FACULTY OF LIFE SCIENCES

Syllabus

for the award of the Degree in

Bachelor of Science (Medical) (Honours)

(Offered under 4- year UG Degree Programme)

(Credit Based Continuous Evaluation Grading System under NEP 2020)

(SEMESTER: I-IV)

Session: 2025-26

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

The Heritage Institution

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

Scheme and Curriculum of Examinations of Four-Year Degree Program

Bachelor of Science (Medical) (Honours)

Session 2025-26

Bachelor of Science (Medical) (Honours) Semester I								
Course Code	**Course Name**	**Course Type**	**Credits**	**Total Marks**	**Ext.**		**CA**	**Examination Time (in Hours)**
					L	**P**		
BSML-1421 BSML-1031 BSML-1431	**Punjabi (Compulsory)** **[1]Basic Punjabi** **[2]Punjab History and Culture**	C	4-0-0	100	70	-	30	3
BSML-1212	**English Language Skills-1**	AEC	4-0-0	100	70	-	30	3
BSML-1483	**Zoology (Diversity of Nonchordates- I (Protozoa - Annelida))**	DSC	4-0-0	100	70	-	30	3
BSMP-1483	**Zoology (Nonchordates- I Lab)**		0-0-2	50	-	35	15	3
BSML-1084	**Chemistry (Inorganic Chemistry-I)**	DSC	4-0-0	100	70	-	30	3
BSMP-1084	**Chemistry (Inorganic Chemistry-I Lab)**		0-0-2	50	-	35	15	3
BSML-1075	**Botany (Diversity of Cryptogams)**	DSC	4-0-0	100	70	-	30	3
BSMP-1075	**Botany (Diversity of Cryptogams Lab)**		0-0-2	50	-	35	15	3
*VACF-1491	**Foundation Course**	VAC	2-0-0	50	35	-	15	1

[1]Special paper in lieu of Punjabi (Compulsory) for those who have not studied Punjabi upto 8th-10th Class.

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

*Credits grade points of these courses will not be added in SGPA/CGPA of the semester Program and only grades will be provided.

C-Compulsory

AEC- Ability Enhancement Compulsory Course

DSC- Discipline Specific Course

VAC- Value Added Course

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

Scheme and Curriculum of Examinations of Four-Year Degree Program

Bachelor of Science (Medical) (Honours)

Session 2025-26

Bachelor of Science (Medical) (Honours) Semester II								
Course Code	**Course Name**	**Course Type**	**Credits (L-T-P)**	**Total Marks**	**Ext.**		**CA**	**Examination Time (in Hours)**
					L	**P**		
BSML-2421 BSML-2031 BSML-2431	**Punjabi (Compulsory)** **[1]Basic Punjabi** **[2]Punjab History and Culture**	C	4-0-0	100	70	-	30	3
BSML-2212	**English Language and Literature-1**	MDC	4-0-0	100	70	-	30	3
BSML- 2483	**Zoology (Diversity of Nonchordates- II (Arthropoda - Hemichordata))**	DSC	4-0-0	100	70	-	30	3
BSMP-2483	**Zoology (Nonchordates- II Lab)**		0-0-2	50	-	35	15	3
BSML-2084	**Chemistry (Organic Chemistry-I)**	DSC	4-0-0	100	70	-	30	3
BSMP-2084	**Chemistry (Organic Chemistry-I Lab)**		0-0-2	50	-	35	15	3
BSML-2075	**Botany (Cell Biology and Genetics)**	DSC	4-0-0	100	70	-	30	3
BSMP-2075	**Botany (Cell Biology and Genetics Lab)**		0-0-2	50	-	35	15	3
BSMM-2080/ BSMM -2480/ BSMM -2070	**Chemistry (Spectroscopic Methods)/** **Zoology (Medical Lab Technology)/** **Botany (Medicinal Botany)**	SEC	2-0-1	100	50	20	30	3+3
VACD- 2161	***Drug Abuse and Ethical Education**	VAC	4-0-0	100	70	-	30	3

[1]Special paper in lieu of Punjabi (Compulsory) for those who have not studied Punjabi upto 8th-10th Class.

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

*Credits grade points of these courses will not be added in SGPA/CGPA of the semester Program and only grades will be provided.

C-Compulsory
MDC- Multidisciplinary Course
DSC- Discipline Specific Course
SEC- Skill Enhancement Course
VAC- Value Added Course

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

Scheme and Curriculum of Examinations of Four-Year Degree Program

Bachelor of Science (Medical) (Honours)

Session 2025-26

Bachelor of Science (Medical) (Honours) Semester III								
Course Code	**Course Name**	**Course Type**	**Credits (L-T-P)**	**Total Marks**	**Ext.**		**CA**	**Examination Time (in Hours)**
					L	**P**		
BSML-3421 BSML-3031 BSML-3431	**Punjabi (Compulsory-3)** **[1]Basic Punjabi-3** **[2]Punjab History and Culture (From 1000 to 1605 A.D.)**	C	4-0-0	100	70	-	30	3
BSML-3212	**English Language Skills-1**	AEC	4-0-0	100	70		30	3
BSML-3483	**Zoology (Diversity of Chordates)**	DSC	4-0-0	100	70		30	3
BSMP-3483	**Zoology (Chordates Lab)**		0-0-2	50	--	35	15	3
BSML-3084	**Chemistry (Physical Chemistry-I: States of Matter and Electrochemistry)**	DSC	4-0-0	100	70		30	3
BSMP-3084	**Chemistry (Physical Chemistry-I Lab)**		0-0-2	50	--	35	15	3
BSML-3075	**Botany (Diversity of Phanerogams)**	DSC	4-0-0	100	70		30	3
BSMP-3075	**Botany (Diversity of Phanerogams Lab)**		0-0-2	50	--	35	15	3
VACG- 4221	**Gender Sensitization Program**	VAC	2-0-0	50	35	-	15	3
VACE- 3221	*** Environmental Studies (Compulsory)**	VAC	1-0-1	50	20	15	15	3

[1]Special paper in lieu of Punjabi (Compulsory) for those who have not studied Punjabi upto 8th-10th Class.

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

*Credits grade points of these courses will not be added in SGPA/CGPA of the semester Program and only grades will be provided.

C-Compulsory

AEC- Ability Enhancement Compulsory Course

DSC- Discipline Specific Course

VAC- Value Added Course

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

Scheme and Curriculum of Examinations of Four-Year Degree Program

Bachelor of Science (Medical) (Honours)

Session 2025-26

Bachelor of Science (Medical) (Honours) Semester IV								
Course Code	**Course Name**	**Course Type**	**Credits**	**Total Marks**	**Ext.**		**CA**	**Examination Time (Hours)**
					L	**P**		
BSML-4421 BSML-4031 BSML-4431	**Punjabi (Compulsory-4)** **[1]Basic Punjabi-4** **[2]Punjab History and Culture (From 1605 to 1849 A.D.)**	C	4-0-0	100	70	-	30	3
BSML-4212	**English Language and Literature-1**	MDC	4-0-0	100	70	-	30	3
BSML- 4483	**Zoology (Cell Biology)**	DSC	4-0-0	100	70	-	30	3
BSMP-4483	**Zoology (Cell Biology Lab)**		0-0-2	50	-	35	15	3
BSML-4084	**Chemistry (Inorganic Chemistry-II: Periodic Table and Coordination Chemistry)**	DSC	4-0-0	100	70	-	30	3
BSMP-4084	**Chemistry (Inorganic Chemistry-II Lab)**		2-0-0	50	-	35	15	3
BSML-4075	**Botany (Structure, Development and Reproduction in Flowering Plants)**	DSC	4-0-0	100	70	-	30	3
BSMP-4075	**Botany (Structure, Development and Reproduction in Flowering Plants Lab)**		0-0-2	50	-	35	15	3
BSMM-4080/ BSMM -4480/ BSMM -4070	**Chemistry (Spectroscopic Methods)/** **Zoology (Medical Lab Technology)/** **Botany (Medicinal Botany)**	**SEC**	2-0-1	100	50	20	30	3+3
VACM- 4502	**Moral Education**	**VAC**	2-0-0	50	35	-	15	3

[1]Special paper in lieu of Punjabi (Compulsory) for those who have not studied Punjabi upto 8th-10th Class.

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

*Credits grade points of these courses will not be added in SGPA/CGPA of the semester Program and only grades will be provided.

C-Compulsory

MDC- Multidisciplinary Course

DSC- Discipline Specific Course
SEC- Skill Enhancement Course
VAC- Value Added Course

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Punjabi (Compulsory)
Course Code: BSML-1421
(THEORY)

COURSE OUTCOMES

CO1. 'ਦੋ ਰੰਗ'(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. 'ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ' ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

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

CO4. ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ: ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ੍ਭਾਸ਼ਾ ਵਿਚ ਅੰਤਰ,ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ੍ ਚਿੰਨ੍ਹ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ: ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Punjabi (Compulsory)
Course Code: BSML-1421
(THEORY)

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

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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 ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੋ ਰੰਗ (ਕਵਿਤਾ ਭਾਗ) (ਸੰਪਾ.ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਰਗੋਧੀਆ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ /ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ ਸਾਰ)

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿੱਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 1 ਤੋਂ 9 ਤੱਕ)

(ਸੰਪਾ.ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਨ),ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

(ਵਿਸ਼ਾ-ਵਸਤੂ/ ਨਾਇਕ ਬਿੰਬ/ ਸਾਰ)

ਯੂਨਿਟ-III

(ੳ) ਪੈਰ੍ਹਾ ਰਚਨਾ (ਤਿੰਨ ਵਿਚੋਂ ਇੱਕ)
(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।

ਯੂਨਿਟ-IV

(ੳ) ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ੍ਭਾਸ਼ਾ ਵਿਚ ਅੰਤਰ,ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ੍ਚਿੰਨ੍ਹ।
(ਅ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Basic Punjabi
Course Code: BSML-1031
(THEORY)

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 (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Basic Punjabi
Course Code: BSML-1031
(THEORY)

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

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. **ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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 ।

ਯੂਨਿਟ-II

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

ਯੂਨਿਟ-III

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

ਯੂਨਿਟ-IV

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

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Punjab History and Culture
Course Code: BSML-1431
(THEORY)

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

CO2. To study the earliest civilisation (Indus Valley Civilization) and original home of Aryans

CO3. To examine the Social, Religious and Economic life during Early and Later Vedic Age

CO4. To comprehend the Buddhist, Jain and Hindu faith and their relevance in the modern times

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Punjab History and Culture

Course Code: BSML-1431

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Credits L-T-P: 4-0-0 **Theory: 70**

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., &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 (3rd edition)

- L.M. Joshi and Fauja Singh (ed.), History of Punjab, Vol.I, Patiala 1977.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: English Language Skills- I
Course Code: BSML-1212
(THEORY)

Course Outcomes

After passing this course, the students will be able to:

CO1. Understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language through the study of "English Grammar in Use" by Raymond Murphy

CO2. To develop the art of creative expression by writing a paragraph on any given topic

CO3. Comprehend the meaning of texts and answer questions related to situations, episodes, and characters depicted in them through the study of the essays in the text "Prose for Young Learners"

CO4. Appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu through the study of the essays in the text "Prose for Young Learners"

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: English Language Skills- I

Course Code: BSML-1212

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Credits L-T-P: 4-0-0 **Theory: 70**

CA: 30

Instructions for the Examiner:

Eight questions are to be set, two from each of the four Units (I-IV). 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 will carry 14 marks. (14x5=70)

UNIT-I

English Grammar in Use, 5th Edition by Raymond Murphy, CUP (Units: 1-37)

UNIT-II

Paragraph Writing and English Grammar in Use (Units: 38-48)

UNIT-III

Prose for Young Learners: Essays at Sr. No. 1, 2, 3, 5 and 6

UNIT-IV

Prose for Young Learners: Essays at Sr. No. 7, 8, 9, 10 and 11

Texts Prescribed:

1. *English Grammar in Use* (Fifth Edition) by Raymond Murphy, CUP
2. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar)

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Zoology (Diversity of Nonchordates- I (Protozoa - Annelida))
Course Code: BSML-1483
(THEORY)

Course Outcome

After passing this course the student will be able to:

CO1. Gain knowledge about physiology of unicellular life and parasitic protozoan.

CO2. Understand the important marine water non chordates.

CO3. Learn about parasitic Platyhelminthes

CO4. Understand the economic importance and physiology of Ascaris and earthworm

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Zoology (Diversity of Nonchordates- I (Protozoa - Annelida))

Course Code: BSML-1483

(THEORY)

Credits: 4-0-0 **Max Marks: 100**

Examination Time: 3 Hours **Theory: 70**
CA: 30

Instructions for the Paper Setter

Eight questions of equal marks (14 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.

Detailed Type study of the following animals

UNIT-I

Protozoa: *Amoeba proteus*
Paramecium caudatum (with special reference to Kappa particles in *P. aurelia*)
Plasmodium vivax
Introduction to parasitic protozoans

UNIT-II

Parazoa (Porifera): *Sycon*
Cnidaria (Coelentrata): *Obelia*

UNIT-III

Platyhelminthes: *Fasciola hepatica,*
Taenia solium
Larvae of *Fasciola hepatica* and *Taenia solium*

UNIT-IV

Aschelminthes: *Ascaris,* Parasitic adaptations in Helminthes
Annelida: *Pheretima posthuma* (Earthworm)

Suggested Readings:

1. Dhami, P.S. &Dhami, J. K(2001), Invertebrates, R. Chand & Co., New Delhi.
2. Brusca, R. C. and Brusca, G. J. (2003), Invertebrates (2nd ed). Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts.
3. Engemann, J. G. and Hegner, R. W. (1981), Invertebrate Zoology (3rd ed.) Macmillan, New York.
4. Gardiner, M. S. (1972), The Biology of Invertebrates, McGraw Hill, New York.
5. Meglitsch, P. A. and Schran, F. R. (1991), Invertebrate Zoology (3rd ed). Oxford University Press, New York.

