoking obscenity New Delhi: Mittal Publications.
8. Sandhu, Ranvinder Singh, 2009, Drug Addiction in Punjab: A Sociological Study. Amritsar: Guru Nanak Dev University.
9. Singh, Chandra Paul 2000. Alcohol and Dependence among Industrial Workers: Delhi: Shipra.
10. Sussman, S and Ames, S.L. (2008). Drug Abuse: Concepts, Prevention and Cessation, Cambridge University Press.

**Bachelor of Computer Applications Semester – I**  
**(Session 2023-24)**  
**COURSE CODE: SECF-1492**  
**FOUNDATION COURSE**

Course Title: Foundation Course

Nature of Course: Audit Course (Value Added) Course Duration: 30 hours

Course intended for: Semester I students of undergraduate degree programs of all 25 streams.

Course Credits: 2 Course Code: SECF-I

#### PURPOSE & AIM

This course has been designed to strengthen the intellectual foundation of all the new entrants in the college. One of the most common factors found in the students seeking admission in college after high school is the lack of an overall view of human history, knowledge of global issues, peaks of human intellect, social/political thinkers and inventors & discoverers who have impacted human life. For a student, the process of transition from school to college is full of apprehension and skepticism regarding adapting themselves to new system. The Foundation Programme intends to bridge the gap between high school and college education and develop an intellectual readiness and base for acquiring higher education.

#### INSTRUCTIONAL OBJECTIVES

- to enable the students to realise their position in the whole saga of time and space
- to inculcate in them an appreciation of life, cultures and people across the globe
- to promote, in the students, an awareness of human intellectual history
- to make them responsible and humane world citizens so that they can carry forward the rich legacy of humanity

#### LEARNING OUTCOMES

After the completion of this Audit course, students will be able to

- learn how past societies, systems, ideologies, governments, cultures and technologies were built, how they operated, and how they have changed
- understand how the rich history of the world helps us to paint a detailed picture of where we stand today

- understand the Vedic theism, Upanishads Philosophy and doctrines of Jainism, Buddhism and Sikhism
- acquire knowledge of women rights and courage to face day to day challenges
- acknowledge the changes in society, religion and literature in the renaissance period and the importance of empathy and compassion for humanity
- learn about the prominent Indians (Men and Women) who contributed significantly in freedom struggle, education, economic development and in the formation and evolution of our nation
- understand meaning of race and how that concept has been used to justify exclusion, inequality, and violence throughout history and the origin of civil right movements to fight for equality, liberty and fraternity
- critically evaluate the socio-political and economic issues at global level and its implications in the present
- upgrade and enhance learning technological skills and striking a balance between technology and their well being
- take pride in learning the saga of Indian Past Culture and Heritage
- understand the rich legacy of KMV and its progressive endeavours

MODULE	TITLE	CONTACT HOURS
I	Introduction and Initial Assessment	2
II	The Human Story	3
III	<i>The Vedas</i> and the Indian Philosophy	2.5
IV	The Journey of Woman The Story and the Dream	2.5
V	Changing Paradigms in Society, Religion & Literature	2.5
VI	Makers of Modern India	2.5
VII	Racism: Story of the West	2.5
VIII	Modern World at a Glance: Political & Economic Perspective	2.5
IX	Technology Vis a Vis Human Life	2.5
X	My Nation My Pride	2.5
XI	The KMV Experience	2.5
XII	Final Assessment, Feedback and Closure	2.5

## **EXAMINATION**

- Total Marks: 50 (Final Exam: 40; Internal Assessment: 10)
- Final Exam: multiple choice quiz. Marks – 40; Time: 1 hour
- Internal Assessment: 10 (Assessment: 05; Attendance: 05)
- Comparative assessment questions (medium length) in the beginning and close of the programme. Marks: 5; Time: 0.5 hour each at the beginning and end.
- Total marks: 50 converted to grade for final result
- Grading system: 90% marks & above: A grade  
80% - 89% marks : B grade  
70% - 79% marks : C grade  
60% - 69% marks : D grade  
50% - 59% marks : E grade  
Below 50% marks : F grade (Fail - must give the exam again)

## **SYLLABUS**

### **Module I Being a Human: Introduction & Initial Assessment**

- Introduction to the programme
- Initial Assessment of the students through written answers to a couple of questions

### **Module 2 The Human Story**

- Comprehensive overview of human intellectual growth right from the birth of human history
- The wisdom of the Ancients
- Dark Middle Ages
- Revolutionary Renaissance
- Progressive modern times
- Most momentous turning points, inventions and discoveries

### **Module 3 The Vedas and the Indian Philosophy**

- Origin, teachings and significance of The Vedas
- Upanishads and Puranas
- Karma Theory of The Bhagwad Gita
- Main tenets of Buddhism & Jainism
- Teachings of Guru Granth Sahib

### **Module 4 Changing Paradigms in Society, Religion & Literature**

- Renaissance: The Age of Rebirth
- Transformation in human thought
- Importance of humanism
- Geocentricism to heliocentricism
- Copernicus, Galileo, Columbus, Darwin and Saint Joan
- Empathy and Compassion

### **Module 5 Woman: A Journey through the Ages**

- Status of women in pre-vedic times
- Women in ancient Greek and Roman civilizations
- Women in vedic and ancient India
- Status of women in the Muslim world
- Women in the modern world
- Crimes against women
- Women labour workforce participation
- Women in politics
- Status of women- our dream

### **Module 6 Makers of Modern India**

- Early engagement of foreigners with India
- Education: The first step to modernization
- Railways: The lifeline of India
- Raja Ram Mohan Roy, Gandhi, Nehru, Vivekanand, Sardar Patel etc.
- Indira Gandhi, Mother Teresa, Homai Vyarawala etc.
- The Way Ahead

### **Module 7 Racism: Story of the West**

- European beginnings of racism
- Racism in the USA - Jim Crow Laws
- Martin Luther King Jr. and the battle against racism
- Apartheid and Nelson Mandela
- Changing face of racism in the modern world

### **Module 8 Modern World at a Glance: Political & Economic Perspective**

- Changing world order
- World War I & II

- UNO and The Commonwealth
- Nuclear Powers; Terrorism
- Economic Scenario: IMF, World Bank
- International Regional Economic Integration

### **Module 9 Technology Vis a Vis Human Life**

- Impact of technology on modern life
- Technological gadgets and their role in our lives
- Technology and environment
- Consumerism and materialism
- Psychological and emotional consequences of technology
- Harmonizing technology with ethics and humaneness

### **Module 10 My Nation My Pride**

- Indian Past Culture and Heritage
- Major Discoveries ( Medicinal and Scientific)
- Vedic Age
- Prominent Achievements
- Art, Architecture and Literature

### **Module 11 The KMV Experience**

- Rich Legacy of KMV
- Pioneering role in women emancipation and empowerment
- KMV Contribution in the Indian Freedom Struggle
- Moral, cultural and intellectual heritage of KMV
- Landmark achievements
- Innovative initiatives; international endeavours
- Vision, mission and focus
- Conduct guidelines for students

### **Module 12 Final Assessment, Feedback & Closure**

- Final multiple choice quiz
- Assessment through the same questions asked in the beginning
- Feedback about the programme from the students

- Closure of the programme

**PRESCRIBED READING**

- The Human Story published by Dawn Publications

**Bachelor of Computer Applications Semester – II**  
(Session 2023-24)  
**COURSE CODE: BCAL–2421**  
**PUNJABI (COMPULSORY)**

**COURSE OUTCOMES**

- CO1: 'ਆਤਮ ਅਨਾਤਮ' ਪੁਸਤਕ ਦੇ ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਕਹਾਣੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।
- CO2: 'ਗੱਦ ਪ੍ਰਵਾਹ' (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ) ਪੁਸਤਕ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।
- CO3: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ-ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।
- CO4: ਸੰਖੇਪ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਮੇਂ ਅਤੇ ਮਿਹਨਤ ਦੀ ਬੱਚਤ ਕਰਨ ਬਾਰੇ ਦੱਸਣਾ ਹੈ। ਮੁਹਾਵਰੇ / ਅਖਾਣ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ। ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।



**Bachelor of Computer Applications Semester – II**  
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**COURSE CODE: BCAL–2421**  
**PUNJABI (COMPULSORY)**

**L-T-P: 4-0-0**

**Credits: 4**

**ਸਮਾਂ : 3 ਘੰਟੇ**

**Maximum Marks : 100**

**Theory : 80**

**CA : 20**

**ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ**

**ਯੂਨਿਟ-I**

ਆਤਮ ਅਨਾਤਮ(ਕਹਾਣੀਭਾਗ),(ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ,ਅੰਮ੍ਰਿਤਸਰ।

(ਉਜਾੜ,ਦਲਦਲ ਕਹਾਣੀਆਂ ਸਿਲੇਬਸ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹੈ)

(ਵਿਸ਼ਾ-ਵਸਤੂ, ਸਾਰ)

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**ਯੂਨਿਟ-II**

ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤ੍ਰ ਤੇ ਹਲਕੇ ਲੇਖ), ਸੰਪਾ.ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ, ਜਸਪਾਲ ਸਿੰਘ ਰੰਧਾਵਾ,ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ,ਅੰਮ੍ਰਿਤਸਰ।

