FACULTY OF LIFE SCIENCES

SYLLABUS

of

Bachelor of Science (Bio-Technology) Three Year Degree Programme

Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme

(Semester: I-II)

(Under Credit Based Continuous Evaluation Grading System)

Session: 2024-25

The Heritage Institution
KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)

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

PSO1: gain and apply knowledge of biotechnology and science concepts to solve problems related to field of environment and biotechnology.

PSO2: design, perform experiments, analyse, and interpret data for investigating complex problems in the field of biotechnology and allied fields.

PSO3: apply ethical principles and commit to professional ethics and responsibilities and norms of the biotechnological practices.

PSO4: design and develop solution to biotechnology problems by applying appropriate tools while keeping in mind safety factor for environment and society.

PSO5: to undertake any responsibility as an individual and as a team in a multidisciplinary environment.

PSO6: contribute to the biotechnology and allied fields in designing, developing, and providing solutions for product/processes/technology development.

PSO7: able to justify societal, health, safety and legal issues and understand the responsibilities in biotechnological engineering practices.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF FOUR YEAR DEGREE PROGRAMME

Bachelor of Science (Bio-Technology) Three Year Degree Programme

Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme

Session: 2024-25

Semester-I

Course No.	Course Title	Course Type	Hours per week	Credits L-T-P	Total Credits	L	P	CA	Total Marks
BBTL -1421 BBTL -1031 BBTL -1431	Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History and Culture	C	4-0-0	4-0-0	4	70	-	30	100
BBTM-1102	Communication Skills in English-I	AEC	3-0-2	3-0-1	4	50	20	30	100
BBTM-1083	Biochemistry-I	DSC	4-0-2	4-0-1	5	50	20	30	100
BBTM-1074	Botany-I	DSC	4-0-2	4-0-1	5	50	20	30	100
BBTM-1345	General Microbiology-I	DSC	4-0-2	4-0-1	5	50	20	30	100
VACF-1491	*Foundation Course	VAC	2-0-0	2-0-0	2	35	-	15	50
	Total Credits				25				

[1] Special Course in lieu of Punjabi (Compulsory)

[2] Special Course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab

***Credits of these papers will not be added towards SGPA/CGPA and only grades will be provided**.

DSC: **Discipline Specific Courses**

AEC: Ability Enhancement Course

C: Compulsory Course

VAC: Value Added Course

Kanya Maha Vidyalaya, Jalandhar (Autonomous)
SCHEME AND CURRICULUM OF EXAMINATIONS OF FOUR YEAR DEGREE PROGRAMME
Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Session: 2024-25
Semester-II

Course No.	Course Title	Course Type	Hours per week	Credits L-T-P	Total Credits	L	P	CA	Total Marks
BBTL -2421 BBTL -2031 BBTL -2431	Punjabi (Compulsory) [1]Basic Punjabi [2]Punjab History and Culture	C	4-0-0	4-0-0	4	70	-	30	100
BBTM-2102	Communication Skills in English-II	AEC	3-0-2	3-0-1	4	50	20	30	100
BBTM - 2063	Genetics	DSC	4-0-2	4-0-1	5	50	20	30	100
BBTM-2484	Cell Biology	DSC	4-0-2	4-0-1	5	50	20	30	100
BBTM-2065	Fundamentals of Biotechnology	DSC	4-0-2	4-0-1	5	50	20	30	100
BBTM-2060	Industrial Biotechnology -I	SEC	2-0-2	2-0-1	3	50	20	30	100
VACD-2161	[*]Drug Abuse: Problem, Management and Prevention (Compulsory)	VAC	2-0-0	2-0-0	2	35	-	15	50
	Total Credits				28				

[1] Special Course in lieu of Punjabi (Compulsory)
[2] Special Course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab
[*]Credits of these papers will not be added towards SGPA/CGPA and only grades will be provided.

DSC: **Discipline Specific Courses**

AEC: Ability Enhancement Course

C: Compulsory Course

VAC: Value Added Course

SEC: Skill Enhancement Course

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTL-1421
Course Title: Punjabi (Compulsory)

COURSE OUTCOMES

CO1: ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਕਵਿਤਾ ਤੇ ਕਹਾਣੀ 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: ਮੰਚ ਘਰ ਪੁਸਤਕ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਗਿਆਨ ਦੇਣਾ ਹੈ।

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

CO4: ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ:ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਵਿਚਲਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ ਚਿੰਨ੍ਹ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨ ਪ੍ਰਣਾਲੀ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTL-1421

Course Title: Punjabi (Compulsory)

ਸਮਾਂ ਤਿੰਨ ਘੰਟੇ **Maximum Marks: 100**
L-T-P **Theory: 70**
4-0-0 **CA: 30**

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। ਏਰ 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 14 ਅੰਕ ਹਨ।

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

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਕਵਿਤਾ ਤੇ ਕਹਾਣੀ (ਸੰਪਾ. ਡਾ. ਰਮਿੰਦਰ ਕੌਰ, ਡਾ. ਮੇਘਾ ਸਲਵਾਨ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ। (ਕਵਿਤਾ ਭਾਗ)

(ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ/ਵਿਸ਼ੇਵਸਤੂ/ਸਾਰ)

14 ਅੰਕ

ਯੂਨਿਟ-II

ਮੰਚ ਘਰ

ਡਾ. ਕੁਲਦੀਪ ਸਿੰਘ ਧੀਰ, ਡਾ. ਹਿਰਦੇਜੀਤ ਸਿੰਘ ਭੋਗਲ (ਸੰਪਾ.), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ,ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ ਵਸਤੂ,ਸਾਰ, ਪਾਤਰ ਚਿਤਰਨ) 14 ਅੰਕ

ਯੂਨਿਟ-III

(ਓ) ਪੈਰ੍ਹਾ ਰਚਨਾ

(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ। 14 ਅੰਕ

ਯੂਨਿਟ-IV

ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ:

ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਵਿਚਲਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ ਚਿੰਨ੍ਹ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

14 ਅੰਕ

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I

Session: 2024-25
Course Code: BBTL-1031
Course Title: Basic Punjabi
In 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) ਲਗਾਖ਼ਰ (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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTL-1031
Course Title: Basic Punjabi
In lieu of Punjabi (Compulsory)

ਸਮਾਂ : 3 ਘੰਟੇ **Maximum Marks: 100**
L-T-P **Theory: 70**
4-0-0 **CA: 30**

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

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

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

14 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਸ਼ਬਦ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ (ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ) 14 ਅੰਕ

ਯੂਨਿਟ-III

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ। 14 ਅੰਕ

ਯੂਨਿਟ-IV

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

14 ਅੰਕ

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTL-1431
Course Title: Punjab History and Culture
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

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 and 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 time

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTL-1431
Course Title: Punjab History and Culture
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Examination Time: 3 Hours | Max. Marks: 100
Credits L-T-P: 4-0-0 | Theory: 70
Contact Hours: 4 Hrs/Week | CA: 30

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 800 words by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.
4. Each question will carry 14 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., and Das,M.N.(1974). A Social, Cultural and Economic History of India, Vol. I, New Delhi: Macmillan India.
- L. M Joshi (ed.), History and Culture of the Punjab, Art-I, Patiala, 1989 (3rd edition)
- L.M. Joshi and Fauja Singh (ed.), History of Punjab, Vol.I, Patiala 1977.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1102
Course Title: Communication Skills in English - I

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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1102
Course Title: Communication Skills in English – I
(Theory)

Total Marks: 100
Examination Time: 3 Hrs **Theory: 50**
Practical: 20
CA: 30

L-T-P: 3-0-1

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 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 Education2009.
4) *Communication Skills* by Raman, M. & S. Sharma, OUP, New Delhi, India (2011).