6. Pechenik, A. Jan. (2000), Biology of the invertebrates, (4th ed), McGraw Hill Book Co. Singapore.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Zoology (Nonchordates- I Lab)
Course Code: BSMP-1483
(PRACTICAL)

Course Outcome

After passing this course the student will be able to:

CO1. Familiarise with Scientific method

CO2. Recognise the importance of conservation

CO3. Observe chromosomal arrangements during cell division

CO4. Understand role of invertebrates

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Zoology (Nonchordates- I Lab)

Course Code: BSMP-1483

(PRACTICAL)

Credits: 0-0-2 **Max Marks: 50**

Examination Time: 3 Hours **Practical: 35**

CA: 15

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

Guidelines for conduct of practical Examination: -

1. Identify and classify the specimens upto order level. Write a note on their habit, habitat, special features and economic importance.
   8
2. Identify the slides/micrographs and give two reasons for identification.
   5
3. Make a temporary mount of protozoa.
   5
4. Draw a well labelled sketch of the given system of the organism and explain to the examiner.
   5
5. Report
   6
6. Viva-voce & Practical file.
   6

1. Classification up to order level with ecological notes and economic importance (if any) of the following animals (Through Specimens or slides):

A. Protozoa: *Amoeba, Euglena, Trypanosoma, Noctiluca, Eimeria, Monocystis, Paramecium Opalina, Vorticella, Balantidium, Nyctotherus* and *Polystomella.*

B. Porifera: *Sycon, Grantia, Euplectella, Hyalonema, Spongilla, Euspongia.*

C. Cnidaria: *Porpita, Velella, Physalia, Aurelia, Rhizostoma, Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia and Astrangia.*

Hydra (W.M.), *Hydra* with buds, *Obelia* (colony and medusa), *Sertularia, Plumularia, Tubularia, Bougainvillea* and *Aurelia*

D. Platyhelminthes: *Dugesia, Fasciola, Taenia, Echinococcus.*

Miracidium, Sporocyst, Redia, Cercaria of *Fasciola,* scolex and proglottids of *Taenia* (mature and gravid).

E. Aschelminthes: *Ascaris* (male and female), *Trichinella, Ancylostoma.*

F. Annelida: *Pheretima, Nereis, Heteronereis, Polynoe, Eunice, Aphrodite, Chaetopterus, Arenicola, Tubifex* and *Pontobdela*

2. **Study of the following permanent stained preparations**:

A. L.S. and T.S. *Sycon,* gemmules, spicules and spongin fibers of a sponge.

B. T.S. *Hydra* (Testis and ovary region)

C. T.S. *Fasciola* (Different regions)

D. T.S. *Ascaris* (Male and Female)

E. T.S. *Pheretima* (pharyngeal and typhlosolar regions), Setae, septal nephridia, spermathecae and ovary of *Pheretima* (Earthworm).

3. **Preparation of the following slides**:

Temporary permanent preparation of freshwater Protozoan culture.

4. Demonstration of digestive, reproductive and nervous systems of earthworm with the help of charts/videos/models.

Note:- Some changes can be made in the practical depending on the availability of material.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Chemistry (Inorganic Chemistry- I)
Course Code: BSML-1084
(THEORY)

Course Outcomes:

Students will be able to

CO1. Predict electronic properties of atoms using current models and theories in chemistry, sketch the probability density curves, identify the periodic trends in physical and chemical properties of elements, describe the arrangement of the elements in the Periodic Table& change from metallic to nonmetallic character.

CO2. Describe VBT, VSEPR theory and predicts the geometry of simple molecules & molecular orbital theory of homonuclear diatomic molecules, explain, predict & draw structures of simple ionic compounds.

CO3. Explains & compares the trends in atomic and physical properties of p-block elements, explain the atomic, physical and chemical properties of alkali metals and alkaline earth metals and concepts of Acids and Bases.

CO4. Detailed studies of Group 13 and 14 of p-block elements.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Chemistry (Inorganic Chemistry- I)

Course Code: BSML-1084

(THEORY)

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

Credit (L-T-P): 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters: Eight questions of equal marks (14 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 **(15 Hrs.)**

Atomic Structure- Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, Quantum numbers, Shapes of s, p, d and f orbitals. Aufbau's and Pauli's Exclusion principle, Hund's multiplicity rule. Electronic configurations of the elements and ions.

Periodic Properties- Position of elements in the periodic table; effective nuclear charge and its calculations. Details of atomic and ionic radii, ionization energy, electron affinity and electronegativity.

Unit- II **(15 Hrs.)**

Ionic Solids: Concept of close packing, Ionic structures, radius ratio rule and coordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy and Born–Haber cycle. Fajan's rule, Weak Interactions –Hydrogen bonding, van der Waals forces.

Chemical Bonding-I: Covalent Bond–Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions, Valence shell electron pair repulsion (VSEPR) theory, homonuclear and heteronuclear diatomic molecules. Multicentre bonding in boranes, Percentage ionic character from dipole moment and electronegativity difference.

Unit- III **(15 Hrs.)**

s- and p-block elements and their comparative study: General remarks about each group (I-VIII), trends in electronic configuration, atomic and ionic radii, ionization potential, electron affinity, electronegativity, oxidation states, Melting and boiling point, density, electropositive or metallic character, flame colouration. Lattice energies. Photoelectric effect, inert pair effect, catenation and hetero catenation. Anomalies in first and second row elements. Chemical properties in details.

Acids and Bases: Arrhenius, Bronsted-Lowry, the Lux-Flood, solvent system and Lewis concepts of acids and bases

Unit- IV (15 Hrs.)

p-Block Elements: Group 13: General characteristics, Atomic and ionic radii, melting and boiling point, Ionisation energies, Oxidation states, Electropositive character, Tendency toform covalent compounds. **Compounds of group 13**: Hydrides, Oxides and hydroxides, Oxoacid; Structure and Properties of Boric acid, Preparation, properties and structure of Diborane, Borazine, Boron halides: Boron hydrides (LiBH4, NaBH4), Anomalous behaviourof Boron and its diagonal relationship with Silicon.

Group 14: General characteristics; Atomic radii, Ionisation energies, Melting and boilingpoint, oxidation state, metallic character, catenation, Allotropy, Tendency to form multiple bonding. **Compounds of group 14**: Hydrides of silicon: preparation and properties, toxic nature of CO, Dioxide of carbon and silicon. Comparison of carbon tetrachloride and silicon tetrachloride. Chemistry of Fullerenes.

Books Suggested

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 3rd edition, Pubs:John Wiley Sons. 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman Hall Ltd., 1991.
3. Shriver, D.E., Alkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, OxfordPublisher: Oxford University Press, 2006.
4. Douglas, B. McDamiel, D., Alexander, J., Concepts and Models of InorganicChemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994.
5. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson EducationInc., 2004.
6. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: McGraw-Hill PublishingCompany Limited, 1991.
7. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
8. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition,Pubs: Milestones Publisher, 2006-07.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Chemistry (Inorganic Chemistry- I Lab)
Course Code: BSMP-1084
(PRACTICAL)

Course outcomes

Students will be able

CO1. To develop technical skills relevant to quantitative analysis

CO2. To separate and identify the various ions present in the mixture

CO3. To understand and master the technique of volumetric analysis

CO4. To analyze an acidic and alkali content in different samples

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Chemistry (Inorganic Chemistry- I Lab)
Course Code: BSMP-1084
(PRACTICAL)

Examination Time: 3 Hrs **Max. Marks: 50**

Credits: 0-0-2 **Practical: 35**

CA: 15

Semi Micro analysis. Cation analysis, Separation and identification of ions from groups I, II, III, IV, V, and VI. Anionic analysis. Four ions with no interference.

Volumetric titrations

1. Determination of strength of Na_2CO_3 solution by titrating it against a standard solution of HCl.
2. Determination of molarity of $KMnO_4$ solution by titrating it against a standard solution of Oxalic acid.
3. Standardise the given $K_2Cr_2O_7$ solution by titrating it against a standard solution Of Mohr's Salt.
4. Estimation of free alkali present in different soaps/detergents
5. Estimation of Cu(II) and $K_2Cr_2O_7$ using sodium thiosulphate solution (Iodimetrically).
6. Estimation of available chlorine in bleaching powder iodometrically.

Books Suggested

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Botany (Diversity of Cryptograms)
Course Code: BSML-1075
(THEORY)

Course outcome:

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

CO1. Understand the classification, characteristic features, life cycle and economic value of algae.

CO2. Develop knowledge about features, classification, life cycle and economic importance of fungi.

CO3. Build up a sound foundation in the subject of Cryptogamic Botany in general and Bryophytes so that the students may be able to apply the acquired knowledge while interacting into the other fields of Botany.

CO4. Acquaint the students about the classification, morphology, biology and economic importance of various pteridophytic plants.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Botany (Diversity of Cryptograms)

Course Code: BSML-1075

(THEORY)

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

Credits (L-T-P): 4-0-0 **Theory: 70**
CA: 30

Instructions for the Paper Setters:

Eight questions of equal marks (14 marks each) 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.

Unit–A

Algae: General characters, classification and economic importance; important features and life history of Chlorophyceae– *Volvox*, *Oedogonium*; Xanthophyceae–*Vaucheria*; Phaeophyceae–*Ectocarpus*; Rhodophyceae–*Polysiphonia*.

Unit–B

Fungi: Important features and life history of Mastigomycotina–*Phytophthora*; Zygomycotina–*Mucor*; Ascomycotina–*Saccharomyces*, *Peziza*; Basidiomycotina–*Puccinia*, *Agaricus*; Deuteromycotina–*Colletotrichum*. General account of Lichens.

Unit–C

Bryophyta: Amphibians of plant kingdom displaying alternation of generations; structure, reproduction, ecology and economic importance. Classification of bryophytes, Structure and reproduction of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida).

Unit–D

Pteridophyta: First vascular plant; classification; ecology and economic importance of pteridophytes. Important characteristics of Psilopsida, Lycopsida, Sphenopsida and Pteropsida. Structure and reproduction in *Rhynia*, *Lycopodium*, *Selaginella*, *Equisetum*, and *Pteris*

Suggested Readings:

1. Alexopoulous, C.J., Mims, C.W. and Blackwell, M. (1996). Introductory Mycology (4th Edition), Wiley - Blackwell, USA.

2. Dube, H.C. (2007). A Textbook of Fungi, Bacteria and Viruses (3rd edition), Scientific Publishers, India
3. Dube, H.C. (2013). An Introduction to Fungi (4th edition), Scientific Publishers., India.
4. Goffinet B. (2008). Bryophyte Biology. Cambridge University Press, UK.
5. Sambamurty, S.S. (2013). A Textbook of Bryophytes, Pteridophytes, Gymnosperms and Paleobotany. I K International Publishing House Pvt Ltd., India
6. Sharma, O.P. (2014). Bryophyta. McGraw Hill Education Pvt Ltd., India.
7. Srivastava, H.N. (2018). Diversity of Microbes and Cryptogams, Vol. I, Pradeep's Publication.
8. Vashishta, P.C, Sinha, A.K, Kumar, A. (2010). Botany for Degree Students Pteridophyta (Vascular cryptogams). S.S. Chand Publications.
9. Sharma, O.P. (2004). Text Book of Thallophytes. McGraw Hill Publishing Co., India.
10. Sharma, P.D. (2004). The Fungi, (2nd Edition) Rastogi Publication, India.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Botany (Diversity of Cryptograms Lab)
Course Code: BSMP-1075
(PRACTICAL)

Course outcome:

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

CO1. Students will assess various phylogenetic information sources, such as ultrastructure and morphology, to understand algae and fungi.

CO2. Understand the evolutionary history and time-scale of non-vascular plants, including the development of the first terrestrial plants from green algae.

CO3. Identify fungal disease symptoms in host plants and study pathogen morphology through section cutting.

CO4. Identify and classify different types of lichens.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Botany (Diversity of Cryptograms Lab)

Course Code: BSMP-1075

(PRACTICAL)

Examination Time: 3 Hrs **Max. Marks: 50**

Credits (L-T-P): 0-0-2 **Practical: 35**
CA:15

Suggested Laboratory Exercises:

Teachers may select plants/material available in their locality/institution

1. Study of the genera included under algae and fungi.
2. Study of morphology, reproductive structures and anatomy of the examples cited in theory under Bryophyta and Pteridophyta
3. Observation of disease symptoms in hosts infected by fungi.
4. Section cutting of diseased material and identification of the pathogens as per the theory syllabus.
5. Study of morphology of Lichens (crustose, foliose and fruticose).

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)
Course Title: Foundation Course
Course Code: VACF- 1491
(THEORY)

Course 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 west and to-day.
- 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.

Bachelor of Science (Medical) (Honours) Semester–I (Session 2025-26)

Course Title: Foundation Course

Course Code: VACF- 1491

(THEORY)

Examination Time: 2 Hours **Max Marks: 50**

Credit (L-T-P): 2-0-0 **Theory: 35**

CA: 15

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.

INSTRUCTIONALOBJECTIVES

- To enable the students to realise their position in the whole saga of time and space
- To inculcate in the man 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

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 Worldata Glance: Political & Economic Perspective**	**2.5**
IX	**Technology Visa 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**

Module 1: 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*
- 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 work force 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 Worldata Glance: Political & Economic Perspective

- Changing world order
- World War I & II
- UNO and The Common wealth
- Nuclear Powers; Terrorism
- Economic Scenario: IMF, World Bank
- International Regional Economic Integration

Module 9: Technology Visa 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 FreedomStruggle
- 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 Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Punjabi (Compulsory)
Course Code: BSML-2421
(THEORY)

COURSE OUTCOMES

CO1. **‘ਦੋ ਰੰਗ’ (ਕਹਾਣੀ ਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ।ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਹਾਣੀ ਦੀ 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. **‘ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ’ ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।**

CO3. **ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਇਸਦੇ ਮੁੱਢਲੇ ਸੰਕਲਪਾਂ ਨੂੰ ਆਧਾਰ ਬਣਾ ਕੇ ਇਹਨਾਂ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।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 ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ। ਮੁਹਾਵਰੇ/ਅਖਾਣ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।**

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Punjabi (Compulsory)

Course Code: BSML-2421

(THEORY)

ਸਮਾਂ: 3 ਘੰਟੇ **Maximum Marks: 100**

L-T-P: 4-0-0 **Theory: 70**

CA: 30

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. **ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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 ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਦੋ ਰੰਗ (ਕਹਾਣੀ ਭਾਗ) (ਸੰਪਾ.ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿਲੋਂ ਅਤੇ ਪ੍ਰੀਤਮ ਸਿੰਘ ਸਰਗੋਧੀਆ),ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਵਿਸ਼ਾ-ਵਸਤੂ/ ਪਾਤਰ ਚਿਤਰਨ / ਸਾਰ)

ਯੂਨਿਟ-II

ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿੱਧ ਹਸਤੀਆਂ (ਜੀਵਨੀ ਨੰ: 10 ਤੋਂ 18 ਤਕ) (ਸੰਪਾ.ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਹਰਨਾਮ ਸਿੰਘ ਸ਼ਾਮ),
ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
(ਵਿਸ਼ਾ-ਵਸਤੂ/ ਨਾਇਕ ਬਿੰਬ/ ਸਾਰ)

ਯੂਨਿਟ-III

(ੳ) ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ : ਪਰਿਭਾਸ਼ਾ, ਮੁੱਢਲੇ ਸੰਕਲਪ।

(ਅ) ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ

ਯੂਨਿਟ-IV

(ੳ) ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ

(ਅ) ਮੁਹਾਵਰੇ/ਅਖਾਣ

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Basic Punjabi
Course Code: BSML-2031
(THEORY)

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 (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Basic Punjabi
Course Code: BSML-2031
(THEORY)

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

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ। ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁਛੇ 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 ਸੈਟੱ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅਗੋਂ 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)

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)

ਯੂਨਿਟ-III

ਪੈਰ੍ਹਾ ਰਚਨਾ

ਸੰਖੇਪ ਰਚਨਾ

ਯੂਨਿਟ-IV

ਚਿੱਠੀ ਪੱਤਰ (ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ)

ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ (ਲਿਸਟ ਨਾਲ ਨੱਥੀ ਹੈ)

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Punjab History and Culture
Course Code: BSML-2431
(THEORY)

Course Outcomes

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

CO1. 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

CO2. Art and architecture of Gupta period and the Indo-Greek style of architecture under Gandhara School

CO3. To have an insight into the socio-cultural history under Harshvardhan and punjab under the stated period

CO4. To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Greek Art and Architecture in Punja

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Punjab History and Culture

Course Code: BSML-2431

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Credits L-T-P: 4-0-0 **Theory: 70**

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. 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 (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Appreciating English Literature- I
Course Code: BSML-2212
(THEORY)

Course Outcomes

After passing this course, the students will be able to:

CO1. Change the narration and voice of sentences after understanding fundamental grammatical rules governing them through the study of "English Grammar in Use" by Raymond Murphy

CO2. To learn to write personal letters and enhance the writing skills

CO3. Comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them through the study of the stories in the text "Tales of Life".