(ਸਾਰ,ਵਿਸ਼ਾ ਵਸਤੂ)

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**ਯੂਨਿਟ-III**

(ੳ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਨਾਂਵ,ਪੜਨਾਂਵ,ਕਿਰਿਆ,ਵਿਸ਼ੇਸ਼ਣ

(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ: ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ,ਸੰਬੰਧਕ,ਯੋਜਕ,ਵਿਸਮਿਕ

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**ਯੂਨਿਟ-IV**

(ੳ) ਸੰਖੇਪ ਰਚਨਾ

(ਅ) ਮੁਹਾਵਰੇ / ਅਖਾਣ

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**ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ**

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-Dਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।

2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-2031**  
**BASIC PUNJABI**

**Course outcomes**

**CO1:**ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦਾ ਮੌਕਾ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤਰਾਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਮਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

**CO2:** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ ਦੀ ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

**CO3:** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

**CO4:** ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਚੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

**Bachelor of Computer Applications Semester – II**  
(Session 2023-24)  
**COURSE CODE: BCAL-2031**  
**BASIC PUNJABI**

L-T-P: 4-0-0

Credits: 4

ਸਮਾਂ : 3 ਘੰਟੇ

Maximum Marks: 100

Theory : 80

CA : 20

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ) ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ।

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ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ)

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ਯੂਨਿਟ-III

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ।

16 ਅੰਕ

ਯੂਨਿਟ-IV

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ।

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ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਸੈਕਸ਼ਨ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 16 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-2431**  
**PUNJAB HISTORY AND CULTURE**

**COURSE OUTCOMES**

After completing Semester II and course on Ancient History of Punjab students will be able to understand:

CO 1: The reasons and impact of Alexander's invasions and to comprehend various factors leading to rise and fall of empires and emergence of new dynasties and their administration specifically of Maurya rule in general and Ashok in particular

CO 2: art and architecture of Gupta period and the Indo-Greek style of architecture under Gandhara School

CO 3: To have an insight into the socio-cultural history under Harshvardhan and punjab under the stated period

CO 4: To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Greek Art and Architecture in Punjab

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-2431**  
**PUNJAB HISTORY AND CULTURE**

**L-T-P: 4-0-0**

**Credits: 4**

**Examination Time: 3 Hours**

**Max. Marks: 100**

**Theory: 80**

**CA: 20**

**Instructions for the Paper Setter:**

1. Question paper shall consist of four Units
2. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
3. Candidates shall attempt 5 questions in 1000 words, by at least selecting One Question from each Unit and the 5<sup>th</sup> question may be attempted from any of the four Units.
4. Each question will carry 16 marks

**Unit-I**

1. Alexander's Invasion's and Impact
2. Administration of Chandragupta Maurya with special reference to reforms introduced by Ashok

**Unit-II**

3. The Kushans: Gandhar School of Art
4. Gupta Empire: Golden Period-Social and cultural life, Art and Architecture)

**Unit-III**

5. The Punjab under Harshvardhana- Society and Religion During the time of Harshvardhana
6. Socio-cultural History of Punjab from 7<sup>th</sup> to 1000 A.D.

**UNIT IV**

7. Development of Languages and Education with Special reference to Taxila
8. Development to Art and Architecture

## **Suggested Readings**

- B.N. Sharma: *Life in Northern India*, Delhi. 1966
- Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
- L. M Joshi (ed), *History and Culture of the Punjab*, Art-I, Punjabi University, Patiala, 1989 (3<sup>rd</sup> edition)
- L.M. Joshi and Fauja Singh (ed.), *History of Punjab*, Vol. I, Punjabi University, Patiala, 1977.



**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAM–2102**  
**COMMUNICATION SKILLS IN ENGLISH**

**Course Outcomes:**

At the end of this course, the students will develop the following skills:

**CO 1:** Enhancement of listening skills with the help of listening exercises based on conversation, news and TV reports

**CO 2:** The ability of Note-Taking to be able to distinguish the main points from the supporting details and the irrelevant information from the relevant one

**CO 3:** Improvement of speaking skills enabling them to converse in a specific situation

**CO 4:** Acquisition of knowledge of phonetics which will help them in learning about correct pronunciation as well as effective speaking

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAM–2102**  
**COMMUNICATION SKILLS IN ENGLISH**

**L-T-P: 3-0-2**  
**Credits: 4**  
**Examination Time: (3+3) Hours**

**Max. Marks: 100**  
**Theory: 50**  
**Practical: 30**  
**CA: 20**

**Instructions for the paper setter and distribution of marks:**

**The question paper will consist of four sections. The candidate will have to attempt five questions in all selecting one from each section and the fifth question from any of the four sections. Each question will carry 10 marks. Each question can be sub divided into two parts.**

**(10 x 5 = 50)**

**Section-A:** Two questions of theoretical nature will be set from Unit I.

**Section-B:** Two questions will be given to the students from Unit II.

**Section-C:** Two questions will be given from Unit III.

**Section-D:** Two questions will be set from Unit IV

**Unit I**

**Listening Skills:** Barriers to listening; effective listening skills; feedback skills.

**Activities:** Listening exercises – Listening to conversation, News and TV reports

**Unit II**

Attending telephone calls; note taking and note making

**Activities:** Taking notes on a speech/lecture

**Unit III**

**Speaking and Conversational Skills:** Components of a meaningful and easy conversation, understanding the cue and making appropriate responses, forms of polite speech, asking and providing information on general topics

- Activities:** 1) Making conversation and taking turns
- 2) Oral description or explanation of a common object, situation or concept

### **Unit IV**

The study of sounds of English, Stress

Situation based Conversation in English Essentials of Spoken English

**Activities:** Giving Interviews

#### **Recommended Books:**

1. *Oxford Guide to Effective Writing and Speaking* by John Seely.
2. *Business Communication* by Sethi, A and Adhikari, B., McGraw Hill Education 2009.
3. *Communication Skills* by Raman, M. & S. Sharma, OUP, New Delhi, India (2011).
4. *A Course in Phonetics and Spoken English* by J. Sethi and P.V. Dhamija, Phi Learning.

### **PRACTICAL / ORAL TESTING**

**Marks: 30**

#### **Course Contents:**

1. Oral Presentation with/without audio visual aids
2. Group Discussion
3. Listening to any recorded or live material and asking oral questions for listening comprehension

#### **Questions:**

1. Oral Presentation will be of 5 to 7 minutes duration. (Topic can be given in advance or it can be of student's own choice). Use of audio-visual aids is desirable.
2. Group discussion comprising 8 to 10 students on a familiar topic. Time for each group will be 15 to 20 minutes.

## **Bachelor of Computer Applications Semester – II**

**(Session 2023-24)**

### **COURSE CODE: BCAL–2113 COMPUTER ARCHITECTURE**

#### **Course Outcomes:**

After passing course the student will be able to:

CO1: Comprehend various registers and its micro-operations, computer instructions and basic design of computer.

CO2: Comprehend various instruction formats and addressing modes.

CO3: Identify the hierarchy of computer memory and their organization.

CO4: Comprehend I/O organization, Pipeline and vector processing.

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–2113**  
**COMPUTER ARCHITECTURE**

**L-T-P: 3-1-0**  
**Credits: 4**  
**Examination Time: 3 Hours**

**Max. Marks: 100**  
**Theory: 80**  
**CA: 20**

**Instructions for Paper Setter -**

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT-I**

**Information Representation:** Register Transfer, Various Registers, Implementing Common Bus Using Multiplexers: Logical; Arithmetic & Shift Micro-operations.

**Basic Computer Design** Instruction Codes, Interfacing various Registers, Computer Instructions, Timing Signals, Instruction Cycle, Design of a Basic Computer.

**UNIT-II**

**CPU Design** Stack Organized CPU, Instruction Formats, Addressing Modes, Program Control, Hardwired & Micro programmed (Wile's Design) Control Unit.

**UNIT-III**

**Memory Organization** Memory Hierarchy, Designs & Concepts of Main Memory, Auxiliary Memory, Associative Memory, Cache and Virtual Memory.

**UNIT-IV**

**I/O Organization** I/O Interface, Modes of Transfer, Program Interrupt, DMA & I/O Processor.

**Pipeline & Vector Processing** Parallel Processing Pipelining, Parallel & Distributed Computers, SISD, SIMD & MISD, MIMD Machines, Vector Processing.

**References/Textbooks:**

1. Morris M. Mano, Computer System Architecture, Prentice Hall, 1992.
2. J.P. Hayes, Computer Architecture and Organization, McGraw Hill, 1998.
3. J.L. Hennessy D.A Patterson, and D. Goldberg, Computer Architecture A Quantitative Approach, Pearson Education Asia, 2006.

**Bachelor of Computer Applications Semester – II**

**(Session 2023-24)**

**COURSE CODE: BCAL–2114**

**DATABASE MANAGEMENT SYSTEM**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Understand data, database and database models.

CO2: Apply relational algebra and relational calculus for performing queries of different types.

CO3: Gain knowledge of normalization and transaction control.

CO4: Create, manage and access database using SQL and PL/SQL.