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1102
Course Title: Communication Skills in English - I
PRACTICAL / ORAL TESTING

Time: 3 hours **Marks: 20**

Course Contents:

1. Oral Presentation with/without audio visual aids (10 Marks)
2. Group Discussion (05 Marks)
3. Practical File (05 Marks)

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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1083
Course Title: Biochemistry-I
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Gain basic knowledge about water and pH.

CO2: Acquire the knowledge of carbohydrates, classification, and their biological functions

CO3: Understand the definition, structure and biological functions of lipids and their subclasses.

CO4: Understand the definition, structure, biological functions, and classification of proteins.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1083
Course Title: Biochemistry-I
(Theory)

Time: 3 Hrs. **Max. Marks: 100**

L-T-P: 4-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setters: Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). 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. Each question carries 10 marks.

Unit-I

Water and its properties: role of water in life, Structure of water molecules, Physico-chemical properties of water, Dissociation and association constants, pH and buffers. pI, pka, Hasselbach Hendersson equation and its implications.

Unit-II

Carbohydrates: Introduction, Monosaccharides: Families of monosaccharides: aldoses and ketoses, trioses, tetroses, pentoses, and hexoses, epimers, and anomers of glucose. Furanose and pyranose forms of glucose and fructose, Mutarotation, structure and functions of monosaccharide derivatives, Disaccharides; concept of reducing and non-reducing sugars, Haworth projections of maltose, lactose, and sucrose, Structural and functional properties of polysaccharides: storage polysaccharides - starch and glycogen; Structural polysaccharides - cellulose, and chitin; Heteropolysaccharides: Glycvosaminoglycans, Peptidoglycan, proteoglycan, glycoproteins

Unit-III

Lipids: Biological importance, Classification of lipids and fatty acids. General structure and function of major lipid subclasses, acylglycerols, phosphoglycerides, sphingolipids, glycosphingolipids and terpenes, sterols, steroids: Prostaglandins.

Unit-IV

Proteins: Biological importance, Structure of amino acids, non-protein and rare amino acids and their chemical reactions. Structural organization of proteins (Primary, Secondary, Tertiary, Quaternary and domain structure, protein classification and function. Forces stabilizing primary, secondary, and tertiary protein structures.

Books Recommended:

1. Voet, D.,Voet, J.G. and Prait, C.W. (2018). Principles of Biochemistry, 5th Edition, Wiley.

2. Stryer, L. (2015). Biochemistry, 8th Edition, W.H. Freeman and Company, New York

3. Berg, J.M., Tymoczko, J. L. And Stryer, L. (2019). Biochemistry, 9th Edition, Freeman.

4. Mathew, C.K., Van, K.E. and Anthern, K.G. (2012). Biochemistry 4th Edition, Addison Wesley.

5. Lehninger, A.L., Nelson, D.L. and Lox, M.M. (2017). Principles of Biochemistry, 7th Edition, CBS Publishers and Distributors, New Delhi.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1083(P)
Course Title: Biochemistry-I
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Perform Beer Lamberts Law

CO2: Determine pKa value while performing practical

CO3: Estimate carbohydrates in the given sample

CO4: Estimate proteins and fats in the sample by different methods

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1083(P)
Course Title: Biochemistry-I
(Practical)

Time: 3 Hrs. **Practical Marks: 20**

Instructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments:

1. Verification of Beer Lamberts Law for p-nitrophenol or cobalt chloride.
2. Determination of pKA value of p-nitrophenol.
3. Estimation of carbohydrate in given solution by anthrone method.
4. Study the presence of reducing/ non-reducing sugar in biological samples.
5. Protein estimation by Lowry's method.
6. Protein estimation by Bradford method.
7. Protein estimation by Biuret method.
8. The determination of acid value of a fat.
9. The determination of saponification value of a fat.

Books Recommended:

1. Plummer D.T. (2017). An Introduction to Practical Biochemistry, 3rd Edition Tata McGraw Hill Education.
2. Sawhney, S.K. and Singh, R. (2014). Introductory Practical Biochemistry, Narosa Publishing House.
3. Wilson, K. And Walker, J. (2018). Principles and Techniques of Biochemistry, 8th Edition, McGraw Hill Education.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-2025
Course Code: BBTL-1074
Course Title: Botany-I

Course outcomes: After passing this course the student will be able to:

CO1: Understand the diversity of plants.

CO2: Understand the structure of meristems, permanent tissues, anatomy of root, stem and leaf in flowering plant.

CO3: Understand the reproduction and different aspects of pollination and self-incompatibility in flowering plants.

CO4: Understand the different plant classification systems, terminology related to floral descriptions and economic importance of various angiosperm families.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-2025
Course code: BBTM-1074
Course Title: Botany-I
(Theory)

Time: 3 Hrs. **Total Marks: 100**
L-T-P: 4-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setters:
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 subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting atleast one question from each section. The fifth question may be attempted from any Section. Each question carries 10 marks.

Unit –I

Diversity in plants: General characters of Algae, Fungi, Lichens, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms. Concepts of species, hierarchical taxa and biological nomenclature.

Unit –II

Anatomy of flowering plants: Meristems, simple and complex permanent tissues, internal structure of stem, root and leaf, secondary growth in stem and root of *Helianthus*.

Unit –III

Reproduction in flowering plants: Structure and development of anther and male gametophyte, Structure and development of ovule and female gametophyte; Pollination (self and cross) and fertilization; structure and function of endosperm and embryo (dicot and monocot), polyembryony, self-incompatibility.

Unit –IV

Taxonomy of flowering plants: Artificial (Linnaeus), natural (Bentham & Hooker) and phylogenetic (Engler and Prantl) systems of classification; Terminology pertaining to floral description, General characteristics (including economic importance) of following families of angiosperms; giving examples of few important genera: Solanaceae: *Solanum/Petunia*, Rutaceae: *Citrus, Murraya,* Cruciferae-*Brassica*, Apiaceae (Umbelliferae)- Coriander, Asteraceae - *Helianthus,* Leguminosae – *Cassia/Acacia*/Sweet pea, Poaceae (Graminae)- *Triticum*.

Suggested Readings:

1. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms, 4th revised and enlarged edition. Vikas Publishing House, Delhi.
2. Dickinson, W.C. (2009). Integrative Plant Anatomy. Harcourt Academic Press, USA.
3. Hopkins, W.G. and Huner, P.A. (2008). Introduction to Plant Physiology. John Wiley and Sons.
4. Taiz, L. and Zeiger, E. (2006). Plant Physiology, 4 th edition, Sinauer Associates Inc .MA, USA.
5. Vashistha, P.C., Sinha, A.K. and Kumar, A.Pteridophyta. New Delhi: S. Chand, 2010. Print.
6. Singh, G.Plant Systematics: Theory and Practice. 3rded. New Delhi: Oxford & IBH Pvt. Ltd., 2012.Print.
7. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A., Minorsky P.V. and Jackson R.B.Biology. 8thed. USA: Pearson Benjamin Cummings, 2008. Print.
8. Sharma, P.D.Plant Pathology. India: Rastogi Publication, 2011. Print.
9. Webster, J. and Weber, R. Introduction to Fungi. 3rded. Cambridge: Cambridge University Press, 2007. Print.
10. Sethi, I.K. and Walia, S.K.Text book of Fungi and Their Allies. India: Macmillan Publishers, 2011. Print.
11. Vanderpoorten, A. and Goffinet, B. Introduction to Bryophytes. Cambridge: Cambridge University Press, 2009. Print.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-2025
Course Code: BBTM-1074(P)
Course Title: Botany-I

Course outcomes: After passing this course the student will be able to:

CO1: Understand the anatomy of dicot root, stem and leaf.