CO4. Appreciate the writings of various Indian and foreign story and Short - Story writers and relate them to their socio-cultural milieu through the study of the stories in the text "Tales of Life".

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Appreciating English Literature- I

Course Code: BSML-2212

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Credits L-T-P: 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters:

Eight questions are to be set, two from each of the four Units (I-IV). 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 will carry 14 marks. (14x5=70)

Unit-I

English Grammar in Use, 5th Edition by Raymond Murphy, CUP (Units: 49-81)

Unit-II

Personal letter Writing and English Grammar in Use (Units: 82-97)

Unit-III

Tales of Life (Guru Nanak Dev University, Amritsar): Stories at Sr. No. 1, 2, 3, 5 and 6

Unit-IV

Tales of Life (Guru Nanak Dev University, Amritsar): Stories at Sr. No. 7, 9, 10, 11, 12

Texts Prescribed:

1. *English Grammar in Use* (Fifth Edition) by Raymond Murphy, CUP
2. *Tales of Life* (Guru Nanak Dev University, Amritsar)

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Zoology (Diversity of Nonchordates- II (Arthropoda - Hemichordata))
Course Code: BSML-2483
(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand physiology and economic importance of cockroach and social organization of insects.

CO2. Gain knowledge about the general pattern of life history of phylum mollusca

CO3. Learn about life history and larval forms of Echinodermata

CO4. Gain knowledge about affinities of Hemichordates with Non-Chordates and Chordates

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Zoology (Diversity of Nonchordates- II (Arthropoda - Hemichordata))
Course Code: BSML-2483
(THEORY)

Credits: 4-0-0 **Max Marks: 100**
Examination Time: 3 Hours **Theory: 70**
CA: 30

Instructions for the Paper Setter

Eight questions of equal marks (14 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

Arthropoda: Type study- *Periplaneta americana* (Cockroach),

Social organizations in insects (Honey bee and Termite)

UNIT-II

Mollusca: Type study-Pila globosa, Tortion, Pearl formation

UNIT-III

Echinodermata: Type study - Asterias (Star fish), Study of Echinoderm larvae

UNIT-IV

Hemichordata: Type study - Balanoglossus (External characters only). Affinities of Hemichordates with Non-Chordates and Chordates

Suggested Readings:

1. Barnes, R.D. (1999), Invertebrate Zoology. W.B. Saunder, Philadelphia.
2. Dhami, P.S. & Dhami, J. K., Invertebrates, R. Chand & Co., New Delhi, 2001.
3. Barth, R. H. and Broshears, R. E (1982), The Invertebrate world. Holt Saunder, Japan.
4. Brusca, R. C. and Brusca, G. J. (2003), Invertebrates (2nd ed), Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts.
5. Engemann, J. G. and Hegner, R. W. (1981), Invertebrate Zoology (3rd ed), Macmillan, New York.
6. Gardiner, M. S. (1972), The Biology of Invertebrates, McGraw Hill, New York.
7. Meglitsch, P. A. and Schran, F. R. (1991), Invertebrate Zoology (3rd ed), Oxford University Press, New York.

8. Pechenik, A. Jan. (2000), Biology of the invertebrates, (4th ed), McGraw Hill Book Co. Singapore.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Zoology (Nonchordates- II Lab)
Course Code: BSMP-2483
(PRACTICAL)

Course Outcomes:

After passing this course the student will be able to:

CO1. Know about the morphological, physiological & behavioural adaptations of different animals in different habitats.

CO2. Familiarise with the classification & ecology of invertebrates.

CO3. Identify different zoogeographical realms with fauna.

CO4. Know about the different nest of birds.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Zoology (Nonchordates- II Lab)
Course Code: BSMP-2483
(PRACTICAL)

Credits: 0-0-2 **Max Marks: 50**
Time: 3 Hours **Practical: 35**
CA: 15

Instructions for the Practical Examiners:

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

1. Classification up to order level with ecological notes and economic importance (if any) of the following animals:

Arthropoda: Peripatus, Palaemon (prawn), Lobster, Cancer (crab), Sacculina, Eupagurus (hermit Crab), Lepas, Balanus, Cyclops, Daphnia, Lepisma, Periplaneta (cockroach), Schistocerca (locust), Poecilocerus (ak grasshopper), Gryllus (cricket), Mantis (praying mantis), Cicada, Forficula (earwig), Dragonfly, Termite queen, Bug, Moth, Beetles, Polistes (wasp), Apis (honey bee), Bombyx, Pediculus (body louse) Millipede and Centipede, Palamnaeus (scorpion), Aranea (spider) and Limulus (king Crab).

Mollusca: Anodonta, Mytilus, Ostrea, Cardium, Pholas, Solen (razor fish), Pecten, Haliotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus shell (Complete and T.S.), Chiton, Dentalium.

Echinodermata: Asterias, Echinus Ophiothrix, Antedon.

Hemichordata: Balanoglossus.

2. **Study of the following permanent stained preparations:**

Trachea and mouth parts of Insects

Radula and osphradium of Pila

T.S. Star fish (Arm).

3. **Demonstration of digestive and nervous systems of *Periplaneta* (cockroach) with the help of charts/models/videos.**

4. **Assignment**

Note:- Some changes can be made in the practicals depending on the availability of material.

Guidelines for conduct of practical Examination:

1.	Identify and classify the specimens upto order level. Write a note on their habit, habitat, special features and economic importance.	**7**
2.	Draw a well labelled sketch of the given system of the animal & explain it to the examiner.	**5**
3.	Identify the slides/models and give two reasons for identification.	**5**
4.	Identify the adaptive feature/nest.	**3**
5.	Assignment	**5**
6.	Viva-voce & Practical file.	**10**

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Chemistry (Organic Chemistry-I)
Course Code: BSML-2084
(THEORY)

Course outcomes:

Students will be able to

CO1: Interpret the bonding, hybridization between different organic compounds, explain the various reaction mechanisms and different electron displacement effects

CO2: Interpret the reactions and properties of alkanes, alkenes & alkynes, derive the electrophilic, nucleophilic addition reactions, free radical mechanisms of halogenation of alkanes.

CO3: Differentiate between aromatic, anti-aromatic and non-aromatic compounds, explain the effect of various substituents on the reactivity of aromatic compounds

CO4: Learn about the basic chemistry of organic compounds along with methodsof formation and reactions of alkyl halides and their derivatives.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Chemistry (Organic Chemistry-I)
Course Code: BSML-2084
(THEORY)

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

Credit (L-T-P): 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters: Eight questions of equal marks (14 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 subdividedinto 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

Hybridization, Use of arrows, Types of reagents, Reactive Intermediates: Carbocations, Carbanions, Free radicals Carbenes, arenes and Nitrenes. Stereochemistry: Fischer Projection, Newmann and Sawhorse Projection formulae and their interconversions, Geometrical isomerism, E/Z notations with C.I.P rules, Optical Activity, enantiomeric and diastereomeric excess, Chirality/Asymmetry, Enantiomers, Diastereoisomers, Racemic mixture and resolution, optical activity in absence of chiral carbon, Relative and absolute configuration: D/L and R/S designations

UNIT- II

Chemistry of alkanes: methods of formation of alkanes, Free radical substitutions:Halogenation -relative reactivity and selectivity. Cycloalkanes and Conformational Analysis: Baeyer strain theory, Conformation analysis, relative stability and energy diagrams of ethane, propane, butane, cyclohexane and Chair, Boat and Twist boat forms of cyclohexane.

Chemistry of alkenes/alkynes: Nomenclature and Formation of alkenes and alkynes, Mechanism of E1 and E2 reactions, Saytzeff and Hofmann eliminations. Mechanisms and Reactions of alkenes, reduction, syn and anti-hydroxylation (oxidation), 1, 2- and 1,4- addition reactions in conjugated dienes and Diels-Alder reaction, mechanism of allylic and benzylic bromination. Reactions of alkynes.

UNIT- III

Aromaticity: Huckel's rule, Structure of benzene: Molecular formula and Kekule structure. Stability and C-C bond lengths of benzene, resonance structure. Aromatic electrophilic substitution–general pattern of the mechanism, role of σ and π complexes. Mechanism of nitration, halogenation, sulphonation, mercuration and Friedel Crafts reaction. Energy profile diagrams. Activating and deactivating substituents, reactivity and orientation of disubstitution. Side chain reactions of benzene derivatives. Methods of formation and chemical reactions of alkylbenzenes.

UNIT- IV

Alkyl halides: Methods of preparation, details of nucleophilic substitution reactions – SN1, SN2 and SNi mechanisms with stereochemical aspects and effect of solvent, nucleophilicsubstitution vs. elimination. Aryl halides: Preparation, including preparation from diazonium salts, nucleophilic aromatic substitution in details; SNAr, Benzyne mechanism. Relative reactivity and mechanism of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions in detail.

Books suggested

1. Morrison, R. N. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).
2. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (PearsonEducation).
3. Solomons, T. W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
4. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson Education,2008.
5. Fundamentals of Organic Chemistry, Solomons, John Wiley.
6. Introduction to Organic Chemistry, Sireitwieser, Heathcock and Kosover, Macmilan.
7. Kalsi, P. S. Stereochemistry Conformation and Mechanism, New Age International, 2005.
8. McMurry, J. E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning IndiaEdition, 2013.
9. Eliel, E. L. & Wilen, S. H. Stereochemistry of Organic Compounds, Wiley: London,1994.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Chemistry (Organic Chemistry-I Lab)
Course Code: BSMP-2084
(PRACTICAL)

Course outcomes:

Students will be able to analyze the given organic compound through

CO1. Understand the basics of Qualitative analysis

CO2. Detection of elements (N, S and halogens) in organic compounds.

CO3. Detection of functional groups (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide) in simple organic compounds

CO4. preparation of their derivatives

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Chemistry (Organic Chemistry-I Lab)
Course Code: BSMP-2084
(PRACTICAL)

Examination Time: 3 Hrs **Max. Marks: 50**

Credits: 0-0-2 **Practical: 35,**

CA: 15

Basic techniques on purification of organic compounds. Determination of melting point and boiling point of organic compounds. Detection of nitrogen, halogens and sulphur in organic compounds. Qualitative analysis of unknown organic compounds containing simple functional groups.

Books Suggested

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
2. Furniss, B.S., Hannaford, A.J., Smith, P.W.G. & Tatchell, A.R. Practical OrganicChemistry, 5 th Ed. Pearson (2012)
3. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry:Preparation and Quantitative Analysis, University Press (2000).
4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Botany (Cell Biology and Genetics)
Course Code: BSML- 2075
(THEORY)

Course outcome:

After passing this course the course the student will be able to: -

CO1. Explain the structure of cell and organelles associated with it.

CO2. Understand cellular envelopes and their functions.

CO3. Understand the chemical basis of hereditary material i.e., DNA, Mitosis, Meiosis and gene interactions.

CO4. Understand different methods of gene expression in prokaryotes and eukaryotes AND various methods of genetic mutation and variations in living beings.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Botany (Cell Biology and Genetics)

Course Code: BSML- 2075

(THEORY)

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

Credits (L-T-P): 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters:

Eight questions of equal marks (14 marks each) 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.

Unit-I

Nucleus: Ultrastructure; nuclear membrane; nucleolus; nucleoid in prokaryotes. Histone proteins: structure and function, Extra nuclear Genome: mitochondrial and plastid DNA; plasmids. Structure and function of cellular organelles.

The Cell Envelopes: Ultra structure of plasma membrane: bi-layer lipid structure, extrinsic and intrinsic proteins, functions. Ultra structure of cell wall, cell wall composition and its functions.

Unit-II

DNA the Genetic Material: DNA structure and its types (A, B, Z DNA); replication; DNA–protein interaction; the nucleosome model; genetic code; satellite and repetitive DNA, Cell Division: Mitosis; meiosis.

Unit-III

Genetic Inheritance: Mendelism; laws of segregation and independent assortment; linkage analysis; Incomplete dominance and co-dominance, multiple alleles, lethal alleles, epistasis, pleiotropy, penetrance and expressivity, polygenic inheritance.

Unit-IV

Gene expression: Structure of gene; transfer of genetic information; transcription, translation, protein synthesis, tRNA; ribosomes; regulation of gene expression in prokaryotes and eukaryotes.

Genetic Variations: Mutations, spontaneous and induced; transposable genetic elements; DNA, damage and repair

Suggested Readings:-

1. Johnson, A. Raff, L. and Walter, R. (2008). Molecular Biology of the Cell (5th Edition). Taylor and Francis Group, USA.
2. Karp, G. (2013). Cell and Molecular Biology: Concepts and Experiments (7th Edition). Wiley Publishers, USA.