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–2114**  
**DATABASE MANAGEMENT SYSTEM**

**L-T-P: 3-1-0**  
**Credits: 4**  
**Examination Time: 3 Hours**

**Max. Marks: 100**  
**Theory: 80**  
**CA: 20**

**Instructions for Paper Setter -**

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT-I**

Introduction: Introduction to Database, Database management system. Structure of database system, Advantages and Disadvantages, Schema, levels of database system, Relational model, Hierarchical model, Network model.

E-R diagram: Entity set, Relationship set, Attributes, Generalization, Participation, different keys used in a relational system.

**UNIT-II**

DBA, responsibilities of DBA, Codd's Rules, Relational Algebra: Selection, Projection, Rename, Union, Intersection, Set Difference, Cartesian Product.

Introduction to SQL, Data types, Constraints, DDL: Creating Table, Deleting Table, Alter Table (Renaming table, changing name of column, adding/dropping column, adding dropping constraint, changing type of column).

**UNIT-III**

DML: Insertion, Deletion and Update. Inserting multiple records, Deleting and update records having reference to another table (Cascade/Restrict/Set Null).

Querying Data: Operators, Where, Order By, Group By and having clause. Aliases, Handling NULL values, displaying distinct records, built in Functions, Aggregate Functions and Wildcards.

**UNIT-IV**

DCL: Creating and managing users/roles, Grant and Revoke commands.

Introduction to Normalization – need and advantages of normalization, Role of Candidate Key, 1NF, 2NF, 3NF, BCNF, 4NF.

Query Processing and Optimization: Steps and Components. Views in SQL.

**References/Textbooks:**

1. C.J. Date, An Introduction to Database Systems, Pearson Education 2000.
2. H. F. Korth&Silverschatz, A., Database System Concepts, Tata McGraw Hill, 2010.
3. Elmasri & Navathe, Fundamentals of Database Systems, Addison-Wesley, 2011.
4. Hoffer, Prescott, Mcfadden, Modern Database Management, Paperback International, 2012.
5. Martin Gruber, Understanding SQL, BPB Publication, 1994.

Note: The latest editions of the books should be followed.



**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–2115**  
**INTRODUCTION TO OBJECT ORIENTED PROGRAMMING-I**

**Course Outcomes:**

After the completion of this course, the student will be able to:

CO1: Comprehend the concepts of Object-Oriented Programming Paradigm.

CO2: Identify the use of access specifiers and different types of constructors in class.

CO3: Apply function and operator overloading.

CO4: Comprehend different types of inheritance and polymorphism.

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**

**COURSE CODE: BCAL–2115**

**INTRODUCTION TO OBJECT ORIENTED PROGRAMMING- I**

**L-T-P: 4-0-0**

**Credits: 4**

**Examination Time: 3 Hours**

**Max. Marks: 100**

**Theory: 80**

**CA: 20**

**Instructions for Paper Setter -**

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT -I**

**Programming Paradigms:** Introduction to the object oriented approach towards programming by discussing Traditional, Structured Programming methodology.

**Objects & Classes:** Object Definition, Instance, Encapsulation, Data Hiding, Abstraction, Inheritance, Messages, Method, Polymorphism, Classes.

**UNIT -II**

**Object Oriented Programming using C++:** Characteristics of OOP, Overview of C++, I/O using cout and cin, Objects and Classes, Member functions and data, private & public, constructor & destructor, Constructor Overloading, Types of Constructors.

**UNIT -III**

**Function Overloading:** Function Overloading, Default Arguments, Ambiguity in Function Overloading.

**Operator Overloading:** Overloading unary and binary operators, Type Conversion using Operator Overloading

**UNIT-IV**

**Inheritance:** Concept of inheritance, Base & derived classes, Access Specifiers, Class Hierarchies, Types of Inheritance with examples.

**Virtual Functions and Polymorphism:** Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples, templates, class templates.

**References / Textbooks:**

1. HerberthtSchildt, C++: The Complete Reference, Tata McGraw-Hill Education India, 4th Edition.
2. Bjarne Stroustrup, The C++ Programming Language, Addison – Wesley Professional (2013), 4th Edition

3. Bjarne Stroustrup, A Tour of C++ (C++ In-Depth Series), Addison – Wesley Professional (2018), 2nd Edition
4. G.S. Baluja, C++ Program Design (w/CD), Khanna Book Publishing Company (2015), 2nd edition.
5. Stanley Lippman, Josee Lajoie, Barbara Moo, C++ Primer, Addison-Wesley Professional (2012), 5th edition.
6. Richard Johnsonbaugh and Martin Kalin, Object Oriented Programming in C++, Pearson Education (1999), 2<sup>nd</sup> Edition

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAP–2116**  
**LAB ON DATABASE MANAGEMENT SYSTEM**

**L-T-P: 0-0-2**  
**Credits: 2**  
**Examination Time: 3 Hours**

**Max. Marks: 50**  
**Practical:40**  
**CA: 10**

Lab based on course code BCAL-2114

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: BCAP–2117**  
**LAB ON OBJECT ORIENTED PROGRAMMING - I**

**L-T-P: 0-0-2**  
**Credits: 2**  
**Examination Time: 3 Hours**

**Max. Marks: 50**  
**Practical:40**  
**CA: 10**

Lab based on course code BCAL-2115

**Bachelor of Computer Applications Semester – II**  
**(Session 2023-24)**  
**COURSE CODE: SECM-2502**  
**MORAL EDUCATION**

**L-T-P: 2-0-0**  
**Credits: 2**  
**Examination Time: 3 Hours**

**Max. Marks: 50**  
**Theory:40**  
**CA: 10**

**Course Duration:** 30 hours

**Course intended for:** Semester II students of undergraduate degree programmes of all streams.

**Course Credits:** 2

**Course Code:** SECM- 2502

**Course Description:-**

The Moral Education Programme has been introduced as part of the curriculum of second semester of all streams of undergraduate degree programmes. Moral education has been added as a compulsory subject, the awards of which will not be incorporated in the total marks but will earn the student two credits.

**Expectations:-**

This academic input has been taken up to sensitize the students to the need of a morally upright character in the present times

**EXAMINATION**

- **Total Marks: 25 (Final Exam: 20; Internal Assessment: 5)**
- Final Exam: multiple choice Questions Marks-20; Time: 1 hour
- Internal Assessment: 5 (Assessment: 3; Attendance: 2)
- Total marks: 25 converted to grade for final result
- Grading system: 90% marks & above: A grade

80%-89% marks	: B grade
70%-79% marks	: C grade
60%-69% marks	: D grade
50%-59% marks	: E grade
Below 50% marks	: F grade (Fail - must give the exam again)

# **SYLLABUS**

## **Module I: Introduction**

- What is Moral Education
- Need content and purpose
- Vedic values
- Character building

## **Module II: The Self and You**

- Understanding the Self-Self awareness, fighting the five evils (lust, anger, attachment, ego and greed), Self growth.
- Personal ethics
- Aspiration v/s ambition, self- seeking v/s selflessness
- Self-Discipline

## **Module III: The Family and You**

- Importance of family- the basic unit of human interaction.
- Generation gap
- Relation with peer group, sibling, elders,

## **Module IV: The Society and You**

- Social responsibility
- Our rights and duties
- Civic sense
- Opposite sex relations
- Globalization and IT boom - Cell phone menace
- Drug abuse
- Sex abuse

## **Module V: The Nation and You**

- International peace and brotherhood
- Saving the environment

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-3111**  
**FOUNDATION OF DATA SCIENCE**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Comprehend basic concepts of Data Science along with its components and process.

CO2: Interpret various data collection tools.

CO3: Analyze different application areas and challenges of data science.

CO4: Work with Power BI for visualization of data.



**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-3111**  
**FOUNDATION OF DATA SCIENCE**

Examination Time: 3 Hours

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT-I**

**Introduction to Data Science:** Meaning, Evolution, Need and Components of Data Science, Data Science Process. Difference between Data Science and Business Intelligence.

**Understanding Data Analytics:** Need, Characteristics – Four Vs.

**UNIT- II**

**Data Collection:** Data Collection sources, Data collection methods – Primary data collection methods – Interviews, Questionnaires and Secondary data collection methods. Data collection Tools – online and offline.

**Types of Data Analytics:** Descriptive, Predictive, Diagnostic, Prescriptive.

**UNIT-III**

**Domain Data Analysis:** Exploratory and Confirmatory data analysis

Application Areas and Challenges in Data Science. Technical Skills of a data Analyst.

Job Roles in Data Science.

