

ಇಂದ,

ದಿನಾಂಕ:

ಅಧ್ಯಕ್ಷರು

ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ಮಂಡಳಿ (ಸ್ನಾತಕ)

ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ತುಮಕೂರು

ಇವರಿಗೆ,

ಮಾನ್ಯ ಕುಲಸಚಿವರು

ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ತುಮಕೂರು

ಮಾನ್ಯರೇ,

ವಿಷಯ: ತೃತೀಯ ಬಿ.ಎಸ್ಸಿ, 5 ಮತ್ತು 6ನೇ ಸೆಮಿಸ್ಟರ್ ನ ಪದವಿಯ ಪಠ್ಯಕ್ರಮವನ್ನು
ಸಿದ್ಧಪಡಿಸಿ, BOS ಸಭೆ ನಡೆಸಿ ನಡಾವಳಿಗಳನ್ನು ಸಲ್ಲಿಸುವ ಬಗ್ಗೆ.

ಉಲ್ಲೇಖ: 1. ಸಂಖ್ಯೆ:ತು.ವಿ: ಶೈವಿ: BOS:UG2025-26/834 ದಿನಾಂಕ: 27.06.2025

2. ಸಂಖ್ಯೆ:ತು.ವಿ: ಶೈವಿ: 2026-27: 395 ದಿನಾಂಕ: 30.04.2026

3. ಸಂಖ್ಯೆ:ತು.ವಿ: ಶೈವಿ:2026-27/331 ದಿನಾಂಕ: 14.07.2026

ಮೇಲ್ಕಂಡ ವಿಷಯ ಮತ್ತು ಉಲ್ಲೇಖಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ, ತೃತೀಯ ಬಿ.ಎಸ್ಸಿ, 5 ಮತ್ತು 6ನೇ
ಸೆಮಿಸ್ಟರ್ ನ ಪದವಿಯ ಪಠ್ಯಕ್ರಮವನ್ನು ಸಿದ್ಧಪಡಿಸಿ, BOS ಸಭೆ ನಡೆಸಿ, ಪಠ್ಯಕ್ರಮದ ಜೊತೆಗೆ ಸಭೆಯ
ನಡಾವಳಿಗಳನ್ನು ಈ ಮೂಲಕ ಸಲ್ಲಿಸುತ್ತಿದ್ದೇವೆ.

ಧನ್ಯವಾದಗಳೊಂದಿಗೆ,

ಸ್ಥಳ: ತುಮಕೂರು


ಅಧ್ಯಕ್ಷರು

ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ಮಂಡಳಿ (ಸ್ನಾತಕ)
ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

ತುಮಕೂರು

Chairman B.O.S. in Zoology

Tumkur University

TUMAKURU- 572103.

ಅಡಕಗಳು:

1. ಅಧ್ಯಯನ ಮಂಡಳಿಯ ಅಧಿಸೂಚನೆಯ ಪತ್ರ
2. ಪ್ರೋಗ್ರಾಮ್ ವಿನ್ಯಾಸದ ಸೂಚನೆಯ ಪತ್ರ
3. ಪದವಿಯ ಪಠ್ಯಕ್ರಮ
4. ಸಭೆ ನಡಾವಳಿಗಳು

ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

ವಿಶ್ವವಿದ್ಯಾಲಯ ಕಾರ್ಯಾಲಯ, ಜಿ.ಎಚ್.ರಸ್ತೆ, ತುಮಕೂರು - 572 103

ಸಂಖ್ಯೆ:ತು.ವಿ.ಬಿ.ಬಿ:BOS:UG:2025-26/834

ದಿನಾಂಕ:27.06.2025

ಪರಿಷ್ಕೃತ ಅಧಿಸೂಚನೆ

ವಿಷಯ: ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಷಯದ UG ಅಧ್ಯಯನ ಮಂಡಳಿಯನ್ನು ರಚಿಸಿರುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1) ವಿ.ವಿ.ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ: ತು.ವಿ.ಬಿ.ಬಿ:BOS:UG/PG-2025-26/333