3. Kleinsmith, L.J. and Kish, V.M. (1995). Principles of Cell and Molecular Biology (2nd edition). Harper Collins College Publishers, New York, USA.
4. Lodish, H. Berk, A. Kaiser, C. A. Krieger, M. Bretscher, A. and Ploegh, H. (2016). Molecular Cell Biology, W.H. Freeman & Co., New York, USA.
5. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics (5th Edition). John Wiley and Sons Inc., U.S.A.
6. Brown, T.A. (2011). Genetics: A Molecular Approach (3rd Edition). BIOS Scientific Publishers, UK.
7. Fletcher, H., Hickey, I. and Winter, P. (2010). Instant Notes on Genetics (3rd edition) Taylor and Francis Group, USA.
8. Gardner, E.J. Simmons, M.J. and Snustad, D.P. (2012). Principles of Genetics (8th Edition). Wiley Sons, USA.
9. Gupta, P.K. (2016). Cell and Molecular Biology, Rastogi Publications, Meerut, India.
10. Krebs, B.E. Goldstein, E.S. and Kilpatrick, S.T. (2011). Lewins Genes X. Jones and Bartlett Publishers, LLC, UK.
11. Singh, B.D. (2007). Molecular Genetics. Kalyani Publishers, India.
12. Fukui, K. and Nakayama, S. (1996). Plant Chromosomes; Laboratory Methods, CRC Press, Boca Raton, Florida.
13. Gunning, B.E.S. and Steer, M.W. (1996). Plant Cell Biology; Structure and Function, Jones and Barllett Publishers, Boston, Massachusetts.
14. Harns, N. and Oparka, K.J. (1994). Plant Cell Biology, A Practical Approach. IRL Press, at Oxford University Press, Oxford, UK.
15. Sharma, A.K. and Sharma, A. (1999). Plant Chromosomes; Analysis. Manipulation and Engineering, Harwood Academic Publishers, Australia.
16. Plopper, G. (2016). Principles of Cell Biology. Jones and Barnett Learning, Boston, Massachusetts.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Botany (Cell Biology and Genetics Lab)
Course Code: BSML- 2075
(PRACTICAL)

Course Outcome:

After passing this course the student will be able to:

CO1. Study of cell structure and plastids examination.

CO2. Understand microscopic structure of cell through light microscope and electron micrograph.

CO3. Evaluate methodologies in the design of genetics experimental procedures.

CO4. Analyze special chromosome types and apply inheritance laws using genetic data.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Botany (Cell Biology and Genetics Lab)

Course Code: BSML- 2075

(PRACTICAL)

Examination Time: 3 Hrs. **Max. Marks: 50**

Credits (L-T-P):0-0-2 **Theory: 35**

CA: 15

Suggested Laboratory Exercises:

1. To study cell structure from onion leaf peels; demonstration of staining and mounting methods.
2. Comparative study of cell structure in onion cells, *Hydrilla* and *Spirogyra*.
3. Study of cyclosis in *Tradescantia* Staminal Cells.
4. Study of plastids to examine pigment distribution in plants (e.g. *Cassia*, *Lycopersicon* and *Capsicum*).
5. Examination of electron micrographs of eukaryotic cells with special reference to organelles.
6. Study of electron micrographs of viruses, bacteria, cyanobacteria and eukaryotic cells for comparative cellular organization.
7. Examination of various stages of mitosis and meiosis using appropriate plant material (e.g. onion root tips, onion flower buds).
8. Cytological examination of special types of chromosomes: bar body, lampbrush and polytene chromosomes.
9. Working out the laws of inheritance using seed mixtures.
10. Working out the mode of inheritance of linked genes from test cross and/or F2 data.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Botany (Medicinal Botany)
Course Code: BSMM- 2070
(THEORY)

Course Outcomes:

After completion of course students will be able to:

CO1. Understand the historical significance and foundational concepts of Ayurveda, Siddha, and Unani medicinal systems.

CO2. Identify and conserve endangered and endemic medicinal plants.

CO3. Acquire skills in the propagation techniques of medicinal plants.

CO4. Explore ethnobotany and its application in traditional and modern medicine.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Botany (Medicinal Botany)

Course Code: BSMM- 2070

(THEORY)

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

Credits (L-T-P): 2-0-1 **Theory: 50**

CA: 30

Instructions for the Paper Setters:

Eight questions of equal marks (10 marks each) 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.

Unit-I

1. History, Scope and Importance of Medicinal Plants: Indigenous Medicinal Sciences; Definition and Scope-*Ayurveda*: History, origin, *panchamahabhutas*, *saptadhatu* and *tridosha* concepts, *Rasayana*, plants used in ayurvedic treatments, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine. Unani: History, concept: *Umoor-e- tabiya*, tumors treatments/ therapy, polyherbal formulations.

Unit-II

2. Conservation of endangered and endemic medicinal plants: Definition; Endemic and Endangered medicinal plants, Red list criteria; *In situ* conservation: Biosphere reserves, sacred groves, National Parks; *Ex situ* conservation: Botanical Gardens.

Unit-III

3. Propagation of Medicinal Plants: Objectives of the nursery, its classification, important components of a nursery, sowing, pricking, use of green house for nursery production, propagation through cuttings, layering, grafting and budding.

Unit-IV

4. **Ethnobotany and Folk medicines:** Definition; Ethnobotany in India: Methods to study ethnobotany; Applications of Ethnobotany: National interacts, Palaeo-ethnobotany, folk medicines of ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India. Application of natural products to certain diseases- Jaundice, cardiac, infertility, diabetics, Blood pressure and skin diseases.

Suggested Readings

1. Trivedi P C, 2006. Medicinal Plants: Ethnobotanical Approach, Agrobios, India.

2. Dhaduk, H. L, 2016, Medicinal Plants: Cultivation and Uses. India: DAYA Publishing House.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Botany (Medicinal Botany)

Course Code: BSMM- 2070

(PRACTICAL)

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

Suggested Laboratory Exercises

1. To visit the nurseries for the study of medicinal and aromatic plants.
2. To visit Botanical Garden and Herbal Garden for the identification of Medicinal Plants.
3. To study harvesting, drying, grading, storage, processing techniques for medicinal and aromatic plants.
4. Collection and Identification of locally used ethnobotanicals.
5. To extract essential oils from aromatic plants by hydrodistillation method.
6. To study major ethnomedicinal plants and practices followed in India.
7. Qualitative analysis of secondary metabolites from plant sample.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)
Course Title: Drug Abuse and Ethical Education
Course Code: VACD-2161
(THEORY)

Course Outcomes

CO1. This academic input has been taken up to sensitize the students to the need of a morally upright character in the present times when youth is being mislead into consumption/ abuse of drugs, thereby ruining their present and future.

CO2. By studying Drug Abuse the students will have a better understanding of the concept.

CO3. They will be able to analyze the physical, psychological and social consequences on individuals and develop strategy for prevention and management to promote healthy life style and community well being.

Bachelor of Science (Medical) (Honours) Semester–II (Session 2025-26)

Course Title: Drug Abuse and Ethical Education

Course Code: VACD-2161

(THEORY)

Examination Time: 3 Hours **Max Marks: 100**

Credits: 4-0-0 **Theory: 70**

CA: 30

Instructions for Students:

- **Total Marks: 100 (Final Exam: 70; Internal Assessment: 30)**
- Final Exam: multiple choice Questions Marks-70; Time: 3 hours
- Internal Assessment: 30 (Assessment: 3; Attendance: 2)
- Total marks: 100 converted to grade for final result
- Grading system for Audit Course

Letter Grade	Percentage Score
O	90.1-100 %
A+	80.1-90 %
A	70.1-80 %
B+	60.1-70 %
B	50.1- 60 %
C	45-50 %
P	35-44.9 %
F	Below 35
Ab	Absent

Module I: Challenges before youth:

Drug Abuse: Meaning; Nature and Types and Extent of Drug Abuse in India and Punjab
Consequences of Drug Abuse: Individual; Education; Employment; Income Family; Violence; Society; Crime and Social Disorganization

Module II: Solving the problem:

Prevention of Drug abuse: Role of family and Educational Institutions; Parent child relationship; Family support and Supervision; Counseling and Teacher as role-model.
Management of Drug Abuse: Medical and Psychiatric management; Medication and withdrawal effects; Counseling; Behavioral and Cognitive therapy; Legislation: NDPs act; Statutory warnings and Strict enforcement of laws

Module III: Understanding the Self:

Character building: Self-awareness; Self growth; Self Control; Self Discipline; Character and Destiny
Generation gap: Relation with peer group; siblings and elders

Module IV: Social Responsibility:

Opposite Sex Relations

Globalization and IT Boom- Advantages and Disadvantages

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Punjabi (Compulsory)
Course Code: BSML-3421
(THEORY)

COURSE OUTCOMES

CO1. 'ਚੋਣਵੇ ਪੰਜਾਬੀ ਨਿਬੰਧ' ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਵਾਰਤਕ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2. ' ਆਧੁਨਿਕ ਇਕਾਂਗੀ' ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਇਕਾਂਗੀ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3. ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ। ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਵਿਚੋਂ ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਜੋੜਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਨ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO4. ਮੂਲ ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Punjabi (Compulsory)
Course Code: BSML-3421
(THEORY)

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

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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 ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਚੋਣਵੇ ਪੰਜਾਬੀ ਨਿਬੰਧ (ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ,ਪਰਮਜੀਤ ਸਿੰਘ ਸਿੱਧੂ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ,ਪਟਿਆਲਾ।

ਘਰ ਦਾ ਪਿਆਰ, ਉਮਰ ਲੰਮੀ ਹੋ ਸਕਦੀ ਹੈ,ਅੱਥਰੂ, ਪੁਰਾਣਾ ਪੰਜਾਬ, ਇੰਗਲੈਂਡ ਦਾ ਸੋਗੀ ਸੋਮਵਾਰ,ਖਿਡਾਰੀਆਂ ਦੇ ਵਹਿਮ।

(ਪਾਠ ਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਹਨ)

(ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ /ਕਲਾ ਪੱਖ)

ਯੂਨਿਟ-II

ਆਧੁਨਿਕ ਇਕਾਂਗੀ

(ਸੰਪਾ. ਰੌਸ਼ਨ ਲਾਲ ਆਹੂਜਾ, ਮਨਜੀਤ ਪਾਲ ਕੌਰ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਵਿਬਾ ਵਸਤੂ/ਪਾਤਰ ਚਿਤਰਨ/ਰੰਗਮੰਚੀ ਪੱਖ/ ਸਾਰ

ਯੂਨਿਟ-III

(ੳ) ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ)

(ਅ) ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਵਿਚੋਂ ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਜੋੜਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਨਾ

ਯੂਨਿਟ-IV

ਮੂਲ ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Basic Punjabi
Course Code: BSML-3031
(THEORY)

Course Outcomes

CO1. ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ। ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਦੇਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO2. 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।

CO3. ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO4. ਨਿਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Basic Punjabi

Course Code: BSML-3031

(THEORY)

ਸਮਾਂ: 3 ਘੰਟੇ | **Maximum Marks: 100**

L-T-P: 4-0-0 | **Theory: 70**

CA: 30

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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

ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ

ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਅਨੁਵਾਦ

ਯੂਨਿਟ-II

ਕਵਿਤਾਵਾਂ

(ੳ) ਸਮਾਂ (ਭਾਈ ਵੀਰ ਸਿੰਘ)

(ਅ) ਖ਼ੈਰ ਪੰਜਾਬੀ ਦੀ (ਫ਼ੀਰੋਜ਼ਦੀਨ ਸ਼ਰਫ਼)

(ਇ) ਅੰਬੀ ਦਾ ਬੂਟਾ (ਪ੍ਰੋ. ਮੋਹਨ ਸਿੰਘ)

(ਸ) ਬਿਰਹੋਂ ਦੀ ਰੜਕ (ਸ਼ਿਵ ਕੁਮਾਰ)

(ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ,ਸਾਰ)

ਯੂਨਿਟ-III

ਕਹਾਣੀਆਂ

(ੳ) ਭੂਆ (ਨਾਨਕ ਸਿੰਘ)

(ਅ) ਦੁੱਧ ਦਾ ਛੱਪੜ (ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ)

(ਏ) ਸਾਂਝੀ ਕੰਧ (ਸੰਤੋਖ ਸਿੰਘ ਧੀਰ)

(ਸ) ਉਹ ਸੋਚਦੀ (ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ)

(ਵਿਸ਼ਾ ਵਸਤੂ,ਸਾਰ)

ਯੂਨਿਟ-IV

ਨਿਬੰਧ

(ੳ) ਘਰ ਦਾ ਪਿਆਰ (ਤੇਜਾ ਸਿੰਘ)

(ਅ) ਖ਼ੁਸ਼ਾਮਦੀ ਨਾਲ (ਹਰਿੰਦਰ ਸਿੰਘ ਰੂਪ)

(ਏ) ਆਓ, ਗੱਲਾਂ ਕਰੀਏ (ਨਰਿੰਦਰ ਸਿੰਘ ਕਪੂਰ)

(ਸ) ਮਨੁੱਖ ਕੁਦਰਤ ਦੀ ਨੇਕ ਔਲਾਦ ਨਹੀਂ (ਸੁਰਿੰਦਰ ਮੰਡ)

(ਵਿਸ਼ਾ ਵਸਤੂ,ਸਾਰ)

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Punjab History and Culture
Course Code: BSML-3431
(THEORY)

Course Outcomes

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab. They will be able to

CO1. Understand the society and culture of Medieval Punjab.

CO2. Understand the growth of various sects during the Bhakti Movement in Punjab.