**UNIT-IV**

**Data Storytelling:** Benefits and Best Practices, data visualization.

**Introduction to Power BI:** Need, Features, Components, Architecture and Services. Creating a Sample dashboard.

**References / Textbooks:**

1. Qurban A Memon, Shakeel Ahmed, Data Science: Theory, Analysis and Applications, CRC Press (2019), 1<sup>st</sup> edition.
2. Ulrika Jagare, Data Science for Dummies, Wiley (2019)
3. Joel Grus, Data Science from Scratch, O'Reilly (2015), 1<sup>st</sup> Edition
4. Pulkit Bansal, Data Science Uncovering the Reality, Notion Press (2020), 1<sup>st</sup> Edition
5. Davy Cielen, Arno D.B.Meysman, Mohamed Ali, Introducing Data Science: Big Data, Machine Learning, Dreamtech Press (2016)
6. Roger Peng, Elizabeth Matsui, The Art of Data Science, Lulu.com (2016)
7. Ramesh Sharda, DursunDelen and Efraim Turban, Business Intelligence, Analytics and Data Science: A Managerial Perspective, Pearson Education (2019), 4<sup>th</sup> Edition
8. Reza Rad, Basics of Power BI Modeling, Radacad Publications (September (2020)), 1<sup>st</sup> Edition
9. Reza Rad, Leila Etaati, Getting started with Power Query in Power BI and Excel, Radacad Publishers, Edition One.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–3112**  
**DATABASE MANAGEMENT SYSTEM**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Understand data, database and database models.

CO2: Apply relational algebra and relational calculus for performing queries of different types.

CO3: Gain knowledge of normalization and transaction control.

CO4: Create, manage and access database using SQL and PL/SQL.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–3112**  
**DATABASE MANAGEMENT SYSTEM**

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

Examination Time:3 Hours

**Instructions for Paper Setter -**

Eight questions of equal marks (12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT-I**

**Introduction:** Introduction to Data, Field, Record, File, Database, Database management system. Structure of database system, Advantages and Disadvantages, levels of database system, Relational model, Hierarchical model, Network model, comparison of models, E-R diagram, different keys used in a relational system, DBA, responsibilities of DBA.

**UNIT-II**

Codd's Rules, Relational Algebra, Relational Calculus - Domain and Tuple relational calculus, Query Processing and Optimization.

**UNIT-III**

**Introduction to normalization** – need and advantages of normalization, 1NF, 2NF, 3NF, BCNF, 4NF and 5NF, Introduction to transaction management – ACID Properties, concurrency control and its management, protection, security, recovery of database.

**UNIT-IV**

**SQL:** Introduction to SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Built in Functions, Views, Security amongst users, sequences, Indexing,

**Introduction to PL/SQL:** Cursors – Implicit and Explicit, Procedures, Functions, Packages, Database Triggers.

**Big Data:** Introduction to Big Data and Analytics, Introduction to NoSQL.

**References/Textbooks:**

6. C.J. Date, An Introduction to Database Systems, Pearson Education 2000.
7. H. F. Korth & Silverschatz, A., Database System Concepts, Tata McGraw Hill, 2010.
8. Elmasri & Navathe, Fundamentals of Database Systems, Addison-Wesley, 2011.
9. Hoffer, Prescott, Mcfadden, Modern Database Management, Paperback International, 2012.

10. Martin Gruber, *Understanding SQL*, BPB Publication, 1994.

11. Shashank Tiwari, *Professional NOSQL*, Wiley, 2015.

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE:BCAL–3113**  
**COMPUTATIONAL PROBLEM SOLVING**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Comprehend basics of Python programming like operators, data types, control structures, etc.

CO2: Apply list and dictionaries for handling and accessing data through iterations.

CO3: Implement various built-in and user defined function to solve mathematical problems.

CO4: Comprehend Object Oriented Programming and modules in Python.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–3113**  
**COMPUTATIONAL PROBLEM SOLVING**

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

Examination Time:3 Hours

**Instructions for Paper Setter -**

Eight questions of equal marks(12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT-I**

**Introduction to Python:** Process of Computational Problem Solving, Python Programming Language

**Data and Expressions:** Literals, Variables and Identifiers, Operators, Expressions, Statements and Data Types

**Control Structures:** Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, Debugging

**UNIT-II**

**Lists:** List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python

**Dictionaries:** Dictionaries and Files, Looping and dictionaries, advanced text parsing

**Iteration:** While statement, definite loops using For, Loop Patterns, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion

**UNIT-III**

**Functions:** Fundamental Concepts, Program Routines, Flow of Execution, Parameters & Arguments

**Files:** Opening Files, Using Text Files, String Processing, Exception Handling

**UNIT-IV**

**Objects and Their Use:** Introduction to Object Oriented Programming

**Modular Design:** Modules, Top-Down Design, Python Modules

**Using Databases and SQL:** Database Concepts, SQLite Manager Firefox Add-on, SQL basics summary, basic Data Modeling, Programming with multiple tables.

## References/Textbooks:

1. Charles Severance, Python for Informatics, Version 0.0.7.
2. Charles Dierbach, Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, Wiley Publications, 2012.
3. Gutttag John V, Introduction To Computation And Programming Using Python, PHI, 2014.
4. Jeeva Jose and Sojan P. Lal, Introduction to Computing & Problem Solving Through Python, Khanna Publishers, 2015.
5. Mark J. Guzdial, Introduction to Computing and Programming in Python, Pearson Education, 2015.
6. Kenneth Lambert, Fundamentals of Python, Course Technology, Cengage Learning, 2015
7. Mark Lutz, Learning Python, O'Reilly Media, 2013

Note: The latest editions of the books should be followed.



**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAP–3114**  
**LAB ON COMPUTATIONAL PROBLEM SOLVING**

**Max. Marks: 50**  
**Practical: 40**  
**CA: 10**

**Examination Time:3**  
**Hours**

Lab based on computational problem solving.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: BCAP–3115**  
**LAB ON DATABASE MANAGEMENT SYSTEM**

**Max. Marks: 25**  
**Practical: 20**  
**CA: 5**

Examination Time:3 Hours

Lab based on Database Management System.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: AECE-3221**  
**ENVIRONMENTAL STUDIES (COMPULSORY)**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Understand the concept and need of environmental education.

CO2: Understand the role of an individual in conservation of natural resources.

CO3: Learn about role of major Eco system and their conservation.

CO4: Develop desirable attitude,value and respect for protection of Biodiversity.

CO5: Learn about the control measure of pollution and solid waste management.

CO6: Understand the role of different agencies in the protection of environment.

CO7: Knowledge regarding welfare programmes and Human rights.

CO8: Knowledge about the applied value of environmental studies.

**Bachelor of Computer Applications Semester – III**  
**(Session 2023-24)**  
**COURSE CODE: AECE-3221**  
**ENVIRONMENTAL STUDIES (COMPULSORY)**

Examination Time: 3 Hours

**Max. Marks: 100**  
**Theory: 60**  
**Project Report: 20**  
**CA: 20**

**Instructions for the Paper Setter:**

The question paper should carry 60 marks. The structure of the question paper being:

**Part-A**, Short answer pattern – 20 marks. Attempt any five questions out of seven. Each question carries 4 marks. Answer to each question should not exceed 2 pages

**Part-B**, Essay type with inbuilt choice – 40 marks. Attempt any five questions out of eight. Each question carries 8 marks. Answer to each question should not exceed 5 pages.

**Unit 1**

**The multidisciplinary nature of environmental studies**

Definition, scope and importance, Need for public awareness

**Unit 2**

**Natural Resources: Renewable and non-renewable resources:**

Natural resources and associated problems.

- (a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- (b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflict over water, dams-benefits and problems.
- (c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- (d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case

studies.

(e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

(f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

### **Unit 3**

#### **Ecosystems**

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

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### **Unit 4**

#### **Biodiversity and its conservation**

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

### **Unit 5**

#### **Environmental Pollution**

- Definition

- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

## **Unit 6**

### **Social Issues and the Environment**

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

## **Unit 7**

### **Human Population and the Environment**

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare

- Role of Information Technology in Environment and Human Health
- Case Studies

## Unit 8

### Field Work

- Visit to a local area to document environmental assets river/forest/grassland/hill/mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

### References:

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
2. Down to Earth, Centre for Science and Environment, New Delhi.
3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.
4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.
7. Sharma, J. P., Sharma, N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.
8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.
9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi
10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**

**COURSE CODE: SECP-3512**  
**PERSONALITY DEVELOPMENT**

**Course Title: Personality Development**

**Nature of course: Audit Course ( Value added)**

**Course duration: 30 hours**

**Course intended for: Sem. III students of all streams (UG Only)**

**Course credits: 2 (For Credit based Continuous Evaluation Grading System)**

**Course Code: SECP-3512**

**PURPOSE**

To enhance holistic development of students and improve their employability skills.

**INSTRUCTIONAL OBJECTIVES**

- To re-engineer attitude and understand its influence on behaviour.
- To develop inter-personal skills and be an effective goal-oriented team player.
- To develop communication and problem solving skills.
- To develop professionals with idealistic, practical and moral values.