CO2: Understand structure and development of anther, male gametophyte, ovule, female gametophyte and endosperms.

CO3: Understand the description of flowers including floral diagram, floral formula, V.S. of flower of various angiosperm families.

CO4: Understand the morphology and economic importance of different angiosperm families.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-2025
Course title: Botany-I
Course Code: BBTM-1074(P)
(Practical)

Time: 3 Hrs. **Max. Marks: 20**

Instructions for the paper setter: Question paper is to be set on the spot jointly by the Internal and External Examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments:

Plant Anatomy:
Anatomical studies of stem, root and leaf in *Helianthus* and maize plant.

Embryology:
Study of the permanent slides pertaining to micro and megasporogenesis and female gametophytes and endosperms.

Taxonomy:

a) Description of flowers including floral diagram, floral formula, V.S. of flower of the representative genera of families mentioned in syllabus.

b) Identification and short morphological economic note on the specimens included in Unit IV of the theory paper.

Suggested Readings:

1. Bhojwani, S.S. and Bhatnagar, S.P. (2000). The Embryology of Angiosperms, 4th revised and enlarged edition. Vikas Publishing House, Delhi.
2. Peau, K. (1977). Anatomy of Seed Plants, 3rd edition. John Wiley & Sons, New York.
3. Pegeri, K. And Vander Pijl (1979). The Principles of Pollination Biology, Pergamon Press, Oxford.
4. Dickinson, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA.
5. Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA and UK.
6. Hopkins, W.G. and Huner, P.A. (2008). Introduction to Plant Physiology. John Wiley and Sons.
7. Taiz, L. and Zeiger, E. (2006). Plant Physiology, 4 th edition, Sinauer Associates Inc .MA, USA.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1345
Course Title: General Microbiology-I
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Know the contribution of microbiologists and general features of various microbes.

CO2: Study the structure of bacteria cell and bacterial classification

CO3: Study the microbial culture collection centers, microbial preservation and sterilization methods and understand the basic concepts of bacterial nutrition.

CO4: To learn different types of microscopy techniques.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1345
Course Title: General Microbiology-I
(Theory)

Time: 3 Hrs. **Max. Marks: 100**

L-T-P: 4-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setters: Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). 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. Each question carries 10 marks.

Unit-I

Introduction to microbiology- Evolution and scope of microbiology, Historical perspective and important discoveries related to microbiology. Relationship between microbiology and biotechnology- The microbial biotechnology. The morphology and fine structure of Bacteria, Fungi, Neurospora, Yeast, algae and Viruses (Bacteriophages). Microbes in extreme environments- the thermophiles, halophiles, acidophiles, psychrophiles and alkalophiles.

Unit-II

Gram-positive and Gram-negative bacteria: Introduction, structure and anatomy of bacterial cell walls and nature of the microbial cell surface. Types of bacterial flagella. Different types of bacterial staining. Bacterial classification: Bacterial classification and taxonomy based on Bergey's Manual of Determinative bacteriology– General outline only. An introduction to Bacterial Serotypes.

Unit-III

Microbial culture collection centers, Methods of microbial preservation: Refrigeration, cryopreservation, lyophilization, Paraffin method. Basic concept of microbial growth and culture media and its components, Sterilization-Basic concept, physical and chemical methods of sterilization. Bacterial nutrition-Introduction, nutritional forms of bacteria, Basic concept of transport mechanisms of nutrients across microbial cell membranes: Facilitated diffusion, Active transport and group translocation.

Unit-IV

Principles and application of bright field, dark field, phase contrast, fluorescence and immunofluorescence, electron microscopy (Scanning electron microscopy & transmission electron microscopy).

Books Recommended:

1. Davis, B.D., Dulbecco. R., Eisen, H.N. and Ginsberg, H.S. (1990). Microbiology: 4th Edition, Harper & Row, Publishers, Singapore.
2. Stanier, R.Y. (1999). General microbiology, MacMillan Press, London.
3. Tortora, G.J., Funke, B.R. and Case, C.L. (2015). Microbiology: An introduction, 12th Edition, Pearson College Div.
4. Willey, J., Sherwood, L. And Wooverton, C. J. (2017). Prescott's Microbiology, 10th Edition, McGraw-Hill Education/ Asia
5. Pelczar, M.J., Chan, E.C.S. and Krieg, N.R. (2010). Microbiology: An application-based approach, Tata McGraw Hill.
6. Purohit, S.S. (2006). Microbiology: Fundamentals and Applications, 7th Edition, Agrobios (India).

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1345(P)
Course Title: General Microbiology-I
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand sterilization techniques of different types of materials.

CO2: Learn methods of isolation and identification of bacteria

CO3: Learn methods of detection of microbes.

CO4: Understand preservation methods of microbes.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: BBTM-1345(P)
Course Title: General Microbiology-I
(Practical)

Time: 3 Hrs. **Practical Marks: 20**

Instructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments:

1. Introduction to microbiology laboratory and its equipments.
2. Cleaning of glassware.
3. Preparation of cotton plugs
4. Preparation of media, and aseptic techniques of sterilization.
5. Isolation of micro-organism from air, water and soil samples. Dilution, spread plating and pour plating, Colony purification.
6. Identification of bacteria by simple staining, negative staining, and Gram staining.
7. Detection of specific bacteria by Wet mount preparation method and Hanging drop mount method.
8. To preserve bacteria by short term preservation methods like direct transfer to subculture, Immersion in oil, cryopreservation.

Books Recommended:

1. Cappuccino, J.G. and Sherman, N. (2014). Microbiology: A Laboratory Manual 10th Edition, Pearson Education India.
2. Dubey R.C. and Maheshwari (2012). Practical Microbiology 5th edition: S. Chand and company ltd. New Delhi.
3. Leooffee, M.J. and Pierce, B.E. (2015). Microbiology: Laboratory Theory and Application, 3rd Edition, Morton Pub. Co.
4. Sastry, A.S. and Bhat, S. (2018). Essentials of Practical microbiology. Jaypee Brothers Medical Publishers.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-I
Session: 2024-25
Course Code: VACF-1491
Course title: Foundation course

Duration: 30 hours

Course Credits: 2 Credits

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 therich 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 technologieswere 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 wherewe 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	***The Vedas* 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: 35; Internal Assessment: 15)**
- Final Exam: multiple choice quiz**.** Marks – 35; Time: 1 hour
- Internal Assessment: 15 (Assessment: 5; Attendance: 10)
  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 program
- 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*
- Upnishads 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
- 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 endeavors
- 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

Semester-II

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTL-2421
Course Title: Punjabi (Compulsory)