CO3. Comprehend and analyse the teachings of Guru Nanak Dev and its relevance today

CO4. Make a comparison between the philosophy and teachings of first five Sikh Gurus and their relevance in the present scenario and also to understand and analyse the institutions started by Sikh Gurus and their implications till date

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Punjab History and Culture

Course Code: BSML-3431

(THEORY)

Examination Time 3 Hrs **Maximum Marks: 100**

L-T-P: 4-0-0 **Theory: 70**

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 800words, 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. Society and Culture of Punjab during Turko-Afghan Rule
2. The Punjab under the Mughals

Unit-II

3. Bhakti Movement and Impact on Society of Punjab
4. Sufism in Punjab

Unit-III

5.Guru Nanak: Early Life and Teachings

6. Concept of Sangat and Pangat

Unit-IV

7. Contribution of Guru Angad Dev, Guru Amar Das and Guru Ram Das
8. Guru Arjun Dev and Compilation of Adi Granth

Suggested Readings:

- Chopra, P. N., Puri, B.N., &Das. M.N. (1974). A Social, Cultural and Economic History of India, Vol. II. New Delhi : Macmillan India.
- Grewal, J.S. (1994) The Sikhsof the Punjab, Cambridge University Press, New Delhi.
- Singh, Fauja (1972), A History of the Sikhs, Vol. II,I. Patiala: Punjabi University.
- Singh, Khushwant (2011). A History of Sikhs- Vol. I (1469-1839), New Delhi, Oxford University Press.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: English Language Skills- II
Course Code: BSML-3212
(THEORY)

Course Outcomes

After passing this course, the students will be able to:

CO1. Understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language through the study of "English Grammar in Use" by Raymond Murphy

CO2. To develop the art of creative expression by writing a paragraph on any given topic

CO3. Comprehend the meaning of texts and answer questions related to situations, episodes, and characters depicted in them through the study of the essays in the text "Prose for Young Learners"

CO4. Appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu through the study of the essays in the text "Prose for Young Learners"

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: English Language Skills- II

Course Code: BSML-3212

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Credits L-T-P: 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters:

Eight questions are to be set, two from each of the four Units (I-IV). 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 will carry 14 marks. (14x5=70)

Unit-I

English Grammar in Use, 5th Edition by Raymond Murphy, CUP (Units: 98-130)

Unit-II

Essay Writing and English Grammar in Use (Units: 131-145)

Unit-III

Making Connections by Kenneth J. Pakenham, 3rd Edn. CUP: Unit-I (Global Health) and Unit II (Multicultural Societies)

Unit-IV

Making Connections by Kenneth J. Pakenham, 3rd Edn. CUP: Section III (Aspects of Language) and Section IV (Sustaining Planet Earth)

Texts Prescribed:

1.English Grammar in Use (Fifth Edition) by Raymond Murphy, CUP

2.Making Connections by Kenneth J. Pakenham, 3rd Edn. CUP

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Zoology (Diversity of Chordates)
Course Code: BSML-3483
(THEORY)

Course Outcomes

After passing this course the student will be able to:

CO1. Understand general body plan of Herdmania and external characters of Amphioxus.

CO2. Understand external characters and affinities of Petromyzon as well as body systems of Labeo.

CO3. Understand body plan and various systems of Frog and Uromastix.

CO4. Understand body systems of Pigeon and Rat.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Zoology (Diversity of Chordates)

Course Code: BSML-3483

(THEORY)

Credits: 4-0-0 **Max Marks: 100**

Examination Time: 3 Hours **Theory: 70**

CA: 30

Instructions for the Paper Setter

Eight questions of equal marks (14 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

Brief Introduction to Protochordata

Urochordata: Type study- *Herdmania*

Cephalochordata: External features and affinities of *Amphioxus*

Unit II

Cyclostomata: External Characters of *Petromyzon*

Affinities of Cyclostomata

Pisces: Type study-*Labeo*

Unit III

Amphibia: Type study-Frog

Reptilia: Type study-*Uromastix*

Unit IV

Aves: Type study-Pigeon

Mammals: Type study-Rat

Suggested Reading Material.

1. Dhami, P.S. & Dhami J.K. (1998), Vertebrates, R. Chand & Co., New Delhi.
2. Hildebrand, M. and Goslow Jr. G.E. (2001), Analysis of Vertebrates Structure, John Wiley, N. Y.
3. Jollie, M. (1968), Chordate Morphology, Reinhold, New York.
4. Kardong, K. V. (1995), Vertebrates – Comparative Anatomy, Function, Evolution. W.B.C. Pub. , Oxford.

5. Kent, G. C. and Carr, R. K. (2001), Comparative Anatomy of the Vertebrates (9th ed), McGraw Hill Higher Education, New York.
6. Linzey, D. (2001), Vertebrate Biology, McGraw Hill Publishing Company, New York.
7. Pough, F. H., Heiser, J. B. and McFarland, W. N. (1990), Vertebrate Life (3rd ed), Macmillan Pub. Co., New York.
8. Young, J. Z. (1982), The Life of Vertebrates, New York.
9. Parker, T.J. and Haswell, W.A (1981) Text Book of Zoology, Vol. II (Vertebrates), ELBS and Macmillian Press Ltd.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Zoology (Chordates Lab)
Course Code: BSMP-3483
(PRACTICAL)

Course Outcomes

CO1. Helps the students to get acquaintance to animal kingdom especially the animal species belonging to phylum Chordata

CO2. Familiarize organ systems.

CO3. Know about economically important specimens (preserved).

CO4. Learn about histology and morphology of chordates

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Zoology (Chordates Lab)

Course Code: BSMP-3483

(PRACTICAL)

LTP: 0-0-2 **Max Marks: 50**

Examination Time: 3 Hrs. **Marks: 35**

CA: 15

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

Guidelines for conduct of Practical Examination:

1.	Draw a labelled sketch of the system of the given animal & explain it to the Examiner.	5
2.	Identify and classify the specimens upto order level. Write a short note on habitat, special features, feeding, habits and economic importance of the specimens.	10
3.	Identify the slides/specimens, give two reasons for identification.	8
4.	Assignment/ Visit Report	6
5.	Viva-voce & Practical file.	6

I. Classification up to order level, except in case of Pisces and Aves where classification up to subclass level, habits, habitat, external characters and economic importance (if any) of the following animals is required :

Urochordata **:** *Herdmania, Molgula, Pyrosoma, Doliolum, Salpa&Oikopleura.*

Cephalochordata: *Amphioxus.* Study of the following prepared slides:

T.S. *Amphioxus* through various regions, Pharynx of *Amphioxus*

Cyclostomata : *Myxine, Petromyzon &Ammocoetes*Larva.

Chondrichthyes : *Zygaena*(hammer head shark), *Pristis* (saw fish), *Narcine (electric ray), Trygon, Rhinobatus and Chimaera* (rabbit fish).

Actinoptergii :*Polypterus, Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Tetradon, Echeneis and Solea.*

Dipneusti (**Dipnoi**) : *Protopterus*(African lung fish)

Amphibia : *Uraeotyphlus, Necturus, Amphiuma, Amblystoma*and its Axolotl Larva, *Triton, Salamandra, Hyla, Rhacophorus*

Reptilia	:	*Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Vipera, Crocodilus, Gavialis, Chelone*(turtle) and *Testudo* (tortoise),Differences in nonpoisonous and poisonous snakes.
Aves	:	*Casuarius, Ardea, Anas, Milvus, Pavo, Eudynamics, Tyto* and *Alcedo.*
Mammalia	:	*Ornithorynchus, Echidna, Didelphis, Macropus, Loris, Macaca, Manis, Hystrix, Funambulus, Panthera, Canis, Herpestes, Capra, Pteropus.*

II. Study of the following systems with the help of charts/models/videos:

Herdmania	**:**	General anatomy
Labeo	:	Digestive and reproductive systems, heart, afferent and branchial arteries, cranial nerves and internal ear.
Pigeon	:	Digestive, arterial, venous and urino-genital systems.
WhiteRat	:	Digestive, arterial, venous and urino-genital systems.

Study of permanent slides of whole mount of Pharynx of *Herdmania*and *Amphioxus.*

Cycloid scales of *Labeo,* blood smear of mammal, Histology of rat/rabbit (compound tissues)

Note:- Some changes can be made in the practicals depending on the availability of material.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Chemistry (Physical Chemistry-I: States of Matter and Electrochemistry)
Course Code: BSML-3084
(THEORY)

Course Outcomes:

Students will be able to

CO1: Explain the fundamental principles governing the gaseous and liquid states, including kinetic theory, van der Waals equation, critical phenomena, and molecular velocity distributions.

CO2: Describe the properties and classification of colloids and crystals, analyze colloidal stability, and interpret crystal structures using X-ray diffraction techniques.

CO3: Apply the concepts of ideal and non-ideal solutions to determine colligative properties, calculate molecular weights, and explain deviations using thermodynamic and experimental methods.

CO4: Analyze electrochemical systems using concepts like conductivity, electrode potentials, Nernst equation, and concentration cells, and evaluate electrochemical parameters such as EMF, ΔG, ΔH, and equilibrium constants.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Chemistry (Physical Chemistry-I: States of Matter and Electrochemistry)

Course Code: BSML-3084

(THEORY)

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

Credit (L-T-P): 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters: Eight questions of equal marks (14 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 (15 Hrs.)

Gaseous States: Postulates of kinetic theory of gases, deviation from ideal behaviour, van der Waals equation of State. Critical Phenomena: PV isotherms of real gases, continuity of states, the isotherms of van der Waal's equation, relationship between critical constants and van der Waals constants, the law of Corresponding states, reduced equation of state. Molecular Velocities: Root mean square, average and most probable velocities. Qualitative Discussion of the Maxwell's distribution of molecular velocities. Collision number, mean free path and collision diameter. Liquefaction of gases. **Liquid State**: Intermolecular forces, surface tension and viscosity of liquids and its determination. Structure of liquids (a qualitative description). Structural differences between solids, liquids and gases.

UNIT- II (15 Hrs.)

Colloidal State: Definition of colloids, classification of colloids. Solids in liquids (Sol): kinetic, optical and electrical properties, stability of colloids, protective action, Hardy Schulze law, gold number. Liquids in liquids (emulsions): Types of emulsions, preparation. Emulsifiers. General applications of colloids.

Solid State: Definition of space lattice and unit cell, Law of crystallography- (i) Law of constancy of interfacial angles, (ii) Law of rationality of indices, (iii) Symmetry elements in crystals. X-ray diffraction by crystals. Derivation of Bragg's Law in Reciprocal space. Determination of crystal structure of NaCl, KCl by use of Powder method; Laue's method. Liquid crystals, Classification, structure of nematic and cholestric phases.

UNIT- III (15 Hrs.)

Solutions, Dilute Solutions and Colligative Properties: Ideal and non–ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient. Dilute solution, colligative properties, Raoult's law, non-ideal system, azeotropes-HCl-H2O and ethanol-water system. Relative lowering of vapour pressure, molecular weight determination. Osmosis, Law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and

elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes.

Electrochemistry–I: Specific conductance and equivalent conductance, measurement of equivalent conductance, Kohlrausch law, Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations.

UNIT- IV (15 Hrs.)

Electrochemistry–I: Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Migration of ions, Transport number, Applications of conductivity measurements, Electrolytic and Galvanic cells-reversible and irreversible cells, conventional representation of electrochemical cells. Standard electrode potential, standard hydrogen electrode, reference electrodes, sign conventions, electrochemical series and its significance. Nernst equation, derivation of cell E.M.F. and single electrode potential. EMF of a cell and its measurements. Calculation of thermodynamic quantities of cell reactions (ΔG, ΔH and K). Types of reversible electrodes: gas- metal ion, metal ion, metal insoluble salt-anion and redox electrodes. Electrode reactions. EMF of reversible electrodes.

Electrochemistry–II: Polarization, over potential, hydrogen overvoltage and its application. Concept of activities and activity coefficient. Concentration cells with and without transference, liquid junction potential, application of concentration cells, valency of ions, solubility product and pH determination, potentiometric titrations.

Books Suggested

1. Atkins, P., Paula, J.de, Atkins Physical Chemistry; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Inc, 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; 1st edition, Pubs: John Wiley & Sons Inc., 1992.
7. Dogra, S.K., Dogra, S., Physical Chemistry Through Problems; Pubs: Wiley Eastern Limited, 1991.
8. Levine, I.N., Physical Chemistry; 5th edition, Pubs: Tata McGraw Hill Publishing Co. Ltd., 2002.
9. Moore, W. J., Basic Physical Chemistry; Pubs: Prentice Hall of India Pvt. Ltd, 1983.
10. University General Chemistry, C.N.R. Rao, Macmillan.
11. Metz, C.R., Theory and problems of Physical Chemistry; Schaum's outline series, 2nd edition,

Pubs: McGraw-Hall Book Company, 1989.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Chemistry (Physical Chemistry-I Lab)
Course Code: BSMP-3084
(THEORY)

Course Outcomes

Students will be able

CO1. Perform acid-catalyzed hydrolysis of esters and evaluate the specific reaction rate and effect of acid strength, applying principles of chemical kinetics.

CO2. Determine physical properties of liquids such as viscosity, surface tension, and refractive index using standard laboratory techniques and calculate related molecular parameters.

CO3. Analyze and interpret crystallographic data from X-ray powder diffraction patterns for crystal system identification and indexing.

CO4. Prepare buffer solutions and perform pH metric titrations to determine dissociation constants, enhancing understanding of acid-base equilibria and solution chemistry.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Chemistry (Physical Chemistry-I Lab)

Course Code: BSMP-3084

(THEORY)

Examination Time: 3 Hrs **Max. Marks: 50**

Credits: 0-0-2 **Practical: 35**

CA: 15

1. To determine the specific reaction rate of hydrolysis of ethyl acetate catalysed by acid at room temperature.
2. To study the effect of acid strength on hydrolysis of an ester.
3. To find the relative and absolute viscosity of given liquid at room temperature. (n-butyl alcohol, sucrose, and glycerine solution in water)
4. To study the surface tension of liquids by drop number and drop weight methods.
5. To determine the Refractive indices of given liquids (water, acetone, methanol, ethyl acetate, cyclohexane) by Abbe's refractometer & calculate their molecular refractivity.
6. To determine the composition of unknown mixture of two liquids by refractive index measurements.
7. Indexing of a given powder diffraction pattern of a cubic crystalline system.
8. Preparation of buffer solutions of different pH (a) Sodium acetate-acetic acid (b) Ammonium chloride-ammonium hydroxide
9. pH metric titration of (a) strong acid vs. strong base, (b) weak acid vs. strong base.
10. Determination of dissociation constant of a weak acid.

Books Suggested

1. Experimental Organic Chemistry, Vol. I & II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
2. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
3. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
4. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.
5. Experiments in Physical Chemistry, R.C. Das and B. Behra, Tata McGraw Hill.

6. Advanced Practical Physical Chemistry, J.B. Yadav, Goel Publishing House.
7. Advanced Experimental Chemistry, Vol. I, Physical, J.N. Guru and R. Kapoor, S. Chand & Co.
8. Selected Experiments in Physical Chemistry, N.G. Mukherjee, J.N. Ghosh & Sons.
9. Experiments Physical Chemistry, J.C. Ghosh, Bharati Bhavan.
10. Findlay's Practical Physical Chemistry, Author: Alexander Findlay, Publisher: Wiley, 1972, ISBN-10:0470258853.
11. Advanced Practical Physical Chemistry, Author: J. B. Yadav, Publisher: Krishna Prakashan Media (P) Ltd (2015), ISBN-10:8182835925.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Botany (Diversity of Phanerogams)
Course Code: BSML-3075
(THEORY)

Course outcome:

After passing this course the student will develop:

CO1. Understand seed plant characteristics and seed evolution in angiosperms and gymnosperms, including gymnosperm traits, classification, and evolution. Examine vegetative and reproductive morphology of *Pinus*, *Cycas*, and *Ephedra*.