**CURRICULUM**

**Course credits-2**

**Total Contact Hours-30**

<b>MODULE</b>	<b>TITLE</b>	<b>HOURS</b>
<b>1.</b>	<b>Positive Thinking &amp; Attitude</b>	<b>2</b>
<b>2.</b>	<b>Self Analysis &amp; Self Confidence</b>	<b>2</b>
<b>3.</b>	<b>Communication Skills</b>	<b>10</b>
	<ul style="list-style-type: none"><li>• <b>Basic Communication Skills</b></li><li>• <b>Body Language</b></li><li>• <b>Interview Skills</b></li><li>• <b>Résumé Writing</b></li><li>• <b>Group Discussion</b></li><li>• <b>Telephone and E-mail etiquette</b></li></ul>	



	<ul style="list-style-type: none"> <li>• <b>Public Speaking</b></li> </ul>	
<b>4.</b>	<b>Time Management</b>	<b>2</b>
<b>5.</b>	<b>Stress and Conflict Management</b>	<b>2</b>
<b>6.</b>	<b>Physical Fitness and Personal Grooming</b>	<b>2</b>
<b>7.</b>	<b>Appropriateness of Apparel</b>	<b>2</b>
<b>8.</b>	<b>Social Etiquette</b>	<b>2</b>
<b>9.</b>	<b>Decision Making process &amp; Problem Solving Skills</b> <ul style="list-style-type: none"> <li>• <b>Leadership Skills</b></li> <li>• <b>Goal Setting</b></li> <li>• <b>Motivation</b></li> </ul>	<b>5</b>
<b>10.</b>	<b>Closure</b>	<b>1</b>

### **Examination**

1. Total marks of the course will be 25 (Final Examination: 20 Marks; Internal Assessment: 5Marks)
2. The pattern of the final examination will be multiple choice questions. 20 multiple choice type questions will be set. Each question will carry 1 mark (20 X 1 = 20). The student will have to attempt all the questions. Total time allotted will be 1 hour.
3. Internal Assessment will consist of Attendance: 2 Marks, Viva: 3 Marks.( Total:5 Marks)

### **SYLLABUS**

#### **MODULE 1: Positive Thinking & Attitude**

- Factors Influencing Attitude
- Essentials to develop Positive Attitude
- Challenges & Lessons from Attitude

#### **MODULE 2: Self Analysis & Self Confidence**

- Who am I
- Importance of Self Confidence
- SWOT Analysis

## **MODULE 3: Communication Skills**

### **(i) Basic Communication Skills**

- Speaking Skills
- Listening Skills
- Presentation Skills

### **(ii) Body Language**

- Forms of Non-Verbal Communication
- Interpreting Body Language clues
- Effective use of Body Language

### **(iii) Interview Skills**

- Type of Interviews
- Ensuring success in job interviews
- Appropriate use of Non-verbal Communication

### **(iv) Résumé Writing**

- Features
- Different types of Résumés for Different Posts

### **(v) Group Discussion**

- Differences between Group Discussion and Debate
- Importance of Group Discussion
- Group Decision
- Ensuring Success in Group Discussions

### **(vi) Telephone & E-mail Etiquette**

- Telephone etiquette
- E-mail etiquette

### **(vii) Public Speaking**

- Introductory Speech

- Informative Speech
- Persuasive Speech
- Extempore Session

#### **MODULE 4: Time Management**

- Importance of Time Management
- Values & Beliefs
- Goals and Benchmarks – The Ladders of Success
- Managing Projects and Commitments
- Prioritizing your To-do's
- Getting the results you need

#### **MODULE 5: Stress & Conflict Management**

- Introduction to Stress
- Types of Stressors
- Small Changes and Large Rewards
- Stress Prevention
- Overcoming Unhealthy Worry
- Stress at Home and Workplace
- Dealing with Frustration and Anger
- Stress reducing Exercises
- Understanding Conflicts
- Violent and Non-violent Conflicts
- Source of Conflict
- Structural and Cultural Violence

#### **MODULE 6: Physical Fitness and Personal Grooming**

- Fitness and Exercise
- Balanced & Healthy Diet
- Skin Care & Hair Care
- Make-up Skills

## **MODULE 7: Appropriateness of Apparel**

- Apparel & Personality
- Psycho-social aspects of Apparel
- Style-tips for smart dressing & effective use of design elements

## **MODULE 8: Social Etiquette**

- Civic Sense
- Workplace Skills
- Meeting and greeting people
- Table Setting and Table Manners

## **MODULE 9: Decision Making Process and Problem Solving Skills**

- Anatomy of a Decision
- How to use Problem solving steps and Problem solving tools
- How to distinguish root causes from symptoms to identify right solution for right problems
- How to improve Problem solving and Decision making by identifying individual problem solving styles
- The Creative process for making decisions
- Tools to improve creativity
- Implementing the Decision – Wrap up

### **(i) Leadership Skills**

- Handling Peer Pressure and Bullies
- Team Work
- Decision Making
- Taking initiatives

### **(ii) Goal Setting**

- Wish List
- SMART Goals
- Blueprint for Success
- Short-term, Long-term, Life-term Goals

### **(iii) Motivation**

- Factors of motivation
- Self Talk
- Intrinsic & Extrinsic Motivators

### **Books Recommended**

1. Everyday Etiquette: How to navigate 101 common and uncommon social situations by Patrica Rossi.
2. Building career success skills by Theodore Pietrzak, Mike Fraum.
3. Creative problem solving: An Introduction by Donald J Treffinger, Scott G.Isaksen, K. Brian.
4. Positive Psychology: The science of happiness and human strengths by Alan Carr
5. Speech craft: An Introduction to public speaking by Brent C Oberg.
6. Effective communication skills: The foundations for change by John Nielsen.
7. Conflict Resolution smarts: How to communicate, negotiate promise and more by Matt Doeden.
8. What you wear can change your life by Trinnywoodall, Susannah Constantine.
9. World Famous Personalities by Dr. B.R. Kishore.
10. Personality Development by John Aurther.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–4111**  
**DATA STRUCTURES**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Analyze complexity of algorithms to determine their efficiency.

CO2: Comprehend various hashing method, sorting and searching algorithms.

CO3: Comprehend various operations of stack and queue along with different scenarios.

CO4: Comprehend advanced data structures such as tree and graph.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–4111**  
**DATA STRUCTURES**

Examination Time: 3 Hours

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT-I**

**Data Structure:** Introduction, Common Operations on Data Structures, Algorithm Complexity, Big O Notation, Time – Space tradeoff between Algorithms.

**Arrays:** Array Defined, Representing Arrays in Memory, Operations, Bubble Sort, Linear Search, Binary Search and Multidimensional Arrays.

**UNIT-II**

**Hashing:** Hash Functions: Division Method, Mid-Square Method & Folding Method and Collision Resolution methods.

**Linked Lists:** Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists.

**UNIT-III**

**Stacks:** Description of STACK structure, Implementation of Stack in memory, Applications of Stacks – Converting Arithmetic expression from infix notation to reverse polish and their subsequent evaluation and Quicksort method.

**Queues:** Description of queue structure, Implementation of queue in memory, Description of priorities of queues, Dequeues.

## UNIT-IV

**Trees:** Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory and Heapsort.

**Graphs:** Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, PathMatrix and Graph traversal techniques - DFS, BFS.

### References / Textbooks:

1. Seymour Lipschutz, Data Structures with C (Schaum's Outline Series), McGraw Hill Education (2017), 1<sup>st</sup> Edition
2. Reema Thareja, Data Structures Using C, Oxford Publication (2014), 2<sup>nd</sup> Edition
3. Sahni Horowitz, Fundamentals of Data Structures in C (2008), 2<sup>nd</sup> Edition
4. Narasimha Karumanchi, Data Structures and Algorithms made easy, Careermonk Publications (2016), 5<sup>th</sup> Edition
5. S.K. Srivastava and Deepali Srivastava, Data Structures through C, BPB Publications (2004)
6. YedidyahLangsam, Augestein and Tanenbaum, Data Structures using C and C++, Pearson Education India (2015), 2<sup>nd</sup> Edition



**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-4112**  
**INFORMATION SYSTEMS**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Identify the importance of data and information management.

CO2: Comprehend development life cycle of information systems.

CO3: Identify the components and applications of Management Information System and Decision Support System.

CO4: Identify the role of Information System in organizations: Accounting Information systems, Inventory control systems and Marketing systems.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**

**COURSE CODE: BCAL–4112**  
**INFORMATION SYSTEMS**

Examination Time: 3 Hours

**Max. Marks: 75**

**Theory: 60**

**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT - I**

**Basic Concepts: Systems,** Data, Information, Knowledge, Database Management System. Information needs of business, Sources of information – Primary and Secondary. Online access and capture.

**UNIT - II**

**Information System:** Introduction to System, types of Systems, Information System and its types.

**Planning Information systems:** System Development Life Cycle and Rapid Application Development. Types of Decisions - Structured, Unstructured and Semi Structured.

**UNIT - III**

**Management Information System:** Need, Components and Functions of MIS. Planning of MIS, Implementation and Controlling MIS.

**Decision Support System:** Meaning, Characteristics, Types and Components of DSS.

**UNIT - IV**

**Transaction Processing Systems:** Meaning, Characteristics, Components of TPS. Difference between MIS, DSS and TPS.

**Case studies of the Information System:** Accounting Information systems, Inventory control systems & Marketing systems.

**References / Textbooks:**

1. Mohammad Azam, Management Information Systems, Tata McGraw Hill Education (2012).

2. Nagpal D.P., Textbook on Management Information System, S.Chand& Company (2011).
3. R. Kelly, Rainer and Casey G. Cegielski, Introduction to Information Systems, Wiley (2015), 4<sup>th</sup> Edition
4. C. Laudon Kenneth and P. Laudon Jane, Management Information System, Pearson Education (2018), 15<sup>th</sup> Edition.
5. Brien, Marakas and Behl, Management Information Systems, McGraw Hill Education (2017), 10th Edition
6. Suman Mann SeemaShokeen, Pooja Singh, Information Systems, Dreamtech Press (2020)

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-4113**  
**INTERNET APPLICATIONS**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Comprehend basics of internet and email along with their effective use.