COURSE OUTCOMES

CO1: ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਕਵਿਤਾ ਤੇ ਕਹਾਣੀ ਪੁਸਤਕ ਦੇ ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਕਹਾਣੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO2: ਗੱਦ ਪ੍ਰਵਾਹ ਪੁਸਤਕ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਗਿਆਨ ਦੇਣਾ ਹੈ।

CO3: ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ, ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ, 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: ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ 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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTL-2421
Course Title: Punjabi (Compulsory)

ਸਮਾਂ ਤਿੰਨ ਘੰਟੇ **Maximum Marks: 100**
L-T- P **Theory: 70**
4-0-0 **CA: 30**

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 14 ਅੰਕ ਹਨ।

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

ਪਾਠਕ੍ਰਮ ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਕਵਿਤਾ ਤੇ ਕਹਾਣੀ (ਸੰਪਾ. ਡਾ. ਰਮਿੰਦਰ ਕੌਰ, ਡਾ. ਮੇਘਾ ਸਲਵਾਨ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ। (ਕਹਾਣੀ ਭਾਗ)

ਕਹਾਣੀ ਦਾ ਸਾਰ/ਵਿਸ਼ੵਵਸਤੂ 14 ਅੰਕ

ਯੂਨਿਟ-II

ਗੱਦ ਪ੍ਰਵਾਹ (ਰੇਖਾ ਚਿਤਰ ਤੇ ਹਲਕੇ ਲੇਖ)

(ਸੰਪਾ. ਡਾ. ਬਿਕਰਮ ਸਿੰਘ ਘੁੰਮਣ ਅਤੇ ਜਸਪਾਲ ਸਿੰਘ),

ਗਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ) 14 ਅੰਕ

ਯੂਨਿਟ-III

(ੳ) ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ, ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ
(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ 14 ਅੰਕ

ਯੂਨਿਟ-IV

ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ

ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ **14 ਅੰਕ**

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTL-2031
Course Title: Basic Punjabi
In lieu of Punjabi (Compulsory)

Course outcomes

CO1: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ (ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO2: ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ (ਸਾਧਾਰਨ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ, ਮਿਸ਼ਰਤ ਵਾਕ, ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨ ਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ) ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਇਸ ਦੀ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ਅਤੇ ਉਨ੍ਹਾਂ ਦੀ ਭਾਸ਼ਾ ਤੇ ਪਕੜ ਮਜਬੂਤ ਹੋਵੇਗੀ।

CO3: ਪੈਰ੍ਹਾ ਰਚਨਾ ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO4: ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ। ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTL-2031
Course Title: Basic Punjabi
In lieu of Punjabi (Compulsory)

ਸਮਾਂ : 3 ਘੰਟੇ | **Maximum Marks: 100**

L-T-P | **Theory :70**

4-0-0 | **CA :30**

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 14 ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ ਪ੍ਰਸ਼ਨਾਂ

ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

ਪਾਠਕ੍ਰਮ

ਯੂਨਿਟ-I

ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ (ਨਾਂਵ, ਪੜਨਾਂਵ, ਕਿਰਿਆ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ ਅਤੇ ਵਿਸਮਿਕ) 14 ਅੰਕ

ਯੂਨਿਟ-II

ਪੰਜਾਬੀ ਵਾਕ ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ

(ੳ) ਸਾਧਾਰਨ ਵਾਕ, ਸੰਯੁਕਤ ਵਾਕ ਅਤੇ ਮਿਸ਼ਰਤ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ)

(ਅ) ਬਿਆਨੀਆ ਵਾਕ, ਪ੍ਰਸ਼ਨ ਵਾਚਕ ਵਾਕ ਅਤੇ ਹੁਕਮੀ ਵਾਕ (ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ) 14 ਅੰਕ

ਯੂਨਿਟ-III

ਪੈਰ੍ਹਾ ਰਚਨਾ

ਸੰਖੇਪ ਰਚਨਾ

14 ਅੰਕ

ਯੂਨਿਟ-IV

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)

ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ (ਲਿਸਟ ਨਾਲ ਨੱਥੀ ਹੈ) **14 ਅੰਕ**