ದಿನಾಂಕ:08.05.2025

2) ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ದಿನಾಂಕ: 04.08.2025

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, ಉಲ್ಲೇಖ (01)ರಲ್ಲಿ ವಿಶ್ವವಿದ್ಯಾಲಯವು ಅಧಿಸೂಚಿಸಿರುವ ಆದೇಶವನ್ನು ಹಿಂಪಡೆದು, ಕರ್ನಾಟಕ ರಾಜ್ಯ ವಿಶ್ವವಿದ್ಯಾಲಯಗಳ ಅಧಿನಿಯಮ 2000ರ ಪ್ರಕರಣ 33ರ ಅಡಿಯಲ್ಲಿ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಷಯದ UG ಅಧ್ಯಯನ ಮಂಡಳಿಯನ್ನು ದಿನಾಂಕ:27.06.2025 ರಿಂದ ಮುಂದಿನ ಎರಡು ವರ್ಷಗಳ ಅವಧಿಗೆ ಅಥವಾ ಮುಂದಿನ ಆದೇಶದವರೆಗೆ, ಮುಂಜಿತವಾಗಿ ಯಾವುದು ಘಟಿಸುವುದೋ ಅಲ್ಲಿಯವರೆಗೆ, ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ಮೇರೆಗೆ ಈ ಕೆಳಕಂಡ ಅಧ್ಯಕ್ಷರು ಹಾಗೂ ಸದಸ್ಯರನ್ನೊಳಗೊಂಡ ಅಧ್ಯಯನ ಮಂಡಳಿಯನ್ನು ಪರಿಷ್ಕರಿಸಿ ಅಧಿಸೂಚಿಸಲಾಗಿದೆ.

1.	ಪ್ರೊ. ಮನೋಹರ ಶಿಂದೆ ಪ್ರಾಧ್ಯಾಪಕರು, ಸ್ನಾತಕೋತ್ತರ ಜೀವರಸಾಯನಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ಮತ್ತು ಸಂಶೋಧನಾ ವಿಭಾಗ, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು, ದೂರವಾಣಿ ಸಂಖ್ಯೆ: 9449157975, ಇ-ಮೇಲ್:drsmanohar@gmail.com	-	ಅಧ್ಯಕ್ಷರು
2.	ಡಾ. ಅಸಿಯಾ ನುಜ್ಜತ್ ಎಫ್.ಜಿ ಸಹ ಪ್ರಾಧ್ಯಾಪಕರು, ಸ್ನಾತಕೋತ್ತರ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ಮತ್ತು ಸಂಶೋಧನಾ ವಿಭಾಗ, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು, ದೂರವಾಣಿ ಸಂಖ್ಯೆ: 9844029441, ಇ-ಮೇಲ್:drasiyanfb@gmail.com	-	ಸದಸ್ಯರು
3.	ಡಾ. ಲಲಿತ ಎಚ್.ಎಂ ಸಹಾಯಕ ಪ್ರಾಧ್ಯಾಪಕರು, ಸ್ನಾತಕೋತ್ತರ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ, ವಿಶ್ವವಿದ್ಯಾಲಯ ವಿಜ್ಞಾನ ಕಾಲೇಜು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು, ದೂರವಾಣಿ ಸಂಖ್ಯೆ:9481400646 ಇ-ಮೇಲ್:lalithahm11@gmail.com	-	ಸದಸ್ಯರು
4.	ಡಾ ಪರಿಮಲ ಜಿ ಸಹ ಪ್ರಾಧ್ಯಾಪಕರು, ವಿಶ್ವವಿದ್ಯಾಲಯ ವಿಜ್ಞಾನ ಕಾಲೇಜು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು, ದೂರವಾಣಿ ಸಂಖ್ಯೆ: 9844611181, ಇ-ಮೇಲ್:parimala.bb@gmail.com	-	ಸದಸ್ಯರು
5.	ಶ್ರೀ.ಸೋಮಶೇಖರಯ್ಯ ವೈ.ಆರ್ ಪ್ರಾಧ್ಯಾಪಕರು, ಕಲ್ಕತರು ಪ್ರಥಮ ದರ್ಜೆ ಕಾಲೇಜು ತಿಪಟೂರು ದೂರವಾಣಿ ಸಂಖ್ಯೆ:9902794884, ಇ-ಮೇಲ್:yrsomashekar2@gmail.com	-	ಸದಸ್ಯರು
6.	ಶ್ರೀಮತಿ ಭವಾನಿ ಬಾಣೇಲ್ ಸಹಾಯಕ ಪ್ರಾಧ್ಯಾಪಕರು ಸರ್ಕಾರಿ ಪ್ರಥಮ ದರ್ಜೆ ಕಾಲೇಜು ತುಮಕೂರು ದೂರವಾಣಿ ಸಂಖ್ಯೆ:9964073629, ಇ-ಮೇಲ್:bhavaniptls@gmail.com	-	ಸದಸ್ಯರು
7.	ಡಾ. ನಾಗರಾಜು ಪ್ರಾಧ್ಯಾಪಕರು ಸ್ನಾತಕೋತ್ತರ ಪ್ರಾಣಿಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ಮತ್ತು ಸಂಶೋಧನಾ ವಿಭಾಗ ಕುವೆಂಪು ವಿಶ್ವವಿದ್ಯಾಲಯ, ಶಂಕರಪಟ್ಟ, ಶಿವಮೊಗ್ಗ. ದೂರವಾಣಿ ಸಂಖ್ಯೆ:9620485338, ಇ-ಮೇಲ್:knagarajjv@gmail.com	-	ಸದಸ್ಯರು

ಪು.ತಿ.ನೋ..