CO2: Apply HTML for development of static webpages.

CO3: Implement styling and behavior in webpages through the use of CSS.

CO4: Create and manage websites through the application of WordPress content management system.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-4113**  
**INTERNET APPLICATIONS**

Examination Time: 3 Hours

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

**UNIT-I**

**Internet:** Introduction, working, applications, DNS, IP addresses, Search engine and its working. File Transfer Protocol (FTP), Telnet, HTTP, WWW and its working.

**E-Mail Basics:** Introduction, Advantage and disadvantage, Protocols and structure of an e-mail message, working of e-mail (sending and receiving messages).

**UNIT-II**

**HTML:** Introduction, Features, Program Structure, Headings, Paragraph, Styling, Formatting, Hyperlink, Image, Table, List, Frame, Block, Entities, Form, Form elements, Audio, Video, Embed YouTube Video.

**UNIT-III**

**CSS:** Introduction, Advantages and Limitations, types, selector, colors, background, box model, text, font, display, position, z-index, float, clear, rounded corners, 2D Transformations, Transitions and Animations.

**UNIT-IV**

**WordPress:** Installation, Configuration, Management - Managing Posts, comments, pages, categories, Plugins, Widgets, Tags, images, users, Import and export content, Updating WordPress. Useful Plugins – MailChimp, Creating Gallery, Stripe Checkout, Verified Authorship, Google Maps, Google Analytics.

**References / Textbooks:**

1. Anshuman Sharma, Fundamentals of Internet Applications, Lakhanpal Publications, 2016.
2. Ikvinderpal Singh, Internet Applications, Khanna Book Publishing Company, 1<sup>st</sup> Edition, 2011
3. P. Rizwan Ahmed, Internet & its Applications, Margham Publications, 2013.
4. Douglas E. Comer, Computer Networks and Internet with Internet Applications, Pearson, 4<sup>th</sup> Edition, 2008.
5. Satish Jain/Vineeta Pillai, Wireless Communication & Networking made Simple, BPB Publishers, 2007.
6. Laura Lerney, Rafe Colburn, Jennifer Kyrnin, Mastering HTML, CSS & Javascript Web Publishing, BPB Publishers, 1st Edition, 2016.
7. Lisa Sabin-Wilson, WordPress for Dummies, Wiley, 8<sup>th</sup> Edition, 2021.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–4114**  
**COMPUTER ARCHITECTURE**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Comprehend various registers and its micro-operations, computer instructions and basic design of computer.

CO2: Comprehend various instruction formats and addressing modes.

CO3: Identify the hierarchy of computer memory and their organization.

CO4: Comprehend I/O organization, Pipeline and vector processing.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAL–4114**  
**COMPUTER ARCHITECTURE**

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

Examination Time: 3 Hours

**Instructions for Paper Setter -**

Eight questions of equal marks (12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT-I**

**Information Representation:** Register Transfer, Various Registers, Implementing Common Bus Using Multiplexers: Logical; Arithmetic & Shift Micro-operations.

**Basic Computer Design** Instruction Codes, Interfacing various Registers, Computer Instructions, Timing Signals, Instruction Cycle, Design of a Basic Computer.

**UNIT-II**

**CPU Design** Stack Organized CPU, Instruction Formats, Addressing Modes, Program Control, Hardwired & Microprogrammed (Wilhe's Design) Control Unit.

**UNIT-III**

**Memory Organization** Memory Hierarchy, Designs & Concepts of Main Memory, Auxiliary Memory, Associative Memory, Cache and Virtual Memory.

**UNIT-IV**

**I/O Organization** I/O Interface, Modes of Transfer, Program Interrupt, DMA & I/O Processor.

**Pipeline & Vector Processing** Parallel Processing Pipelining, Parallel & Distributed Computers, SISD, SIMD & MISD, MIMD Machines, Vector Processing.

**References/Textbooks:**

4. Morris M. Mano, Computer System Architecture, Prentice Hall, 1992.
5. J.P. Hayes, Computer Architecture and Organization, McGraw Hill, 1998.
6. J.L. Hennessy D.A Patterson, and D. Goldberg, Computer Architecture A Quantitative Approach, Pearson Education Asia, 2006.



**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAP-4115**  
**LAB ON DATA STRUCTURES**

Examination Time: 3 Hours

**Max. Marks: 50**  
**Practical: 40**  
**CA: 10**

Lab based on Data Structures.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: BCAP-4116**  
**LAB ON INTERNET APPLICATIONS**

Examination Time: 3 Hours

**Max. Marks: 50**  
**Practical: 40**  
**CA: 10**

Lab Based on Use of Internet and Web Designing.

**Bachelor of Computer Applications Semester – IV**  
**(Session 2023-24)**  
**COURSE CODE: SECS - 4116**  
**SOCIAL OUTREACH**

Course Title: Social Outreach Programme

Course Duration: 30 hours

Course intended for: Semester IV students of Undergraduate Degree Programmes of all streams.

Course Credits: 2

Course Code: SECS- 4522

**Course Objectives:**

- The Social outreach program proposes to equip the students for community upliftment work.
- It will strive to prepare citizens who will make a marked difference in society.
- The students will be provided with numerous opportunities to build their knowledge and skills on the fundamental values of social fairness and compassion.
- The program will focus on integrating academic work with community services

**Learning Outcomes:**

On successful completion of this course, student will be able to

- connect the knowledge gained in the classroom with real-life situations by getting hands-on experience through community services.
- get an opportunity to engage in social service. It will also foster the development of civic responsibility.
- reflect upon larger issues that affect communities through readings and discussions.
- integrate academic learning and community engagement through practical fieldwork.
- develop awareness, knowledge, and skills for working with diverse groups in society.

**Curriculum**

Course Code: SECS- 4522

Total Contact Hours: 30

MODULE	TITLE	HOURS
1.	Sensitizing the students towards Social Issues	4 Hrs.
2.	Collaborating with NGO	2 Hrs.
3.	Social Extension in villages & literacy drive	2 Hrs.
4.	NSS, Swatch Bharat, Unnat Bharat	2 Hrs.
5.	Environmental issues/NCC	2 Hrs.
6.	Empathy Corner	2 Hrs.
7.	Food Adulteration and Medical Camps	2 Hrs.
8.	Medical Camp/ Adulteration Camp / Science Awareness Camp in Villages	2 Hrs.
	Total Hours	18 Hrs.

**Time given to students for Project Work:**

**12 Hrs**

- A. Students will be introduced to various broad areas in which they can take up projects
- B. The students are expected to be actively engaged in working on any of the project areas listed below as volunteers. Evaluation will be based on consistency, commitment, and results achieved in the areas taken up.

**List of Projects Areas under Social Outreach Programmes:**

- Working as Motivators under the Swatch Bharat Campaign of the Government
- Literacy drive:
  - (I). Teaching in the Charitable School Adopted by the College
  - (ii). Work on projects undertaken by the Rotary Club of Jalandhar for inducting students into child labor Schools.
- Enroll as NSS Volunteers for various projects (Cleanliness, Women's health awareness)
- Counseling camps in villages
- Tree plantation
  - (i) Maintaining the trees in the park adopted by the college. in Vikas Puri, Jalandhar
  - (ii) Enroll in projects undertaken by JCI Jalandhar City
- Enroll in the Gandhian Studies Centre as a Student Volunteer for surveys in villages.
- Women Empowerment Programmes in collaboration with JCI Jalandhar Grace
- Generating awareness on voting among the youth.

- Drug Abuse (Generate awareness among the school children)
- Environment Awareness (Reduce Pollution)
- Old Age Homes/Orphanages
- Operating the Empathy Corner outside the college gate.
- Disaster Management/Relief Work

### **Evaluation /Assessment:**

At the beginning of the semester, the students after enrolling for one of the Projects offered will be given deadlines for the project.

- Students will be responsible for recording their hours of service with the faculty and also map the progress of their subjects (children, old people, saplings, etc.).
- The respective departments will monitor the involvement of their students.
- The students will submit a report of the project taken up by them.
- There will be no written examination, the students will be given a grade based on the evaluation of the projects by an evaluation committee, comprising of the Dean of the respective streams, the Head, and two teachers of the concerned department.

### **Total Marks: 25 (Internal Assessment: 5 and Project Report: 20)**

Internal Assessment based on the attendance during the Lectures

Project Report based on the work done by the student.

### **Total marks: 25 converted to grade for final result**

#### **Grading system:**

90% marks & above: A grade

80% - 89% marks: B grade

70% - 79% marks: C grade

60% - 69% marks: D grade

50% - 59% marks: E grade

Below 50% marks: F grade (Fail – To repeat Project)

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5111**  
**COMPUTER NETWORKS**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Describe the functions of each layer in OSI and TCP/IP model.

CO2: Identify various network devices and the layers on which it operates.

CO3: Describe the Data Link layer and Network layer design issues.