ਅਖਾਣ

ਉਠੇ ਤਾ ਉੱਠ ਨਹੀਂ ਰੇਤੇ ਦੀ ਮੁੱਠ ,ਉੱਦਮ ਅੱਗੇ ਲੱਛਮੀ ਪੱਖੇ ਅੱਗੇ ਪੌਣ ,ਉਹ ਦਿਨ ਡੁੱਬਾ ਜਦੋਂ ਘੋੜੀ ਚੜ੍ਹਿਆ ਕੁੱਬਾ ,ਉੱਚੀ ਦੁਕਾਨ ਫਿੱਕਾ ਪਕਵਾਨ ,ਉਲਟੀ ਵਾੜ ਖੇਤ ਨੂੰ ਖਾਏ ,ਉੱਚਾ ਲੰਮਾ ਗੱਭਰੂ ਪੱਲੇ ਠੀਕਰੀਆਂ , **ਅਸ਼ਰਫ਼ੀਆਂ ਦੀ ਲੁੱਟ ਤੇ ਕੋਲਿਆਂ ਤੇ ਮੁਹਰਾਂ, ਅੱਗੇ ਸੱਪ ਪਿੱਛੇ ਸ਼ੀਂਹ, ਆਦਰ ਤੇਰੀ ਚਾਦਰ ਨੂੰ ਬਹਿਣਾ ਤੇਰੇ ਗਹਿਣੇ ਨੂੰ, ਆਪੇ ਫਾਥੜੀਏ ਤੈਨੂੰ ਕੌਣ ਛੁਡਾਏ, ਆਪਣੇ ਹੱਥੀਂ ਆਪਣਾ ਆਪੇ ਹੀ ਕਾਜ ਸਵਾਰੀਐ, ਆਰੀ ਨੂੰ ਇੱਕ ਪਾਸੇ ਦੰਦੇ ਜਹਾਨ ਨੂੰ ਦੋਹੀਂ ਪਾਸੀਂ,**ਅੱਖੀਂ ਵੇਖ ਕੇ ਮੱਖੀ ਨਹੀਂ ਨਿਗਲੀ ਜਾਂਦੀ ,ਅੰਦਰ ਹੋਵੇ ਸੱਚ ਤਾਂ ਕੋਠੇ ਚੜ੍ਹ ਕੇ ਨੱਚ ,ਆਪੇ ਮੈਂ ਰੱਜੀ ਪੁੱਜੀ ਆਪੇ ਮੇਰੇ ਬੱਚੇ ਜਿਉਣ ,ਆਪ ਕੁਚੱਜੀ ਵਿਹੜੇ ਨੂੰ ਦੋਸ਼ ,ਅੰਨ੍ਹਾ ਵੰਡੇ ਰਿਉੜੀਆਂ ਮੁੜ ਮੁੜ ਆਪਣਿਆਂ ਨੂੰ ,ਅਕਲ ਵੱਡੀ ਕੇ ਮੱਝ ,ਅੰਨ੍ਹਿਆਂ ਵਿੱਚ ਕਾਣਾ ਰਾਜਾ ,ਆਪਣੀ ਪੀੜ੍ਹੀ ਹੇਠ ਸੋਟਾ ਫੇਰਨਾ ,ਇਕ ਅਨਾਰ ਸੌ ਬਿਮਾਰ ,ਇਕ ਹੱਥ ਨਾਲ ਤਾੜੀ ਨਹੀਂ ਵੱਜਦੀ ,ਇੱਕ ਚੁੱਪ ਸੌ ਸੁੱਖ ਝੱਟ ਮੰਗਣੀ ਪੱਟ ਵਿਆਹ ,ਸਹਿਜ ਪੱਕੇ ਸੋ ਮੀਠਾ ਹੋਵੇ ,ਦਾਲ ਵਿੱਚ ਕਾਲਾ ਹੋਣਾ , **ਸੰਗ ਤਾਰੇ ਕੁਸੰਗ ਡੋਬ,** ਸੱਦੀ ਨਾ ਬੁਲਾਈ ਮੈਂ ਲਾੜੇ ਦੀ ਤਾਈਂ ,ਸਵੈ ਭਰੋਸਾ ਵੱਡਾ ਤੋਸਾ,ਸੌ ਦਿਨ ਚੋਰ ਦੇ ਇਕ ਦਿਨ ਸਾਧ ਦਾ ,ਸੱਪ ਦਾ ਬੱਚਾ ਸਪੋਲੀਆ ,ਸੱਪ ਮਰ ਜਾਵੇ ਲਾਠੀ ਵੀ ਨਾ ਟੁੱਟੇ ,ਸਾਈਆਂ ਕਿਤੇ ਵਧਾਈਆਂ ਕਿਤੇ ,ਹੰਕਾਰਿਆ ਸੋ ਮਾਰਿਆ , **ਹੱਥ ਨੂੰ ਹੱਥ ਧੋਂਦਾ ਹੈ,** ਹਾਥੀ ਲੰਘ ਗਿਆ ਪੂਛ ਰਹਿ ਗਈ, **ਕੋਹ ਨਾ ਚੱਲੀ ਬਾਬਾ ਤਿਹਾਈ**,ਕੁੱਛੜ ਕੁੜੀ ਸ਼ਹਿਰ ਢੰਡੋਰਾ ,ਕੋਲਿਆਂ ਦੀ ਦਲਾਲੀ ਵਿੱਚ ਮੂੰਹ ਕਾਲਾ ,ਕਰੇ ਕੋਈ ਭਰੇ ਕੋਈ , **ਖਿੱਦੋ ਫ਼ਰੋਲਿਆਂ ਲੀਰਾਂ ਹੀ ਨਿਕਲਦੀਆਂ ਹਨ,** ਖ਼ਵਾਜੇ ਦਾ ਗਵਾਹ ਡੱਡੂ ,ਖੇਤੀ ਖਸਮਾਂ ਸੇਤੀ , **ਖਰਬੂਜ਼ੇ ਨੂੰ ਦੇਖ ਕੇ ਖਰਬੂਜ਼ਾ ਰੰਗ ਬਦਲਦਾ ਹੈ,**ਖੂਹ ਪੁੱਟਦੇ ਨੂੰ ਖਾਤਾ ਤਿਆਰ , **ਘੜੇ ਨੂੰ ਹੱਥ ਲਾਇਆ ਸਾਰਾ ਟੱਬਰ ਤਿਹਾਇਆ**,ਘਰ ਦਾ ਭੇਤੀ ਲੰਕਾ ਢਾਹੇ ,ਘਰ ਦੀ ਕੁੱਕੜੀ ਦਾਲ ਬਰਾਬਰ ,ਚਿੰਤਾ ਚਿਖਾ ਬਰਾਬਰ , ਛੱਜ ਤਾਂ ਬੋਲੇ ਛਾਣਨੀ ਵੀ ਬੋਲੇ,ਛੋਟੀ ਮੂੰਹ ਵੱਡੀ ਗੱਲ **, ਜੋ ਰਾਤੀਂ ਜਾਗਣ ਕਾਲੀਆਂ ਸੋ ਹੀ ਖਾਣ ਸੁਖਾਲੀਆਂ** ,ਜਾਂਦੇ ਚੋਰ ਦੀ ਲੰਗੋਟੀ ਹੀ ਸਹੀ ,ਜਿਸ ਦੀ ਕੋਠੀ ਦਾਣੇ ਉਹਦੇ ਕਮਲੇ ਵੀ ਸਿਆਣੇ ,ਜਿਹੜੇ ਗੱਜਦੇ ਨੇ ਉਹ ਵਰ੍ਹਦੇ ਨਹੀਂ , ਝੱਟ ਮੰਗਣੀ ਪੱਟ ਵਿਆਹ , **ਨਵਾਂ ਨੌ ਦਿਨ ਪੁਰਾਣਾ ਸੌ ਦਿਨ, ਪਾਣੀ ਵਿੱਚ ਸੋਟਾ ਮਾਰਿਆਂ ਪਾਣੀ ਦੋ ਨਹੀਂ ਹੋ ਜਾਂਦੇ, ਵਿੱਦਿਆ ਵਿਚਾਰੀ ਤਾਂ ਪਰਉੱਪਕਾਰੀ, ਵੇਲੇ ਦੀ ਨਮਾਜ਼ ਕੁਵੇਲੇ ਦੀਆਂ ਟੱਕਰਾਂ, ਇਕ ਦਰ ਬੰਦ ਸੌ ਦਰ ਖੁੱਲ੍ਹਾ, ਬਿੱਲੀ ਦੇ ਸਿਰ੍ਹਾਣੇ ਦੁੱਧ ਨਹੀਂ ਜੰਮਦਾ,**ਰੱਸੀ ਸੜ ਗਈ ਵੱਟ ਨ੍ਹੀਂ ਗਿਆ