CO2. Understanding of Botanical Nomenclature, classification of angiosperms and Salient features of the systems proposed by Bentham and Hooker, Hutchinson, Engler and Prantl

CO3. Understanding diversity of flowering plants in families like Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

CO4. Understanding diversity of flowering plants in families like Ranuculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Asteraceae.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)

Course Title: Botany (Diversity of Phanerogams)

Course Code: BSML-3075

(THEORY)

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

Credits (L-T-P): 4-0-0 **Theory: 70**

CA:30

Instructions for the Paper Setters:

Eight questions of equal marks (14 marks each) 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.

Unit–I

Seed plants: Characteristics, distinguishing features of angiosperms and gymnosperms, primitive angiosperms.

Gymnosperms: General features, classification, diversity of Gymnosperms including fossil and living gymnosperms; Geological time scale and fossilization. Study of Morphology, anatomy (root, Stem and leaf) and reproduction (life-cycle) of Pinus, Cycas, and Epherda.

Unit- II

Angiosperm Taxonomy: Brief history, Aims and fundamental components (alpha-taxonomy, Omega-taxonomy, Holotaxonomy); Identification keys. Botanical nomenclature: Taxonomic ranks; Type concept; Principle of priority. Systems of Plant Taxonomy: Artificial, Natural and Phylogenetic systems of classification. Salient features of the systems proposed by Bentham and Hooker, Engler and Prantl, Hutchinson.

Unit- III

Diversity of flowering plants as illustrated by members of the families Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

Unit- IV

Diversity of flowering plants as illustrated by members of the families Ranuculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Asteraceae.

Suggested Readings:

1. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms, New Age International Limited, New Delhi.
2. Gifford, E.M. and Foster, A.S. (1988). Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.
3. Pellant, C. (1994). Fossils, Dragon's World, Great Britain
4. Sporne, K.R. (1965). The Morphology of Gymnosperms, Hutchinson & Co. (Publishers) Ltd., London.
5. Taylor, T. N., Taylor, E. L. and Krings, M. (2008). Paleobotany: The Biology and Evolution of Fossil Plants (2nd Edition). Elsevier Inc. Netherlands.
6. Vashistha, P. C. (2016). Botany for degree students. S.Chand and Company, New Delhi
7. Bendre, A. (2007). Practical Botany, Rastogi Publications, Meerut.
8. Davis, P.H. and Heywood, V.H. (1963). Principles of Angiosperm Taxonomy, Oliver and Boyd, London.
9. Gifford, E.M. and Foster, A.S. (1988). Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.
10. Jeffrey, C. (1982). An Introduction to Plant Taxonomy, Cambridge University Press, Cambridge, London.
11. Jones, S.B., Jr. and Luchsinger, A.E. (1986). Plant Systematics (2nd edition). McGraw- Hill Book Co., New York.
12. Radford, A.E. (1986). Fundamental of Plant Systematics, Harper and Row, New York
13. Angiosperm Phylogeny Group (2003). An update of the Angiosperm Phylogeny Group classification for the orders and families of the flowering plants: APG
14. Botanical Journal of the Linnaean Society 141: 399-436. 2. Cronquist, A. (1981). An Integrated System of Classification of Flowering Plants. Columbia University Press, New York.
15. Simpson, M.C. (2006). Plant Systematics. Elsevier, Amsterdam

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Botany (Diversity of Phanerogams Lab)
Course Code: BSMP-3075
(PRACTICAL)

Course Outcome:

After passing this course the student will able to:

CO1. Demonstrate practical knowledge of vegetative and reproductive structures of *Cycas*, *Pinus* and *Ephedra* through specimen observation, dissection, and slide analysis.

CO2. Analyze anatomical features of gymnosperm organs using transverse, longitudinal, and vertical sections, including reproductive structures and developmental stages.

CO3. Identify and classify representative angiosperms from major plant families using morphological and floral characteristics.

CO4. Demonstrate understanding of taxonomic diversity and key diagnostic features of selected dicot and monocot families.

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Botany (Diversity of Phanerogams Lab)
Course Code: BSMP-3075
(PRACTICAL)

Examination Time: 3 Hrs **Max. Marks: 50**
Credits (L-T-P): 0-0-2 **Practical: 35**
CA:15

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

Suggested Laboratory Exercises:

1. **Gymnosperms**

Cycas (i) Habit, armour of leaf bases on the stem (if specimen is not available show Photography), very young leaf (circinate vernation) and old foliage leaves, scale leaf, bulbils, male cone (specimen); Microsporophyll, megasporophyll mature seed. (ii) Study through permanent slides—normal root (T.S.), stem (T.S.) (if sections are not available show photographs), ovule (L.S.). (iii) Study through hand sections or dissections-coralloid root (T.S.), rachis (T.S.), leaflet (V.S.), microsporophyll (V.S.), pollen grains (W.M.).

Pinus (i) Habit, long and dwarf shoot showing cataphylls and scale leaves, T.S. wood showing growth rings, male cone, 1st year, 2nd year and 3rd year female cones, winged seeds. (ii) Study through permanent slides-root (T.S.), female cone (L.S.) ovule (L.S.), embryo (W.M.) showing polycotyledonous condition. (iii) Study through hand sections or dissections-young stem (T.S.), old stem (wood) (T.L.S. and R.L.S.), needle (T.S. male cone (L.S.), male cone (T.S.), Pollen grains (W.M.).

Ephedra (i) Habit and structure of whole and female cones. (ii) Permanent slides-female cone (L.S.). (iii) Hand sections/dissections-node (L.S.), internode (T.S.), macerated stem to see vessel structure; epidermal peel mount of vegetative parts to study stomata, male cone (T.S. and L.S.), Pollen grains.

2. **Angiosperms**

This list is only indicative. Teachers may select plants/material available in their locality/institution.

1. Ranunculaceae: *Ranunculus, Delphinium*
2. Brassicaceae: *Brassica, Alyssum, Iberis, Coronopus.*
3. Malvaceae*: Hibiscus, Abutilon.*

4. Rutaceae: *Murraya, Citrus*.

5. Fabaceae: Faboideae: *Lathyrus, Cajanus, Melilotus, Trigonella,* Caesalpinioideae*: Cassia, Caesalpinia,* Mimosoideae: *Prosopis, Mimosa, Acacia*.

6. Apiaceae: *Coriandrum. Foeniculum, Anethum*.

7. Acanthaceae: *Adhatoda, Peristrophe*.

8. Apocynaceae: *Vinca, Thevetia, Nerium.*

9. Asclepiadaceae: *Calotropis*.

10. Solanaceae: *Solanum, Withania, Datura*.

11. Euphorbiaceae: *Euphorbia, Phyllanthus*.

12. Lamiaceae: *Ocimum, Salvia*.

13. Chenopodiaceae: *Chenopodium, Beta*.

14. Liliaceae: *Asphodelus, Asparagus*.

15. Poaceae: *Avena, Triticum, Hordeum, Poa, Sorghum*.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Gender Sensitization Program
Course Code: VACG-3531
(THEORY)

The program has been designed to instill the value of gender equality among students, enabling them to identify areas of gender discrimination, raise their voices against it, and work towards creating a gender-neutral society.

Objectives of the Course:

1. To sensitize students about gender rights, gender roles and relations.
2. To make students aware and capable of realizing their true potential.
3. To ensure equal participation of men and women in all economic, social and political processes.
4. To develop a gender perspective to transform the mindset of society.

Learning Outcomes:

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

- develop ways to address gender inequalities and promote gender justice
- understand the difference between sex and gender and cultural norms ascribed to boys/men and girls/women.
- evaluate the impact of socially defined gender roles on economic and political participation.
- analyze social problems using a gender lens.
- learn the constitutional provisions and laws relating to gender rights.
- understand the importance of comprehensive access to healthcare for all women
- defend themselves against potential attacks and adversities using self-defense techniques.
- engage themselves in critical self-reflection and work for social transformation.

CURRICULUM

Course Code: VACG 3531 **Total contact hours: 30**

MODULE	TITLE	HOURS
1	**Introduction to Gender Sensitization**	**4 Hrs.**
2	**Workshop in Self-Defense Techniques**	**12 Hrs.**
3 I	**Cultural Roles and Gender Sensitivity**	**2 Hrs.**

3 II	**Gender Dimensions in Economic Participation and Wage Gap**	**2 Hrs.**
3 III	**Gender Rights: Constitutional Rights & Legal Rights**	**2 Hrs.**
3 IV	**Social Problems and Issues: Gender Perspective with focus on Indian Society**	**2 Hrs.**
3 V	**Gender Issues and the Health Care System**	**2 Hrs.**
3 VI	**Gender and Political Participation**	**2 Hrs.**
4	**Final Assessment Feedback and Closure**	**2 Hrs.**

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Environmental Studies (Compulsory)
Course Code: VACE- 3221
(THEORY)

COURSE OUTCOMES:

After passing this course, students will be able to:

CO1. Understand the concept and need of environmental education and role of an individual in conservation of natural resources.

CO2. Learn about role of major Eco system and their conservation and Develop desirable attitude, value and respect for protection of Biodiversity.

CO3. Learn about the control measure of pollution and solid waste management and climate change and global warming.

CO4. Knowledge regarding welfare programmes and Human rights and understand the role of different agencies in the protection of environment

Bachelor of Science (Medical) (Honours) Semester–III (Session 2025-26)
Course Title: Environmental Studies (Compulsory)
Course Code: VACE- 3221
(Theory)

Time: 3 Hrs. **Max. Marks: 50**
Credit: 2-0-0 **Theory: 35**
CA: 15

Instructions for the Paper Setter:

Eight questions of equal marks (7 marks) are to be set, two in each out 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.

Unit I

1. **The multidisciplinary nature of environmental studies**
   - Definition, scope and importance, Need for public awareness
2. **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, conflicts 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 II

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)
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 III

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

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
- Public awareness

Unit IV

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

8. Introduction to Environmental Laws, Environmental Audit and Impact Assessment

- Constitutional provisions- Article 48A
- Article 51A(g) and other derived environmental rights
- 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
- Environmental risk assessment Pollution control and management
- Waste Management- Concept of 3R (Reduce, Recycle and Reuse)
- Ecolabeling /Ecomark scheme

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 Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Punjabi (Compulsory)
Course Code: BSML-4421
(THEORY)

ਸਮਾਂ: 3 ਘੰਟੇ
L-T-P: 4-0-0

Maximum Marks: 100
Theory: 70
CA: 30

COURSE OUTCOMES

CO1. 'ਗਲੀਏ ਚਿਕੜੁ ਦੂਰਿ ਘਰੁ' (ਸਵੈ ਜੀਵਨੀ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਵੈ ਜੀਵਨੀ ਸਾਹਿਤ ਰੂਪ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2. 'ਫ਼ਾਸਲੇ' (ਨਾਟਕ) ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਾਟਕ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਨਾਟਕ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3. ਲੇਖ ਰਚਨਾ ਅਤੇ ਅਖ਼ਬਾਰ ਵਿਚ ਇਸ਼ਤਿਹਾਰ ਲਿਖਣਾ ਸਿਖਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO4. ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰਨ ਦਾ ਮਕਸਦ ਵਿਦਿਆਰਥੀਆਂ ਦੁਆਰਾ ਲਿਖ਼ਤ ਵਿਚ ਕੀਤੀਆਂ ਜਾਣ ਵਾਲੀਆਂ ਗਲਤੀਆਂ ਨੂੰ ਸੁਧਾਰਨਾ ਹੈ। ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Punjabi (Compulsory)

Course Code: BSML-4421

(THEORY)

ਸਮਾਂ: 3 ਘੰਟੇ | **Maximum Marks: 100**

L-T-P: 4-0-0 | **Theory: 70**

CA: 30

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. **ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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 ਅਤੇ ਪਾਠ ਪੁਸਤਕਾਂ

ਯੂਨਿਟ-I

ਗਲੀਏ ਚਿਕੜੁ ਦੂਰਿ ਘਰੁ (ਸਵੈ ਜੀਵਨੀ): ਸ.ਸ.ਵਣਜਾਰਾ ਬੇਦੀ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ

(ਨਾਇਕ ਬਿੰਬ/ਸਵੈ ਜੀਵਨੀ ਦੇ ਤੌਰ ਤੇ ਪਰਖੇ/ਵਾਰਤਕ ਸ਼ੈਲੀ)

ਯੂਨਿਟ-II

ਫ਼ਾਸਲੇ (ਨਾਟਕ) :ਜਤਿੰਦਰ ਬਰਾੜ,

(ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ /ਨਾਟਕ ਕਲਾ)

ਯੂਨਿਟ-III

(ੳ) ਲੇਖ ਰਚਨਾ (ਸਮਾਜਕ, ਸਭਿਆਚਾਰਕ, ਇਤਿਹਾਸਕ ਅਤੇ ਵਿਦਿਅਕ ਸਰੋਕਾਰਾਂ ਸੰਬੰਧੀ)

(ਅ) ਅਖ਼ਬਾਰ ਵਿਚ ਇਸ਼ਤਿਹਾਰ

ਯੂਨਿਟ-IV

ਵਿਆਕਰਣ

(ੳ) ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਵਿਚੋਂ ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਜੋੜਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਨਾ

(ਅ) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Basic Punjabi
Course Code: BSML-4031
(THEORY)

Course outcomes

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਦੇ ਵਿਦਿਆਰਥੀ '**ਆਤਮ ਅਨਾਤਮ' (ਕਵਿਤਾ ਭਾਗ) ਦੇ** ਨਾਮਵਰ ਕਵੀਆਂ **ਮੋਹਨ ਸਿੰਘ,ਜਗਤਾਰ,ਸੁਰਜੀਤ ਪਾਤਰ,ਪਾਸ਼** ਦੀਆਂ ਰਚਨਾਵਾਂ **ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ** ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