CO4: Comprehend the functioning of Transport layer and Application layer protocols.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5111**  
**COMPUTER NETWORKS**

Examination Time: 3 Hours

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks(12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT – I**

**Introduction:** Basic concepts of Computer Networks, Basic Components of a Network, Network types and topologies.

**Models:** OSI Reference Model, TCP/IP Model, Comparison between TCP/IP and OSI model

**Transmission Media:** Coaxial Cable, Twisted Pair Cable, Fiber Optics & Satellites.

**UNIT – II**

**Network Devices:** Hub, Switch, Repeaters, Bridges, Routers, Gateways.

**Introduction to Analog and Digital Transmission:** Introduction to Analog and Digital Signals, Modems, Types of modems, pulse code modulation. Multiplexing and its types, Circuit Switching, Packet Switching, Message Switching.

**Data Link Layer Design Issues:** Error Control, Flow Control, Error Detection & Correction

**UNIT - III**

**Media Access Protocols:** CSMA, CSMA/CD, CSMA/CA.

**IEEE standards 802:** Token Ring, FDDI.

**Design Issues of Network Layer:** Routing Algorithm- Distance Vector Routing, Link state Routing and The Dijkstra Algorithm, IPv4: Notation, Classful addressing, Header Format, IPv6 addressing.

#### **UNIT – IV**

**Design issues of Transport Layer:** Introduction to TCP, TCP Services, features, TCP segment format, Introduction to UDP, User Datagram Format, UDP Operation

**Network Security and Privacy:** Introduction to Cryptography, types of Key.

#### **References/Textbooks:**

1. Tanenbaum , A.S., Computer Networks, Prentice Hall, 2010.
2. Stallings, W., Local Networks: An Introduction: Macmillan Publishing Co, 1990.
3. Stallings W., Data and Computer Communications, Prentice Hall, 2011.
4. Forouzan B., Data Communications and networking, McGraw Hill, 2007.

Note: The latest editions of the books should be followed.



**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5112**  
**WEB TECHNOLOGIES (FULL STACK DEVELOPMENT)**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Apply JavaScript code for interaction with content of webpage.

CO2: Develop user interface of single page website through React.

CO3: Implement Node.js code for back-end support and database connectivity with MongoDB.

CO4: Implement Express code for managing HTTP responses, sessions, forms and database connectivity.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5112**  
**WEB TECHNOLOGIES (FULL STACK DEVELOPMENT)**

Examination Time: 3 Hours

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT-I**

**JavaScript:** Introduction to JavaScript, Features, Data types (Number, Strings, Boolean, Objects), Operators (Arithmetic, Assignment, Comparison, Logical), Functions, Looping Statement (For loop, While loop), Conditional Statement, Arrays, JavaScript objects, Host objects.

**DOM:** Introduction, Methods, Accessing HTML and CSS, Events, Event Listener, Nodes and Collection.

**BOM:** Window, Screen, History, Navigation.

**ES6:** Variables, Arrow functions, Class.

**UNIT-II**

**React:** Introduction, Features, Render HTML, JSX.

**React Components:** Class, Function, Constructor, Nested Component, Lifecycle of React Components

**Data Handling:** Props, Form and Event Handling in React, Fetching Data through API.

**UNIT-III**

**Node:** Introduction to Node, Modules -NPM, HTTP and URL Module.

Node File System, User Authentication, Event Handling, File Upload, Email Handling. Using MongoDB with Node.

## UNIT-IV

**Express:** Introduction, Working with HTTP methods (GET and POST), Routing, URL Building, and Templating.

**Express Middleware:** Application-level, Router-level, Error-Handling, Built-in, Third Party. Managing Cookies and Sessions, Connecting with MongoDB.

### References / Textbooks:

1. Jeffery C Jackson, “Web Technology- A Computer Science perspective”, Pearson Education, 1<sup>st</sup> Edition, 2007.
2. Chris Bates, “Web Programming- Building Internet Applications”, Wiley India, 1<sup>st</sup> Edition, 2006.
3. Achyut S Godbole and Atul Kahate, “Web technologies”, Tata McGraw Hill, 1<sup>st</sup> Edition, 2008.
4. Web Technologies, Uttam K Roy, Oxford University Press, 1<sup>st</sup> Edition, 2010.
5. Kirupa Chinnathambi, Learning React, Addison-Wesley Professional, 1<sup>st</sup> Edition, 2019.

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL - 5113**  
**OPERATING SYSTEM**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Describe, contrast and compare different types of Operating System.

CO2: Understand the process synchronization policies and CPU scheduling.

CO3: Describe and analyze the memory management and its allocation policies.

CO4: Comprehend about the application of virtual memory and disk scheduling.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5113**  
**OPERATING SYSTEM**

Examination Time: 3 Hours

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks(12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT – I**

**Introduction:** Definition, Batch Processing, Multi programming, Time Sharing Systems, Multitasking, multiprocessing, Parallel Systems, Distributed Systems, Real–time Systems.

**Processes:** Process Concepts, Process Scheduling, Threads, System Calls.

**UNIT - II**

**CPU–Scheduling:** Basic concepts, Scheduling Criteria, Scheduling Algorithms, Algorithm Evaluation: Response Time, Turnaround Time, Waiting Time, Throughput.

**Process Synchronization:** Critical-section problem, semaphores and its Types (Binary and Counting), Classical problems of synchronization and their solutions.

**UNIT – III**

**Deadlocks:** System Model, Deadlock characterization, Methods for handling deadlocks, Deadlocks Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Approach to Deadlock handling.

**Memory Management:** Background, Logical v/s Physical Address Space, Swapping, Continuous Allocation, Paging, Segmentation.

**UNIT – IV**

**Virtual Memory:** Background, Page Fault, Demand Paging, Page Replacement, Page Replacement Algorithms, Thrashing.

**Secondary Storage Structures:** Disk structures, Disk scheduling.

**References/Textbooks:**

1. AviSilberschatz, Peter Baer Galvin, Greg Gagne, Operating System Concepts, Wiley, 2013.
2. Charles Crowley, Operating Systems: A Design-Oriented Approach, Tata McGraw Hill, 2001.
3. Deitel, An Introduction to Operating Systems, Second Edition, Addison Wesley, 1990.
4. William Stallings, Operating Systems: Internals and Design Principles, Pearson Education Limited, 2014.

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5114**  
**OBJECT ORIENTED PROGRAMMING-II**

**Course Outcomes:**

After passing this course the student will be able to:

CO1: Understand the basic fundamentals of Object Oriented Programming using Java.

CO2: Identify the use of inheritance, interfaces and packages in Java.

CO3: Identify the utilization of multithreading and Exception handling.

CO4: Connect Java application with an existing database and access it through JDBC.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAL-5114**  
**OBJECT ORIENTED PROGRAMMING-II**

**Examination Time: 3 Hours**

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT - I**

**JAVA BASICS:** Introduction to Java, Features of Java, Structure of a Java Program, primitive data types, keywords, Identifiers, literals, operators and comments.

**OOPS:** Object oriented concepts Advantage of OOPs, Objects and Classes,

**Strings:** Declaring a string, Immutable string, string comparison, concatenation, substring, string tokenizer.

**UNIT - II**

**Inheritance:** what is inheritance, types of inheritance, static import, Method overloading, method overriding, Runtime polymorphism, super keyword, final keyword

**Interfaces:** Abstract classes, declaring an interface, relationship between classes and interface, interface inheritance, implementing multiple inheritance using interface

**Packages:** what are packages, advantages of using packages, accessing package from another package, subpackaging, running packages by setting path and classpath.

**UNIT - III**

**Exception Handling:** what is exception handling, checked and unchecked exceptions, try-catch, try-multiple catch, try – finally, throw and throws

**Multithreading:** What is a thread, life cycle of a thread, creating a thread, sleeping a thread, joining a thread, thread priority

**UNIT - IV**

**Input/Output:** File input stream, File output stream, Buffered output stream, Buffered input



stream.

**Database connectivity:** JDBC, JDBC drivers, steps to connect to the database, connectivity with MYSQL.

**References/Textbooks:**

1. HurbertSchildt, Java The Complete Reference, Tata McGraw Hill, 2014.
2. Y. Daniel Liang, Introduction to Java Programming, Pearsons Publications, 2015.
3. Jon Duckett, Beginning Web Programming with HTML, XHTML, and CSS, John Wiley & Sons, 2004.
4. Thomas A. Powell, HTML & CSS: The Complete Reference, McGraw-Hill, 2010.

Note: The latest editions of the books should be followed.

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAP-5115**  
**LAB ON OBJECT ORIENTED PROGRAMMING-II**

Examination Time: 3 Hours

**Max. Marks: 50**  
**Practical: 40**  
**CA: 10**

Lab Based on Object Oriented Programming - II

**Bachelor of Computer Applications Semester – V**  
**(Session 2023-24)**  
**COURSE CODE: BCAP-5116**  
**LAB ON FULL STACK DEVELOPMENT**

Examination Time: 3 Hours

**Max. Marks: 50**  
**Practical: 40**  
**CA: 10**

Lab Based on Web Technologies.