ਮੁਹਾਵਰੇ

ਉਸਤਾਦੀ ਕਰਨੀ, ਉਂਗਲ ਕਰਨੀ, ਉੱਲੂ ਬਣਾਉਣਾ ,ਉੱਚਾ ਸਾਹ ਨਾ ਕੱਢਣਾ, ਉੱਡਦੇ ਫਿਰਨਾ ,ਉੱਘ ਸੁੱਘ ਮਿਲਣੀ,ਅੱਖਾਂ ਵਿਚ ਰੜਕਣਾ , **ਉਂਗਲਾਂ ਤੇ ਨਚਾਉਣਾ, ਉਧੜ-ਧੁੰਮੀ ਮਚਾਉਣਾ, ਊਠ ਦੇ ਮੂੰਹ ਵਿੱਚ ਜ਼ੀਰਾ ਦੇਣਾ,** ਅੱਗ ਲਾਉਣਾ ,ਆਵਾ ਊਤ ਜਾਣਾ ,ਅਸਮਾਨ ਨੂੰ ਟਾਕੀਆਂ ਲਾਉਣਾ, ਅੱਖਾਂ ਵਿੱਚ ਲਾਲੀ ਉਤਰਨੀ ,ਅਕਲ ਤੇ ਪਰਦਾ ਪੈਣਾ, **ਅੱਖਾਂ ਅੱਗੇ ਖੋਪੇ ਚਾੜ ਦੇਣੇ, ਅੱਖਾਂ ਉੱਤੇ ਬਿਠਾਉਣਾ, ਅੱਲੇ ਫੱਟਾਂ ਤੇ ਲੂਣ ਛਿੜਕਣਾ, ਆਪਣੇ ਅੱਗੇ ਕੰਡੇ ਬੀਜਣਾ, ਆਪਣੇ ਤਰਕਸ਼ ਵਿੱਚ ਤੀਰ ਹੋਣਾ, ਸਿਰ ਚੜ੍ਹਨਾ,** ਈਨ ਮੰਨਣੀ, ਈਦ ਦਾ ਚੰਨ ਹੋਣਾ, ਇੱਟ ਨਾਲ ਇੱਟ ਖੜਕਾਉਣਾ,ਸਿਰ ਫਿਰਨਾ, ਸਿਰ ਤੇ ਚੜ੍ਹਨਾ ,ਸਬਰ ਦਾ ਘੁੱਟ ਭਰਨਾ, ਸਿਰ ਪੈਰ ਨਾ ਹੋਣਾ, **ਸਿਰ ਖੁਰਕਣ ਦੀ ਵੇਹਲ ਨਾ ਹੋਣਾ, ਸੱਠੀ ਦੇ ਚੌਲ ਖੁਆਣੇ,** ਹੱਥ ਧੋ ਕੇ ਪਿੱਛੇ ਪੈਣਾ, ਹੱਥੀਂ ਛਾਂਵਾਂ ਕਰਨੀਆਂ, ਹੱਡ ਭੰਨਣੇ, ਹੱਥ ਤੰਗ ਹੋਣਾ ,ਹੱਥ ਮਲਣਾ,ਹੱਥ ਪੈਰ ਮਾਰਨਾ, **ਹੱਥ ਉੱਤੇ ਹੱਥ ਧਰ ਕੇ ਬੈਠਣਾ, ਹੱਥ ਵਟਾਉਣਾ, ਹਵਾ ਦੇ ਘੋੜੇ ਸਵਾਰ ਹੋਣਾ,** ਕੰਨੀਂ ਕਤਰਾਉਣਾ, ਕੰਨ ਤੇ ਜੂੰ ਨਾ ਸਰਕਣਾ, ਕੰਨ ਘੇਸਲ ਮਾਰਨੀ**, ਕਣਕ ਨਾਲ ਘੁਣ ਵੀ ਪਿਸਣਾ, ਕੱਖ ਭੰਨ ਕੇ ਦੂਹਰਾਂ ਨਾ ਕਰਨਾ, ਕਲਮ ਦੇ ਧਨੀ ਹੋਣਾ, ਕਿਤਾਬੀ ਕੀੜਾ ਹੋਣਾ,** ਖ਼ਾਨਾ ਖ਼ਰਾਬ ਹੋਣਾ, ਖਾਨਿਓ ਜਾਣਾ, **ਖੂਹ ਨਿਖੁੱਟ ਜਾਣਾ,** ਗੁੱਡੀ ਚੜ੍ਹਨੀ, ਗਲ ਪੈਣਾ ,ਗੰਗਾ ਨਹਾਉਣਾ ,ਚੜ੍ਹ ਮੱਚਣੀ, ਚੰਦ ਚਾੜ੍ਹਨਾ, ਚਾਦਰ ਵੇਖ ਕੇ ਪੈਰ ਪਸਾਰਨਾ ,ਚਕਮਾ ਦੇਣਾ ,ਛੱਕੇ ਛੜਾਉਣਾ ,ਛਾਪਾ ਮਾਰਨਾ, ਛਿੱਲ ਲਾਉਣੀ ,ਛਿੱਕੇ ਟੰਗਣਾ

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTL-2431
Course Title: Punjab History and Culture
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTL-2431
Course Title: Punjab History and Culture
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

Examination Time: 3 Hours **Max. Marks: 100**
Credits L-T-P: 4-0-0 **Theory: 70**
Contact Hours: 4 Hrs/Week **CA:30**

Instructions for the Paper Setter:

a. Question paper shall consist of four Units
b. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
c. Candidates shall attempt 5 questions in 800 words by at least selecting One Question from each Unit and the 5th question may be attempted from any of the four Units.
d. Each question will carry 14 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 7th 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 (3rd edition)
- L.M. Joshi and Fauja Singh (ed.), *History of Punjab*, Vol.I, Punjabi University, Patiala, 1977.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2102
Course Title: Communication Skills in English – II

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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2102
Course Title: Communication Skills in English – II
(Theory)

Time: 3 hours (Theory) **Max. Marks: 100**
3 hours (Practical) **Theory: 50**
Practical: 20
Continuous Assessment: 30

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.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2102
Course Title: Communication Skills in English - II
PRACTICAL / ORAL TESTING

Time: 3 hours **Marks: 20**

Course Contents:

1. Oral Presentation with/without audio visual aids (10 Marks)

2. Group Discussion/ Mock Interview (10 Marks)

3. Listening to any recorded or live material and asking oral questions for listening comprehension (05 Marks)

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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2063
Course Title: Genetics
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand Mendelian and Neo-mendelian genetics along with the study of phenomenon of dominance, laws of segregation, independent assortment of genes

CO2: Develop an understanding of the principles and mechanisms of linkage and crossing over.

CO3: To learn various types of mutations their significance and practical applications along with basic microbial genetics

CO4: Understand the organization of chromosomes and concept of human genetics

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2063
Course Title: Genetics
(Theory)

Time: 3 Hours **Max. Marks: 100**
L-T-P: 4-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setter: Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). 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. Each question carries 10 marks.

Unit - I

Mendel's Laws of Inheritance: Principle of segregation and independent assortment, Monohybrid, dihybrid, and trihybrid crosses, back cross and test cross, concept of probability

Interaction of Genes: Incomplete inheritance and co-dominance, pleiotropism, modification of **F2** ratios: epistasis, complementary genes, supplementary genes, inhibitory genes, duplicate genes, lethality, and collaborators genes. Multiple allelism.

Unit – II

Linkage: Coupling and repulsion hypothesis, chromosomal theory of linkage, complete and incomplete linkage, linkage groups and significance of linkage.

Crossing Over: Introduction, mechanism of meiotic crossing over, types of crossing over, factors affecting it and its significance.

Mutation: Spontaneous versus induced mutations, types of mutations, mutations rate and frequency, Mutagens: Physical and chemical, the molecular basis of mutations. Significance and practical applications of mutation.

Unit – III

Basic Microbial Genetics: Conjugation, transduction, transformation

Extra Chromosomal (Cytoplasmic) Inheritance: features; inheritance of mitochondrial DNA, chloroplast DNA, kappa articles in Paramecium, Sigma factor in Drosophila, cytoplasmic male sterility (CMS) in maize.

Chromosomal aberrations: Structural: deletion, duplication, inversion, translocation; Numerical: polyploidy, aneuploidy; significance of chromosomal aberrations.

Unit – IV

Organization of Chromosomes: The structure of prokaryotic and eukaryotic chromosome, centromere, and telomere structure, euchromatin and heterochromatin, Special chromosomes: Polytene chromosomes and lampbrush chromosomes, satellite DNA, supercoiling of DNA.

Human Genetics: Population genetics, Hardy Weinberg law, Pedigree analysis, Karyotyping, genetic disorders.

Books Recommended:

1. Gupta, P.K. (2018). Genetics, 5th Revised Edition, Rastogi Publications.
2. Hartl, D.L., Cochrane, B. (2017). Genetics: Analysis of Genes & Genomes 9th Edition. Jones & Bartlett Publishers.
3. Brooker, R.J. (2017). Genetics: Analysis and Principles, McGraw-Hill Education.
4. Pierce, B. (2016). Genetics: A conceptual approach, 6th Edition, WH Freeman.
5. Snustad and Simmons (2015). Principles of Genetics, 7th Edition, John Wiley & Sons

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2063(P)
Course Title: Genetics
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand Mendelian laws.