CO2: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਦੇ ਵਿਦਿਆਰਥੀ '**ਆਤਮ ਅਨਾਤਮ' (ਕਵਿਤਾ ਭਾਗ) ਦੇ** ਵੱਖੋ ਵੱਖਰੀਆਂ ਧਾਰਾਵਾਂ ਨਾਲ ਸਬੰਧਤ **ਮੋਹਨ ਸਿੰਘ,ਜਗਤਾਰ,ਸੁਰਜੀਤ ਪਾਤਰ,ਪਾਸ਼** ਦੀਆਂ ਰਚਨਾਵਾਂ **ਦੇ ਸਾਰ** ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

CO3: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਦੇ ਵਿਦਿਆਰਥੀ '**ਆਤਮ ਅਨਾਤਮ' (ਕਵਿਤਾ ਭਾਗ) ਦੇ** ਵੱਖੋ ਵੱਖਰੀਆਂ ਧਾਰਾਵਾਂ ਨਾਲ ਸਬੰਧਤ **ਮੋਹਨ ਸਿੰਘ,ਜਗਤਾਰ,ਸੁਰਜੀਤ ਪਾਤਰ,ਪਾਸ਼ ਕਵੀਆਂ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ** ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

CO4: ਲੇਖ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ। ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰਨ ਦਾ ਮਕਸਦ ਵਿਦਿਆਰਥੀਆਂ ਦੁਆਰਾ ਲਿਖ਼ਤ ਵਿਚ ਕੀਤੀਆਂ ਜਾਣ ਵਾਲੀਆਂ ਗਲਤੀਆਂ ਨੂੰ ਸੁਧਾਰਨਾ ਹੈ।

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Basic Punjabi

Course Code: BSML-4031

(THEORY)

ਅੰਕ ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ (A-D) ਸੈਕਸ਼ਨ ਹੋਣਗੇ।ਸੈਕਸ਼ਨ A-D ਤੱਕ ਦੇ ਪ੍ਰਸ਼ਨ ਕ੍ਰਮਵਾਰ ਯੂਨਿਟ I-IV ਵਿਚੋਂ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿਚੋਂ 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

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ)(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ.ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

ਯੂਨਿਟ-II

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ)(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ.ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਸਾਰ /ਵਿਸ਼ਾ ਵਸਤੂ)

ਯੂਨਿਟ-III

ਆਤਮ ਅਨਾਤਮ (ਕਵਿਤਾ ਭਾਗ)(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ.ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਕਵੀਆਂ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ ਬਾਰੇ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ)

ਯੂਨਿਟ-IV

ਲੇਖ ਰਚਨਾ

ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਜੋੜਾਂ ਨੂੰ ਸ਼ੁੱਧ ਕਰਕੇ ਲਿਖਣਾ

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Punjab History and Culture
Course Code: BSML-4431
(THEORY)

Course Outcomes

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab

CO1. Understand the adoption of new policy by Guru Hargobind and martyrdom of Guru Tegh Bahadur

CO2. To understand the factors leading to the establishment of Khalsa Panthand its impact

CO3. Have deep insight into the conflict with Mughals and the rise of Banda Singh Bahadur and aftermath.

CO4. Understand the administration under Maharaja Ranjit Singh, also the fairs, festivals and folk music of Punjab.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Punjab History and Culture

Course Code: BSML-4431

(THEORY)

Examination Time 3 Hrs **Maximum Marks: 100**

L-T-P: 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters

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 800words, 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. Transformation of Sikhism under Guru Hargobind.

2. Martydom of Guru Teg Bahadur

Unit II

3. Creation of Khalsa

4. Khalsa and its impact on the Punjab

Unit III

5. Banda Bahadur and his achievements

6. Rise of Misls.

Unit IV

7. Maharaja Ranjit Singh:- Civil, Military and Land Revenue Administration.

8. Fair, Festivals and Folk Music in the Punjab during the medieval period (Jarag, Baisakhi and Diwali)

Suggested Readings:

- Chopra P.N., Puri, B.N., & Das, M.N. (1974), A Social, Cultural & Economic History of India.Vol.II, Macmillan India Limited, New Delhi.
- Grewal, J.S. (1994). The Sikhs of the Punjab, Cambridge University Press, New Delhi.
- Singh, Fauja (1972). A History of the Sikhs, Vol. III, Patiala: Punjabi University.
- Singh, Kushwant (2011). A History of the Sikhs- Vol. I (1469-1839). New Delhi:
- Singh, Kirpal (1990). History and Culture of the Punjab-Part II (Medieval Period).

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Appreciating English Literature- II
Course Code: BSML-4212
(THEORY)

Course Outcomes

After passing this course, the students will be able to:

CO1. Change the narration and voice of sentences after understanding fundamental grammatical rules governing them through the study of "English Grammar in Use" by Raymond Murphy

CO2. To learn to write personal letters and enhance the writing skills

CO3. Comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them through the study of the stories in the text "Tales of Life".

CO4. Appreciate the writings of various Indian and foreign story and Short - Story writers and relate them to their socio-cultural milieu through the study of the stories in the text "Tales of Life".

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Appreciating English Literature- II

Course Code: BSML-4212

(THEORY)

Examination Time: 3 Hours **Max. Marks: 100**

Credits L-T-P: 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters:

Eight questions are to be set, two from each of the four Units (I-IV). 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 will carry 14 marks. (14x5=70)

Unit-I

English Grammar in Use, 5th Edition by Raymond Murphy, CUP (Revision of Units: 26-37, 42-48, 92-97,113-120)

Unit-II

Moments in Time: Poems at Sr. No. 1-6

Unit-III

Moments in Time: Poems at Sr. No. 7-12

Unit-IV

Paragraph writing, Business Letters, Writing Emails

Texts Prescribed:

1.*English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

2.*Moments in Time*

3. *Making Connections*

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Zoology (Cell Biology)
Course Code: BSML-4483
(THEORY)

Course Outcome

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. Knowledge about structure and function of cell organelles.

CO4. Learn elementary idea about Cancer and Immunity.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Zoology (Cell Biology)

Course Code: BSML-4483

(THEORY)

Credits: 4-0-0 **Max Marks: 100**

Time: 3 Hours **Theory: 70**

CA: 30

Instructions for the Paper Setter

Eight questions of equal marks (14 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

Methods in Cell Biology

(a) Principles of light and phase contrast microscopy
(b) Electron microscopy (TEM and SEM)
(c) Fixation and fixatives
(d) Staining techniques

UNIT-II

Organization of Cell: Extra nuclear and nuclear, ultrastructure and functions of cell organelles

(a) Plasma Membrane: Structure, osmosis, active and passive transport, endocytosis and exocytosis.
(b) Endoplasmic reticulum: Structure, types and associated enzymes.
(c) Mitochondria: Structure, mitochondrial enzymes and role of mitochondria in respiration and mitochondrial DNA.

UNIT-III

Organization of Cell:

(a) Golgi complex: Structure and functions.
(b) Ribosomes: Types of ribosomes, their structure and functions.
(c) Lysosomes: Polymorphism and their function.
(d) Centrosome: Structure and functions.

UNIT-IV

Nucleus: Structure and functions of nuclear membrane, nucleolus and chromosomes.

An elementary idea of cell transformation in cancer

An elementary idea of cellular basis of immunity

Suggested Readings:

1. Cooper, G. M. (2004), The cell, A Molecular Approach, ASM press, Washington, D. C.
2. Karp, G. (1984). Cell Biology (4^{th} ed), McGraw Hill, New York.
3. Pawar, C.B (1999), Cell Biology, Himalaya Publishing House, Bombay.

4. Dhami P. K. (2000) Zoology I, Pradeep Publishers.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Zoology (Cell Biology Lab)
Course Code: BSMP-4483
(PRACTICAL)

Course Outcomes

After passing this course the student will be able to:

CO1. Understand the techniques of Chromatography

CO2. Learn about protein estimation through Gel electrophoresis

CO3. Understand the Electron microscopy

CO4. Learn about structures of cell organelles through micrographs

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Zoology (Cell Biology Lab)

Course Code: BSML-4483

(THEORY)

LTP: 0-0-2 **Max Marks: 50**

Time: 3 Hrs. **Marks: 35**

CA: 15

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

1. CHROMATOGRAPHY

   A. Paper chromatography.

   B. Thin layers chromatography

2. Gel electrophoresis through photographs or through research laboratories

3. Familiarity with TEM & SEM.

4. Study of different ultra structures of cell organelles through micrographs.

Guidelines for conduct of practical Examination: -

1. Write the principle, Procedure and Application of Chromatography and show the results to the Examiner 8
2. Write a note on Principle, Procedure and applications of Gel Elecrophoresis. 8
3. Write a note on microscopy 5
4. Identify the slides/micrographs and give two reasons for identification. 6
5. Viva-voce & Practical file. 8

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Chemistry (Inorganic Chemistry-II: Periodic Table and Coordination Chemistry)

Course Code: BSML-4084

(THEORY)

Course outcomes:

Students will be able to

CO1. Explain the periodic trends, chemical properties, and structures of p-block elements and their compounds, including sulphur and halogen oxoacids, interhalogens, and industrial processes like the Contact Process for sulphuric acid.

CO2. Compare and contrast the electronic structure, oxidation states, and magnetic properties of d- and f-block elements, including the effects of lanthanide and actinide contraction and their analytical applications.

CO3. Analyze the structure, bonding, stability, and stereochemistry of coordination compounds using Werner's theory, valence bond theory, and ligand field considerations.

CO4. Interpret electronic spectra of transition metal complexes using Orgel diagrams and selection rules, and describe the structure, bonding, and reactivity of organometallic compounds including their role in catalysis

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Chemistry (Inorganic Chemistry-II: Periodic Table and Coordination Chemistry)
Course Code: BSML-4084
(THEORY)

Examination Time: 3 Hrs. **Max. Marks: 100**
Credit (L-T-P): 4-0-0 **Theory: 70**
CA: 30

Instructions for the Paper Setters: Eight questions of equal marks (14 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 subdividedinto 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 (15 Hrs.)

p–Block Elements: Group 16: General characteristics: atomic radii, Ionisation energies, Melting and boiling point, Electron affinity, Oxidation state, Catenation, Elemental state, Allotropy, Hydrides of group 16, Chemical properties of SO_2, structure of SO_2 & SO_3, Oxoacid of sulphur: structure and basicity. Preparation of sulphuric acid by contacts process and its chemical properties

Group 17: General characteristics: atomic radii, Ionisation energies, melting and boiling point, Electron affinity, Electronegativity, Non-metallic character, colour, Oxidation state and reactivity**,** Hydrides of group 17, Relative acidic strength of hydro acids and Oxoacids of group 17, structure of interhalogen compounds and polyhalides.

Important compounds of p-block: Carbides, fluorocarbons, Silicones and phosphazenes, triphosphazenes.

UNIT -II (15 Hrs.)

Chemistry of Transition Elements: General characteristics of Transition Elements. Properties of the elements of the first transition series, Relative stability of their oxidation state. Coordination number and geometry. General characteristics of elements of Second and Third Transition Series. Difference in the properties of first transition elements with second and third transition series elements in respect of ionic radii, oxidation states, magnetic behaviour.

***f*-block elements**: Lanthanoids: Electronic configurations, oxidation states, ionic radii, lanthanide contraction, colour, spectral and magnetic properties, lanthanum compounds. Actinoids: electronic configurations, oxidation states, ionic radii, actinide contraction, colour, spectral and magnetic properties. Comparison of lanthanoids and actinoids and their analytical applications.

UNIT-III (15 Hrs.)

Coordination Compounds: Nomenclature of coordination compounds, Werner's coordination theory, effective atomic number, polydentate, chelating ligands and chelation, factors affecting stability of chelates, structural and stereoisomerism in coordination compounds with co-ordination number 4 and 6, resolution of racemic mixture, Valence bond theory of transition metal complexes, hybridization and geometry of complexes of Cr, Fe, Co, Cu and its ions, Magnetic properties and colour of coordination compounds.

Transition Metal complexes: an elementary idea of crystal field theory, Jahn-Teller effects. methods of determining magnetic susceptibility by Gouy's and Faraday method. L-S coupling, correlation of μs and μeff values, Nucleophilic Substitution reactions in square planar complexes

UNIT-IV (15 Hrs.)

Electronic Spectra of Transition Metal Complexes: Types of electronic transitions, selection rules and relaxations, splitting of Russel-Saunder states in octahedral and tetrahedral, spectrochemical series, Orgel diagram of one electron-one hole system and two electron-two hole system in octahedral and tetrahedral complexes. Limitation of Orgel diagram.

Organometallic Compounds: Definition, nomenclature and classification of organometallic compounds. σ and π complexes, types of organoligands, EAN rule, bonding in organometals, Preparation, properties, bonding and applications of alkyl lithium and organoaluminium compounds (AlR_3). Metal olefin complexes, bonding in metal-ethylenic complexes, Mechanism of homogeneous hydrogenation reactions of alkene. Metal carbonyls: examples and bonding.

Books suggested

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 3rd edition, Pubs: John Wiley Sons. 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman Hall Ltd., 1991.
3. Shriver, D.E., Alkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, Oxford Publisher: Oxford University Press, 2006.
4. Douglas, B. McDamiel, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994.
5. Porterfield, W.W., Wesley, A., Inorganic Chemistry; Pubs: Addison-Wesley Publishing Company, 1984.
6. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004.
7. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: McGraw-Hill Publishing Company Limited, 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
9. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.

10. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
11. Inorganic Chemistry, A.G. Sharpe, ELBS.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Chemistry (Inorganic Chemistry-II Lab)
Course Code: BSMP-4084
(THEORY)

Course Outcomes:

Students will be able to analyze the given organic compound through

CO1. Perform volumetric titrations for the quantitative analysis of substances such as acetic acid, antacids, and water hardness using appropriate indicators and standard solutions.

CO2. Apply redox titration techniques (e.g., permanganometry, dichromate method, iodometry) to estimate metal ions like calcium, iron, and copper with accuracy and precision.

CO3. Execute gravimetric analysis procedures for the estimation of metal ions like copper, nickel, and silver through selective precipitation and weighing of pure compounds.

CO4. Synthesize and characterize simple inorganic compounds such as Prussian Blue, potash alum, and copper acetylacetonate, demonstrating understanding of coordination chemistry and crystallization techniques

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Chemistry (Inorganic Chemistry-II Lab)

Course Code: BSMP-4084

(THEORY)

Examination Time: 3 Hrs **Max. Marks: 50**

Credits: 0-0-2 **Practical: 35**

CA: 15

Volumetric Analysis

1. Determination of acetic acid in commercial vinegar using NaOH.
2. Determination of alkali content-antacid tablet using HCI.
3. Estimation of calcium content in chalk as calcium oxalate by permanganometry.
4. Standardisation of EDTA with $Pb(NO3)2$ / $ZnSO4.\ 7H2O$ and Estimation of hardness of water by EDTA.
5. Estimation of ferrous and ferric by dichromate method.
6. Estimation of copper using sodium thiosulphate.