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: SECJ - 5551**  
**JOB READINESS COURSE**

**Course Title: JOB READINESS COURSE**

**Course Duration: 30 hours**

**Course intended for:** Semester V students of undergraduate degree programmes of all streams.

**Course Credits: 2**

**Course Code: SECJ - 5551**

**Objectives of the Course:**

It is a specialized programme structured to prepare the students job ready and adaptable for their professional career. The students will be able to set goals for themselves with the exposure provided to them during the course. The main purpose of the course is to enhance their life skills, increase their capacities for adapting to professional environment and teaming up. They will learn the importance and art of synergising with others and working in teams. It will help them to realize their potential and set high but realistic goals.

**Learning Outcomes:**

On successful completion of this course, students will be able to:

- Build confidence and have positive attitude
- Have an overview and exposure of job markets to realize their potential
- Get inputs on critical thinking and leadership qualities
- Comprehend how speaking skills can help them excelling in job interviews
- Acquire knowledge of team work
- Share their ideas in the group and improve their listening skills
- Learn skills of self-introduction to represent themselves and to write a well drafted resume

## CURRICULUM

Course Code: SECJ-5551

Course Credits: 2

Contact Hours: 30

MODULE	TITLE	HOURS
I.	Goal Setting and Ambition	2 Hours
II.	Positive Attitude and Self Confidence	2 Hours
III.	Career Options and Job Markets	2 Hours
IV.	Resume Building	4 Hours
V.	Presentation Skills	4 Hours
VI.	Public Speaking	4 Hours
VII.	E-Mail Etiquette and Telephonic Conversation	2 Hours
VIII.	Organizational Structure and Corporate Jargons	2 Hours
IX.	Personal Interviews	4 Hours
X.	Final Assessment, Feedback and Closure	4 Hours

## EXAMINATION

- **Total Marks:** 25 (Final Exam: 20; Internal Assessment: 5)
- **Final Exam:** Multiple Choice Quiz; Marks – 20; Time: 1 hour
- **Internal Assessment:** 5 (Assessment: 3; Attendance:2)

Comparative assessment questions (medium length) in the beginning and close of the programme. Marks: 3; Time: 0.5 hour each at the beginning and end.

- **Total marks:** 25 converted to grade for final result
- **Grading system:**

90.1% -100% marks: O grade

80.1% - 90% marks: A+ grade

70.1% - 80% marks: A grade

60.1% - 70% marks: B+ grade

50.1% -60% marks: B grade

45%- 50 % marks: C grade

35%-44.9% marks: P grade

Below 35% marks: F grade

Absent: Ab

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAL - 6111**  
**COMPUTER GRAPHICS**

**Course Outcomes:**

After passing this course the student will be able to:

CO1: Comprehend the background mechanism involved in display devices like CRT, LCD, LED, etc.

CO2: Comprehend basic concepts involved in drawing basic shapes.

CO3: Implement various algorithms and techniques to clip and transform various objects and viewports.

CO4: Identify the importance of viewing and projections.

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAL - 6111**  
**COMPUTER GRAPHICS**

**Examination Time: 3 Hours**

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT – I**

**Overview of Graphics System:** Computer Graphics and their applications.

**Display Devices:** CRT Monitors, Random Scan, Raster Scan, LED & LCD Monitors, Virtual Reality and Workstation.

**UNIT – II**

**Elementary Drawing:** Points and various line drawing Algorithms and their comparisons and Circle & Ellipse Generating Algorithms.

**UNIT – III**

**Two Dimensional Transformations:** Basic Transformations - Translation, Rotation, Scaling, Reflection and Shearing. Matrix representation of Basic Transformations, Homogenous Coordinates and Composite transformations.

**Windowing and Clipping:** Windowing Concepts, Clipping and its Algorithms and Window-to-View Port Transformations.

**UNIT - IV**

**Three Dimensional concepts:** 3D Coordinate Systems, 3D Transformations - Translation, Rotation, Scaling, Reflection and Shearing,

**Projection:** Parallel Projections, Perspective Projection, Vanishing Point, View Confusion and Topological Distortion.

**References / Textbooks:**

1. Hearn D, Baker P, Computer Graphics, PHI Eastern Economy (2002), 2<sup>nd</sup> Edition.



2. Zhigang Xiang, Plastock R, Kalley G, Computer Graphics, McGraw Hill Education (2006), 2<sup>nd</sup> Edition.
3. Rajesh K. Maurya, Computer Graphics with Virtual Reality System, Wiley (2018), 3<sup>rd</sup> Edition
4. Udit Aggarwal, Computer Graphics, SK Katria and Sons (2013), Reprint 2013 Edition
5. Pardeep K. Bhatia, Computer Graphics, Dreamtech Press (2019)
6. Andries Van Dam, Foley, Steven, John, Computer Graphics Principles and Practice, Pearson Education India (2002), 2<sup>nd</sup> Edition

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAL - 6112**  
**SOFTWARE ENGINEERING**

**Course Outcomes:**

After passing course the student will be able to:

CO1: Identify and evaluate various process model used for development of software.

CO2: Analyze gathered data to form requirement specifications and formulate design from this requirement specifications..

CO3: Comprehend activities involved in software project management.

CO4: Apply testing techniques on basic building blocks and control structure of a software.

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAL - 6112**  
**SOFTWARE ENGINEERING**

**Examination Time: 3 Hours**

**Max. Marks: 75**  
**Theory: 60**  
**CA: 15**

**Instructions for Paper Setter -**

Eight questions of equal marks (12 marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

**UNIT – I**

**Introduction to Software:** Definition, Software characteristics, Software Components, Software Applications.

**Introduction to Software Engineering:** Definition, Software Engineering Paradigms, Waterfall Model, Prototyping Model, Incremental Model, Spiral Model.

**UNIT – II**

**Requirement, Analysis and Specifications** – Problem Analysis, Requirement Gathering Tools (Questionnaire, Interview, Group Discussion, and Observation), SRS Document and its Characteristics, Structured Analysis: Data Flow Diagram, Data Dictionaries.

**Software Design** – Characteristics, Structure Chart, Coupling, Cohesion, Functional Independence.

**UNIT – III**

**Project Management** – SPMP Document, Size Estimation (LOC, Function Point), COCOMO (Basic, Intermediate and Complete COCOMO), Effort Estimation, Development Time Estimation, Project Scheduling (Work Breakdown Structure, Activity Network, Critical Path Method, Gantt Chart, PERT Chart), Staffing.

Risk management and Control, software Maintenance and its types, Software Reuse, Software Reliability.

**UNIT – IV**

**Coding**– Coding Standards and Guidelines, Code Walkthrough, Code Inspection.

**Testing** - Test Case Design, Unit Testing, Black Box Testing (Equivalence Class Partitioning, Boundary Value Analysis), White Box Testing (Statement, Branch, Condition, Path Coverage), Cyclomatic Complexity, Integration Testing, System Testing (Alpha, Beta, Acceptance), Validation And Verification, Performance Testing.

**References / Textbooks:**

1. Roger S. Pressman, Software Engineering, McGraw-Hill series (2014) , 8<sup>th</sup> Edition.
2. Pankaj Jalote, A concise introduction to Software Engineering, Wiley (2008).
3. Rajib Mall, Fundamentals of Software Engineering, PHI Learning (2018), 5<sup>th</sup> Revised Edition
4. Kogent Learning Solutions Inc., Software Engineering, Dreamtech Press (2012)
5. Bruce R. Maxim, Roger S. Pressman, Software Engineering: A Practitioner's Approach, McGraw Hill Education (2019), Eighth edition
6. David A. Gustafson, Schaum's Outline of Software Engineering, McGraw Hill (2020), 1<sup>st</sup> Edition

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAP - 6113**  
**LAB ON COMPUTER GRAPHICS**

**Max. Marks: 50**  
**Practical: 40**  
**CA: 10**

**Examination Time: 3 Hours**

Lab Based on Applications of Computer Graphics in C / C++.

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAD - 6114**  
**PROJECT**

**Course Outcomes:**

After passing this course the student will be able to:

CO1: Apply software engineering paradigms like Process Model, Analysis, Design, Testing, etc.

CO2: Work within defined time and resource constraints while developing real world application.

CO3: Address the Real World Problems and find the required solution.

CO4: Demonstrate an ability to work in teams and manage the conduct of the research study.

CO5: Formulate and propose a plan for creating a solution.

**Bachelor of Computer Applications Semester – VI**  
**(Session 2023-24)**  
**COURSE CODE: BCAD - 6114**  
**PROJECT**

**Examination Time: 3 Hours**

**Max. Marks: 300**

**Practical: 240**

**CA: 60**

**General Instructions:**

1. A software module based on the work done in the entire course is to be developed.
2. Candidates have to submit one hard copy and two CDs/DVDs of documentation which shall be kept with the HoD in the college only. Further, supervisor/guide shall forward one copy of DVD/CD containing all the documentation files of the students (file name to be saved as Rollno\_of\_the\_student.pdf) to the COE Office. The Covering letter (duly signed by the guide and Head of the department) should contain the following information: Candidate name, Candidate Roll no, Project Title of the student and .pdf file name of her project documentation.
3. The software module / website maybe developed in groups, consisting of at most two students in a group.
4. The college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original and authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per rules.
5. The evaluation of the module shall be done as per the common ordinance of UG/PG under semester system.