CO2: Solve paternity disputes.

CO3: Demonstrate segregation in preserved material.

CO4: Study polytene chromosomes and dermatoglyphics.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2063(P)
Course Title: Genetics
(Practical)

Time: 3 Hrs. **Practical Marks: 20**

Instructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments:

1. Demonstration of Law of segregation and independent assortment (use of colored beads,capsules etc.).

2. Numerical problems on Mendelism and on modified F2 ratios.

3. Numerical problems on paternity disputes (Blood groups)

4. Segregation demonstration in preserved material

5. Study of polytene chromosomes from permanent slides.

6. Dermatographics: Palm print taking and fingertip patterns.

7. Preparation and study of mitosis slides from onion root tips by squash method.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2484
Course Title: Cell Biology
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1. Understanding the basic unit of life – cell and broad classification of cell types.

CO2. Understanding the structure and functions of cell organelles.

CO3: Understand Cell Division and Cell Cycle.

CO4. Understanding the biological membranes along with membrane transport mechanism.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM- 2484
Course Title: Cell Biology
(Theory)

Time: 3 Hours **Max. Marks: 100**
L-T-P: 4-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setter

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). 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. Each question carries 10 marks.

Unit-I

Cell as a basic unit of living systems. The cell theory Broad Classification of Cell Types: PPLO's, bacteria, eukaryotic microbes, plant and animal cells. A detailed classification of cell types within an organism. Cell, tissue, organ and organism as different levels of organizations of otherwise genetically similar cells.

Unit-II

Structure and function of cell organelles, ultrastructure of cell membrane, cytosol, Golgi bodies, endoplasmic reticulum (rough and smooth), ribosomes, cytoskeletal structures (actin, microtubules etc.), Mitochondria, chloroplasts, lysosomes, peroxysomes, nucleus (nuclear membrane, nucleoplasm, nucleolus, chromatin).

Unit-III

Cell Division and Cell Cycle: mitosis, meiosis, stages of cell cycle, binary fission, amitosis and its regulation. Cell-cell interaction, Cell locomotion (amoeboid, flagellar and ciliar).

Unit-IV

Biological Membranes: Supramolecular architecture of membranes; Solute transport across membranes; Model membranes and Liposomes.

Books Recommended:

1. De-Robertis, F.D.P. and De-Robertis Jr. E.M.F. (2017) Cell and Molecular Biology, Saunders, Philadelphia.
2. Lodish, Berk, Kaiser, Krieger, Scott, Bretscher, Ploegh and Matsudaira (2007) Molecular Cell Biology 6th Edition, W.H.Freemen& Co Ltd.
3. Geoffrey, M. Cooper & Robert E. Hausman (2013) The Cell: A molecular approach 6th Edition, Sinauer Associates.
4. Alberts, Johnson, Lewis, Raff, Roberts and Walter (2008) Molecular Biology of the Cell, 5th Edition, Garland Science.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2484(P)
Course Title: Cell Biology
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1. Perform a variety of molecular and cellular biology techniques.

CO2. Describe cellular membrane structure and function, fine structure and function of cell organelles.

CO3.Understand Microtomy, staining and histology of different tissues.

CO4. Study about electron micrographs of different organelles

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2484(P)
Course Title: Cell Biology
(Practical)

Time: 2 Hrs. **Practical: 20**

Instructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

1. Study of Cells:

(a) Prokaryotic cells: Lactobacillus, E. coli. Blue green algae.

(b) Eukaryotic cells: Testicular material (for studies of spermatogenesis)

2. Study of electron micrographs of various cell organelles-plasma membrane, Mitochondria, Golgi complex, Lysosomes, Endoplasmic Reticulum (smooth and granular), Cilia, Centrioles, inclusions like glycogen, lipids, etc.
3. Preparation of Permanent Slides: Principles and procedures- Section cutting of tissues and staining of tissues with Haematoxylin/eosin method.
4. Study of permanent slides of various tissues (gut region, liver, lung, spleen, kidney, pancreas, testis, ovary, tongue, skin etc.).
5. Preparation of Buccal Smear for microscopic examination.
6. Barr body observation in human squamous epithelial cells.
7. Microtomy of Plant Tissue specimens (Stem & Root)

Books Recommended:

1. Shah, V.C., Bhatavdekar, J., Chinoy, N.J. and Murthy, S.K. (1988). Essential techniques in Cell Biology.Anand Book Depot, Ahemadabad.
2. Celis, J.E. (1998) Cell Biology: A Laboratory handbook. Vol. 1-3. Academic Press, UK.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2065
Course Title: Fundamentals of Biotechnology
(Theory)

COURSE OUTCOMES

After passing this course the student will be able to:

CO1: Know the basic concept of biotechnology and recombinant technology.

CO2: Understand applications of biotechnology in health care and agriculture.

CO3: Know the bio business and intellectual property rights in biotechnology.

CO4: Know different ethical issues pertaining to biotechnology.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2065
Course Title: Fundamentals of Biotechnology
(Theory)

Time: 3 Hours **Max. Marks: 100**
L-T-P: 4-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setter: Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). 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. Each question carries 10 marks.

UNIT-I

Emergence, scope and basics of biotechnology

Historical perspective, Appraise the interplay of science and technology in the development of biotechnology, Definition and areas of biotechnology, Overview - DNA, gene, gene expression, Recombinant DNA technology. **Role of Bacteria (*E. coli*), Yeast, Viruses (bacteriophages), *Drosophila melanogaster, Caenorhabditis elegans, Arabidopsis thaliana* as workhorses of biotechnology. Biotechnology research in India. biotechnology institutions in India (Public and private Sector),** Biotech success stories, Biotech policy initiatives**.** careers and employment opportunities in biotechnology.

UNIT-II

Applications of Biotechnology: An Overview

Applying biotechnology to modern life styles: Healthcare – Biopharma : Recombinant human insulin, Recombinant hepatitis B vaccine; molecular diagnostics : PCR for infectious disease (viral / bacterial), blood screening and genetic testing, Gene therapy (for Alzheimer's disease), genetic counseling; Agriculture and food production (Genetically engineered food, seed banks, aquaculture); Green biotechnology (bioremediation, biofuels, conservation); Forensics & biodefense; Evo Devo (The development of life and human family tree); careers and employment opportunities in biotechnology.

UNIT-III

Bio business and IPRs in Biotechnology

Commercialization of biotechnology: concerns and consequences, biotechnology industry practices and Government regulations, concept and market potential of Bio business, Requirements and objectives of patent, patentable and non-patentable inventions, process of writing and filing a patent, patenting genes/ gene fragments /SNPs/ proteins / stem cells. Patents related to bacteria, viruses, fungi and medicinal plants, plant breeder's right. IPR: introduction, types (trade secret, copyright, trademark)

UNIT-IV

Biotechnology & Society

Ethical Issues & Regulating the use of Biotechnology: Human cloning, GM microorganisms, Food & Food ingredients, stem cells; Public Perception of Biotechnology: Consuming GM foods, GMOs and environment, antibiotic resistance; The future of Biotechnology.