Gravimetric Analysis

Analysis of Cu as CuSCN; Ni as Ni (dimethylgloxime) and Determination of silver(I) as its chloride

Inorganic Preparations

Synthesis of Iron(III) Hexacyanoferrate(II) $Fe4[Fe(CN)6]3$ (Prussian Blue).

Preparation of Potassium Aluminum Sulfate $KAl(SO_4)\cdot 12\ H_2O$ (Potash Alum) Preparation of bis Acetylacetonate Copper(II) $Cu(O_2C_5H_7)_2$.

Books Suggested

1. Vogel's Textbook of Quantitative Inorganic Analysis (revised), J. Bassett, R.C. Denney, G.H. Jeffery and J. Mandham, ELBS.

2. Standard Methods of Chemical. Analysis, W.W. Scott: The Technical Press.
3. Experimental Inorganic Chemistry, W.G. Palmer, Cambridge.
4. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
5. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
6. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.
7. Experimental Organic Chemistry, Vol. I & II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
8. Marr, G. and Rockett, B.W. Practical Inorganic Chemistry, 1972.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Botany (Structure, Development and Reproduction in Flowering Plants)

Course Code: BSML-4075

(THEORY)

Course Outcome:

After passing this course the student will be able to: -

CO1. Understand the structural organization and development of the shoot system in flowering plants, including meristematic activity, tissue differentiation, and secondary growth.

CO2. Explain the structure and function of wood, secondary phloem, and leaves, including their roles in transport, photosynthesis, stress adaptation, and senescence.

CO3. Understand root structure, development, and modifications, along with methods and economic significance of vegetative reproduction, including grafting and budding.

CO4. Understand flower structure, pollination mechanisms, fertilization processes, and seed and fruit development, including their ecological roles and dispersal strategies.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Botany (Structure, Development and Reproduction in Flowering Plants)

Course Code: BSML-4075

(THEORY)

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

Credits (L-T-P): 4-0-0 **Theory: 70**

CA: 30

Instructions for the Paper Setters:

Eight questions of equal marks (14 marks each) 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.

Unit- I

The basic body plan of a flowering plant: Diversity in plant form; branching pattern; monopodial and sympodial growth; canopy architecture.

The Shoot System: The shoot apical meristem and its histological organization; meristematic and permanent tissue, formation of internodes. Cambium and its functions; formation of secondary xylem.

Unit- II

General account of wood structure: Role in conduction of water and minerals; characteristics of growth rings, sapwood and heart wood; secondary phloem-structure function relationships; periderm. **Leaf:** Origin, development, arrangement and diversity in size and shape; internal structure in relation to photosynthesis and water loss; adaptations to water stress; senescence and abscission.

Unit- III

The Root System: The root apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.

Vegetative Reproduction: Methods of vegetative propagation, detailed study and types of grafting and budding, economic aspects.

Unit- IV

Flower: A modified shoot; structure, development and varieties of flower; functions, structure of anther and pistil; the male and female gametophytes; types of pollination; attractions and reward for pollinators; (sucking and foraging types); pollen-pistil interaction self-incompatibility.

Double fertilization: formation of seed endosperm and embryo; fruit development and maturation Significance of seed; ecological adaptation; dispersal strategies.

Suggested Readings:-

1. Beck, C.B. (2010). An Introduction to Plant Structure and Development: Plant anatomy for the Twenty First Century (2nd Edition). Cambridge University Press, UK.
2. Cutler, D. F., Botha, T. and Stevenson, D. M. (2007). Plant Anatomy: An Applied Approach. Blackwell Publishing, Oxford, UK.
3. Dickison, W.C. (2000). Integrative Plant Anatomy. Academic Press, California, USA.
4. Mauseth, J.D. (1988). Plant Anatomy, The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.
5. Peau, K (1977) Anatomy of Seed Plants, 3rd edition. John Wiley & Sons, New York.
6. Raven, P.H., Evert, R.F. and Eichhorn, S.E. (1999). Biology of Plants, 5th edition. W.H. Freeman and Co., Worth Publishers, New York.
7. Rudall, P. J. (2007). Anatomy of Flowering Plants: An Introduction to Structure and Development (3rd Edition). Cambridge University Press, UK.
8. Thomas, P. (2000) Trees: Their Natural History, Cambridge University Press, CambridgeBhojwani, S.S. and Bhatnagar, S.P. (2000). The Embryology of Angiosperms, 4th revised and enlarged edition. Vikas Publishing House, Delhi.
9. Hartmann, H.T. and Kestler, D.E. (1976). Plant Propagation: Principles and Practices, 3rd edition, Prentice Hall of India Pvt. Ltd., New Delhi.
10. Mauseth, J.D. (1988). Plant Anatomy, The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.
11. Peau, K. (1977). Anatomy of Seed Plants, 3rd edition. John Wiley & Sons, New York.
12. Pegeri, K. and Vander Pijl (1979). The Principles of Pollination Biology, Pergamon Press, Oxford.
13. Raven, P.H., Evert, R.F. and Eichhorn, S.E. (1999). Biology of Plants, 5th edition. W.H. Freeman and Co., Worth Publishers, New York.
14. Bhojwani, S.S. and Bhatnagar, P. (2000). The Embryology of Angiosperms (4th revised and enlarged edition), Vikas Publishing House, New Delhi.
15. Mauseth, J.D. (1988). Plant Anatomy, The Benjamin/Cumminas Publishing Co., Inc., Mehlo Park, California, USA.

16. Raven, P.H., Evert, R.F. and Eichhorn, S.E. (1992). Biology of Plants (5th Edition). Worth Publishers, New York.
17. Steeves, T.A. and Sussex, I.M. (1989). Patterns in Plant Development (2nd Edition). Cambridge University Press, Cambridge.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Botany (Structure, Development and Reproduction in Flowering Plants Lab)
Course Code: BSMP-4075
(Practical)

Course Outcome

After passing this course the student will be able to:

CO1. Develop knowledge about the role of herbarium techniques in plant identification.

CO2. Understand different life forms exhibited by flowering plants.

CO3. Understand anatomy of different plant parts using free hand razor technique.

CO4. Examine flower and their mode of pollination.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Botany (Structure, Development and Reproduction in Flowering Plants Lab)
Course Code: BSMP-4075
(THEORY)

Examination Time: 3 Hrs **Max. Marks: 50**
Credits (L-T-P): 0-0-2 **Theory: 35**
CA: 15

Suggested Laboratory Exercises

1. Study of any commonly occurring dicotyledonous plant (for example *Solanum nigrum* or Kalanchoe) to the body plan, organography and modular type of growth.
2. Life forms exhibited by flowering plants (by a visit to a forest or a garden, Study of tree like habit in cycads, bamboo, banana, traveller's tree (*Revenala madagascariensis*) and Yucca and comparison with true trees as exemplified by conifers and dicotyledons.
3. L.S. Shoot tip to study the cytohistological zonation and origin of leaf primordia.
4. Monopodial and sympodial types of branching in stems (especially rhizomes).
5. Anatomy of primary and secondary growth in monocots and dicots using free hand razor technique (*Solanum*, *Boerhavia*, *Helianthus*, *Mirabilis*, *Nyctanthus*, *Draceana*, Maize) hand sections (or prepared slides). Structure of secondary phloem and xylem. Growth rings in wood, microscopic study of wood in T.S., T.L.S. and R.L.S.
6. Field study of diversity in leaf shape, size, thickness and surface properties. Internal structure of leaf. Structure and development of stomata (using epidermal peels of leaf).
7. Anatomy of the root. Primary and secondary structure.
8. Examination of a wide range of flowers available in the locality and methods of their pollination.
9. Structure of anther, microsporogenesis (using slides) and pollen grains (using whole mounts). Pollen viability using in vitro pollen germination.
10. Structure of ovule and embryo sac development using serial sections from permanent slides.
11. Nuclear and cellular endosperm. Embryo development in monocots and dicots (using permanent slides/dissections).

12. Simple experiments to show vegetative propagation (leaf cuttings in *Bryophyllum*, *Sansevieria*, *Begonia*; stem cuttings in rose, *Salix*, money plant, Sugarcane and *Bougainvillea*).
13. Germination of non-dormant and dormant seeds.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Zoology (Medical Lab Technology)
Course Code: BSMM-4480
(THEORY)

Course outcomes:

After completion of course students will be able to:

CO1: Comply with safety regulations and universal precautions during lab investigations and perform basic laboratory techniques on biological specimens.

CO2: Know about routine clinical laboratory investigations including collection of different samples and perform other routine hematological procedures.

CO3: Describe basic scientific principles in learning new techniques and procedures in bacteriology and microbiology.

CO4: Apply knowledge and technical skills associated histopathology, staining techniques and biochemical estimations.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Zoology (Medical Lab Technology)
Course Code: BSMM-4480
(THEORY)

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

Instructions for the Paper Setter

Eight questions of equal marks 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. Each question will carry 10 marks.

UNIT-I

Antigen and antibody interactions- Serodiagonstic assays (Precipitation, agglutination immunodiffusion, ELISA, RIA)

Vaccines

Laboratory Techniques: Colorimetry, Microscopy, Autoclaving, Centrifugation and Spectrophotometry

UNIT- II

Collection, transportation and preservation of different clinical samples.

Haematology, collection of blood (venous and capillary), anticoagulants (merits and demerits), Romanowsky's stains, total RBC count, erythrocyte sedimentation rate, TLC, DLC, platelet count

UNIT- III

Bacteriology: sterilization (dry heat, moist heat, autoclave, filteration), disinfection, staining techniques, (gram stain, AFB stain, etc), culture media (defined and synthetic media & routine laboratory media), bacterial culture (aerobic and anerobic) and antibiotic sensitivity.

UNIT- IV

Histopathology: Common fixatives and staining techniques.

Biochemistry: Principal/theory and significance of estimation of urea, sugar, cholesterol, creatinine, enzymes (transaminase, phosphatase, amylase and lipase), uric acid in blood, estimation of proteins, sugar, bile salts, ketone bodies in urine and liver function test.

Suggested Readings:

1. Baker, F.J. and Silverton, R.E. (1985) Introduction to Medical Laboratory Technology, (6th ed), Butlerworth and Co. Ltd.
2. Chatterjee, K.D. (1995), Parasitology, Protozoology and Helminthology (12th ed).
3. Cheesborough, M. (1987), Medical Laboratory Technology for Tropical countries (2nd ed), Butlerworth and Co., Ltd.
4. Garcia, L.S. (2001), Diagnostic Medical Parasitology, (4th ed), ASM Press Washington.
5. Kimball, J.W. (1986), Introduction of Immunology, MacMillian Publishing Co., New York.
6. Kuby, J. (2000), Immunology, W.H. Freeman & Co., USA.
7. Roitt, I. (1984), Essential Immunology, Blackwell Scientific Publications, Oxford.
8. Talib, V.H. (1999), Essential Laboratory Manual, Mehta Publishers, New Delhi.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

Course Title: Zoology (Medical Lab Technology Lab)

Course Code: BSMM-4480 (P)

(PRACTICAL)

Course outcomes:

After completion of course students will be able to:

CO1: Apply knowledge and technical skills associated with medical laboratory technology for delivering quality clinical investigations support.

CO2: Perform basic clinical laboratory procedures using appropriate laboratory techniques and instrumentation in accordance with current laboratory safety protocol and quality patient health care.

CO3: Understanding of sterilization techniques and will also learn about various histopathology techniques, handling and processing of tissue specimens as well as staining procedures.

CO4: Understanding of estimation of protein & sugar.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)
Course Title: Zoology (Medical Lab Technology Lab)
Course Code: BSMM-4480 (P)
(PRACTICAL)

Examination Time: 3 Hours **Practical: 20**
Credits (L-T-P): 2-0-1

1. Demonstration of safety rules in laboratory like proper handling of patients, specimens and disposal of syringes, needles etc.
2. Demonstration of the use of autoclave, centrifuge and spectrophotometer.
3. Cleaning and sterilization of glass ware, using hot air oven, autoclave etc.
4. Physico-chemical examination of urine.
5. Preparation of thick and thin blood smear.
6. Counting of WBC, RBC and DLC.
7. ESR and haematocrit
8. Demonstration of fixation, embedding, cutting of tissue sections, and their staining (routine haemotoxylin and eosin). Visit to a pathology Lab and preparation of report.

Note:- Some changes can be made in the practical depending on the availability of material.

Bachelor of Science (Medical) (Honours) Semester–IV (Session 2025-26)

MORAL EDUCATION COURSE

AUDIT COURSE (Value Based)

Course Title: Moral Education Course

Course Duration: 30 hours

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

Course Credits: 2 (Credit Based Continuous Evaluation Grading System)

Course Code: VACM- 4502

Course Description:-

The Moral Education Course 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.

Course Objectives:-

- To sensitize students about the role and importance of human values and ethics in personal, social and professional life
- To enable students to understand and appreciate ethical concerns relevant to modern lives
- To prepare a foundation for appearing in various competitive examinations
- To sensitize students the students about the current issues and events of national and international importance
- To highlight plausible implications of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with nature

Course Methodology:-

- The methodology of this course is aimed at perceptional transformation
- It is free from any dogma or value prescriptions
- It is an initiation into the process of self- investigation and self- exploration
- It aims at encouraging a dialogue between the teacher and the taught, paving the way for a continuous self- evolution
- The self-exploration will enable the students to evaluate their personal beliefs and their pre conceived notions while marching on the path of truth and righteousness.

Curriculum:

MODULE	TITLE	CONTACT HOURS
I	Introduction to Moral Education, need, content and purpose	6
II	The Self and You	6
III	The Family and You	6
IV & V	The Society and You	6
VI	The Nation and You	6

EXAMINATION

- **Total Marks: 50 (Final Exam: 40; Internal Assessment: 10)**
- Final Exam: Multiple choice Questions Marks-40; Time: 1 hour
- Internal Assessment: 10 (Assessment: 6; Attendance: 4)
- Total marks: 50 converted to credits for final result

- Grading system **Letter Grades for Moral Education**

Letter Grade	**Percentage Score**
O	90.1-100
A+	80.1-90
A	70.1-80
B+	60.1-70
B	50.1-60
C	45-50
P	35-44.9
F	Below 35
Ab	Absent

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 &V: The Society and You

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

Module VI: The Nation and You

- International peace and brotherhood
- Saving the environment
- Rights and duties – Human Rights & Fundamental Rights