8.	ಡಾ. ಮಲಿಕೇಶಿ ಎಂ ಜರಾದರ್ ಪ್ರಾಧ್ಯಾಪಕರು, ಪ್ರಾಣಿಶಾಸ್ತ್ರ ವಿಭಾಗ, ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ದಾರವಾಡ, ದೂರವಾಣಿ ಸಂಖ್ಯೆ: 9448038958, ಇ- ಮೇಲ್: pulikeshi1232rediffmail.com	-	ನದಸ್ಯರು
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ಎಲ್ಲಾ ನದಸ್ಯರುಗಳು ಅಧ್ಯಯನ ಮಂಡಳಿಯಲ್ಲಿ ವಿಶ್ವವಿದ್ಯಾಲಯವು ಸೂಚಿಸುವ ಪಠ್ಯಕ್ರಮ ರಚನೆ ಹಾಗೂ ಇನ್ನಿತರೆ ಕಾರ್ಯನಿರ್ವಹಣೆಯನ್ನು ವಿಶ್ವವಿದ್ಯಾಲಯದ ನಿಯಮಾನುಸಾರ ಕರ್ತವ್ಯ ನಿರ್ವಹಿಸಲು ಕೋರಿದೆ.

ವಿ.ಸೂ: ರಾಜ್ಯ ಶಿಕ್ಷಣ ನೀತಿಯ ಪ್ರತಿಯ ವರ್ಷದ 3 ಮತ್ತು 4ನೇ ಸೆಮಿಸ್ಟರ್‌ನ ಸ್ನಾತಕ ಪದವಿಯ ಪಠ್ಯಕ್ರಮವನ್ನು ಸಿದ್ಧಪಡಿಸಲು ದಿನಾಂಕ: 15.07.2025ರ ಒಳಗೆ ಸಭೆ ನಡೆಸಿ ಪಠ್ಯಕ್ರಮವನ್ನು ವಿಶ್ವವಿದ್ಯಾಲಯಕ್ಕೆ ಅತೀ ಜರೂರಾಗಿ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

3-2-2025
ಕುಲಸಚಿವರು
ಕುಲಸಚಿವರು
ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ
ತುಮಕೂರು

ಗೆ,

ಮೇಲ್ಕಂಡ ಅಧ್ಯಯನ ಮಂಡಳಿಯ ಅಧ್ಯಕ್ಷರು ಮತ್ತು ನದಸ್ಯರುಗಳು

ಪ್ರತಿಗಳು:

1. ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ), ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು
2. ಹಣಕಾಸು ಅಧಿಕಾರಿಗಳು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು
3. ನಿರ್ದೇಶಕರು, ಸಂಶೋಧನಾ ವಿಭಾಗ, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು
4. ನಿರ್ದೇಶಕರು, ಐಕ್ಯೋಪನಿ ವಿಭಾಗ, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು
5. ಹೀನರು, ವಿಜ್ಞಾನ ನಿಕಾಯ, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು
6. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು
7. ಕಛೇರಿ ಪ್ರತಿ

ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

ವಿಶ್ವವಿದ್ಯಾಲಯ ಕಾರ್ಯಾಲಯ, ಜಿ.ಎಚ್.ರಸ್ತೆ, ತುಮಕೂರು - 572 103

ಸಂಖ್ಯೆ:ತು.ವಿ.ಶೈ.ವಿ:2026-27: 395

ದಿನಾಂಕ:30.04.2026

:ಅಧಿಸೂಚನೆ:

ವಿಷಯ:- 2024-25 & 2025-26 ನೇ ಸಾಲಿನಲ್ಲಿ ಪ್ರಥಮ ಸೆಮಿಸ್ಟರ್‌ಗೆ ಪ್ರವೇಶ ಪಡೆದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ

ಪ್ರೋಗ್ರಾಮ್ ವಿನ್ಯಾಸವನ್ನು (Programme Structure) ಅಧಿಸೂಚಿಸುವ ಕುರಿತು.

- ಉಲ್ಲೇಖ:- 1. ವಿ.ವಿ. ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ: ತು.ವಿ. ಶೈ.ವಿ: UG: 2025-26/ 2550, ದಿನಾಂಕ:13.11.2025.
2. ಪ್ರೋಗ್ರಾಂ ವಿನ್ಯಾಸವನ್ನು ಸಿದ್ಧಪಡಿಸುವ ಸಮಿತಿಯ ಸಭಾ ನಡಾವಳಿ ದಿನಾಂಕ:05.01.2026
3. ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ನಿರ್ಣಯ ದಿನಾಂಕ:24.01.2026.
4. ಸಿಂಡಿಕೇಟ್ ಸಭೆಯ ನಿರ್ಣಯ ದಿನಾಂಕ:16.04.2026.
5. ಪ್ರೋಗ್ರಾಂ ವಿನ್ಯಾಸವನ್ನು ಸಿದ್ಧಪಡಿಸುವ ಸಮಿತಿಯ ಸಭಾ ನಡಾವಳಿ ದಿನಾಂಕ:28.04.2026
6. ಮಾನ್ಯ ಕುಲಪತಿಯವರ ಅನುಮೋದನೆಯ ದಿನಾಂಕ:30.04.2026