Books Recommended:

1. David P Clark & Nanette J. Pazdernik (2017) Biotechnology – Applying the Genetic Revolution, Elsevier Academic Press.
2. Bernard R Glick, Jack J Pasternak and Cheryl L Patten (2010) Molecular Biotechnology: Principles and applications of Recombinant DNA, ASM Press.
3. Singh, B.D. (2018). Biotechnology expanding horizons, Kalyani Publishers, New Delhi.
4. Singh, I. and Kaur, B (2010) Patent law and Entrepreneurship, 3rd Edition, Kalyani Publishers.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2065(P)
Course Title: Fundamentals of Biotechnology
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Learn good lab practices in biotechnology laboratory.

CO2: Learn principle, working and applications of instruments.

CO3: Know the handling and disposal procedure regarding hazardous reagents.

CO4: Know different steps in patent writing.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2065(P)
Course Title: Fundamentals of Biotechnology
(Practical)

Time: 3 hours **Practical marks: 20**

Instructions for the practical Examiner:

Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitted for the record to COE office, Kanya Maha Vidyalaya, Jalandhar.

Experiments:

1. Good laboratory practices followed in biotechnology laboratory
2. Introduction, use and maintenance of basic equipments in a biotechnology laboratory (Auto-pipettes, weighing balance, pH meter, water bath, dry bath, spectrophotometer, centrifuges, light microscope, electrophoretic apparatus, vortex mixer, magnetic stirrer, rocker, laminar hoods, autoclave, sonicator, UV transilluminator, hot air oven, BOD incubator)
3. Handling and disposal of hazardous reagents (acids, carcinogenic chemicals like acrylamide, ethidium bromide) and concept of chemical hoods.
4. Different steps for patent with the help of example.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2060
Course Title: Industrial Biotechnology-I
(Theory)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Understand the basics of microbial industrial processes.

CO2: Understand the isolation, maintenance, and preservation of industrially important microbes

CO3: Understand different strain improvement method required for industrial important microbes

CO4: Understand industrial production of primary and secondary metabolite and fermentation of dairy products, fermented foods, and enzymes.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2060
Course Title: Industrial Biotechnology-I
(Theory)

Time: 3 Hours **Max. Marks: 100**
L-T-P: 2-0-1 **Theory: 50**
Practical: 20
CA: 30

Instructions for the Paper Setter: Eight questions of equal marks (specified in the syllabus) are to be set, two in each of the four Sections (A-D). 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. Each question carries 10 marks.

Unit-I

Introduction: Basic concept of agriculture and food processing as industry, methods and principles of food processing, differences between microbial industrial processes and chemical industrial processes.

Unit-II

General study and characterization of Industrially important microbes. Methods of isolation, screening (primary and secondary methods), selection and identification, maintenance, and preservation of industrially important microbial cultures.

Unit-III

Strain improvement of industrial important microbes: by using mutational programme and recombination systems (parasexual cycle, protoplast fusion and recombinant DNA techniques), isolation of mutants (induced, auxotrophic, resistant and revertant mutants), inoculums development, media formulation and process optimization of industrial and agro industrial microbes.

Unit-IV

Introduction to primary and secondary metabolites production. Production of Tetracycline and penicillin, Dairy products like curd, yoghurt, cheese, bread. Fermented foods-Pickles, Sauerkraut, Enzyme production-Amylases, cellulases, proteases in leather industries.

Books Recommended:

1. Wittmann, C. and Liao, J. (2017). Industrial Biotechnology: Products and Processes (Advanced Biotechnology), Vol. 4 Wiley-VCH.

2. Singh B.D. (2016). Biotechnology: Expanding horizons, Kalyani Publishers / Lyall Bk Depot

3. Chakraborty, P.K. (2013). Agro and Industrial Biotechnology, Black Prints

4. Tyagi, N. (2012). Industrial Microbiology and Biotechnology, Agrotech Press.

5. Casida, L.E.J.R. (2007). Industrial Microbiology, New Age International Publishers

6. Okafor N, Okeke B.C. (2018). Modern Industrial Microbiology and Biotechnology, 2nd edition, CRC Press.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2060(P)
Course Title: Industrial Biotechnology-I
(Practical)

COURSE OUTCOMES:

After passing this course the student will be able to:

CO1: Isolate milk protein and determine fat content in milk

CO2: Learn the process of cheese making

CO3: Isolate microbes from soil

CO4: Screen industrially important enzyme producing microbes

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: BBTM-2060(P)
Course Title: Industrial Biotechnology-I
(Practical)

Time: 3 Hrs **Practical Marks: 20**

Instructions for the practical Examiner: Question paper is to be set on the spot jointly by the internal and external examiners. Two copies of the same may be submitted for the record to COE Office, Kanya Maha Vidyalaya, Jalandhar.

Experiments

1. Isolation of microbial cells by serial dilution-spread plate method.

2. Measurement of bacterial size.

3. Metabolic Characterization by IMVIC test

4. Alcoholic and Mixed–Acid Fermentation.

5. Starter culture preparation, evaluation and application.

6. Determination of nitrate reduction by bacteria.

Books Recommended:

1. Cappuccino J.G., Sherman N. (2007). Microbiology: A laboratory (Pearson Benjamin Cummings).
2. Plummer D.T. (2004). An introduction to practical biochemistry (Tata McGraw Hill Publishers Co. Ltd., New Delhi).
3. Bansal, D.D., K Hardori, R., Gupta, M.M. (1985). Practical biochemistry (Standard Publication Chandigarh).
4. Dubey R.C. and Maheshwari (2012) Practical Microbiology 5th edition: S. Chand and company ltd. New Delhi.

Bachelor of Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: VACD-2161
Course Title: Drug Abuse: Problem, Management and Prevention (COMPULSORY)

Course Outcomes

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. 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.

CO3. Learn how to be supportive during the detoxification and rehabilitation process

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 Science (Bio-Technology) Three Year Degree Programme
Bachelor of Science (Honours) Bio-Technology Four Year Degree Programme
Semester-II
Session: 2024-25
Course Code: VACD-2161
Course Title: Drug Abuse: Problem, Management and Prevention (COMPULSORY)

Time: 3Hrs Max. Marks: 50 Theory:35 CA:15
Credits: L-T-P: 2-0-0
Contact Hours: 2 Hrs/ Week

Instructions for the Paper Setter:

a. Question paper shall consist of four Units
b. Examiner shall set 8 questions in all by selecting Two Questions of equal marks from each Unit.
c. Candidates shall attempt 5 questions in 500 words by at least selecting One Question from each Unit and the 5^{th} question may be attempted from any of the four Units.
d. Each question will carry 7 marks

UNIT-I

Meaning of Drug Abuse:

(i)Meaning, Nature, Types and Extent of Drug Abuse in India and Punjab.

(ii)Consequences of Drug Abuse for:

Individual: Education, Employment, Income.
Family: Violence.
Society: Crime, Social Disorganization

UNIT-II

MANAGEMENT OF DRUG ABUSE:

(i) Medical management: medication for treatment and to withdrawal effects.

(ii) Psychiatric Management: Counseling, Behavioral and Cognitive therapy.

UNIT-III

Prevention of Drug abuse:

(i) Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

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

UNIT-IV

Controlling Drug Abuse:

(i) 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: SagePublications.

4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: MittalPub.

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.