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ, 2024-25ನೇ ಸಾಲಿನಲ್ಲಿ ವಿವಿಧ ಸ್ನಾತಕ ಪದವಿ ಕೋರ್ಸುಗಳ ಪ್ರಥಮ ಸೆಮಿಸ್ಟರ್‌ಗೆ ಪ್ರವೇಶ ಪಡೆದು ನಂತರದ 2025-26 ಮತ್ತು 2026-27ನೇ ಸಾಲಿನಲ್ಲಿ ಕ್ರಮವಾಗಿ 2ನೇ ಮತ್ತು 3ನೇ ವರ್ಷಗಳಲ್ಲಿ ವ್ಯಾಸಂಗ ಮಾಡುವ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಹಾಗೂ 2025-26ನೇ ಸಾಲಿನಲ್ಲಿ ಪ್ರಥಮ ವರ್ಷಕ್ಕೆ ಪ್ರವೇಶಾತಿ ಪಡೆದು, ನಂತರ 2026-27 ಮತ್ತು 2027-28 ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಲ್ಲಿ ಕ್ರಮವಾಗಿ 2ನೇ ಮತ್ತು 3ನೇ ವರ್ಷದಲ್ಲಿ ವ್ಯಾಸಂಗ ಮಾಡಲಿರುವ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಪ್ರೋಗ್ರಾಂ ವಿನ್ಯಾಸವನ್ನು (Programme Structure) ಸಿದ್ಧಪಡಿಸಿ ಅಧಿಸೂಚಿಸಲಾಗಿದೆ. (ಅನುಬಂಧ)

ಸದರಿ ಪ್ರೋಗ್ರಾಂ ವಿನ್ಯಾಸದಂತೆ ಸಿದ್ಧಪಡಿಸಿರುವ/ ಸಿದ್ಧಪಡಿಸಲಾಗುವ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ತಮ್ಮ ಕಾಲೇಜಿನಲ್ಲಿ ಬೋಧನೆ ಮಾಡುವಂತೆ ಅಗತ್ಯಕ್ರಮ ವಹಿಸಲು ಹಾಗೂ ತಮ್ಮ ಕಾಲೇಜಿನ ಅಧ್ಯಾಪಕರ ಗಮನಕ್ಕೆ ತರಲು ತಿಳಿಸುವಂತೆ ಮಾನ್ಯಕುಲಪತಿಗಳಿಂದ ನಿರ್ದೇಶಿತನಾಗಿದ್ದೇನೆ.

ಆದೇಶದ ಮೇರೆಗೆ,

(Signature)

ಉಪಕುಲಸಚಿವರು
ಉಪಕುಲಸಚಿವರು

ಶೈಕ್ಷಣಿಕ ವಿಭಾಗ

ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ

ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ,

ಇವರಿಗೆ,

ಪ್ರಾಂಶುಪಾಲರುಗಳು ಎಲ್ಲಾ ಸಂಯೋಜಿತ /ಘಟಕ /ಸ್ವಾಯತ್ತ ಕಾಲೇಜುಗಳು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ,
ತುಮಕೂರು.

ಪ್ರತಿಗಳು:

1. ಕುಲಸಚಿವರು, (ಮೌಲ್ಯಮಾಪನ), ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು.
2. ಡೀನರುಗಳು, ವಿವಿಧ ನಿಕಾಯಗಳು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು.
3. ಎಲ್ಲಾ ಸ್ನಾತಕ ವಿಷಯಗಳ ಅಧ್ಯಯನ ಮಂಡಳಿ ಅಧ್ಯಕ್ಷರು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು.
4. ನೋಡಲ್ ಅಧಿಕಾರಿಗಳು, ಯುಯುಸಿಎಂಎಸ್, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು.
5. ಸಿಸ್ಟಂ ಅನಾಲಿಸ್ಟ್, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ ತುಮಕೂರು - ವೆಬ್‌ಸೈಟ್‌ನಲ್ಲಿ ಇಂದೇ ಪ್ರಕಟಿಸುವುದು, ಎಲ್ಲಾ ಕಾಲೇಜುಗಳಿಗೆ ಇ-ಮೇಲ್ ಕಳುಹಿಸುವುದು.
6. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು.
7. ಮಾನ್ಯ ಕುಲಸಚಿವರ ಆಪ್ತ ಸಹಾಯಕರು, ತುಮಕೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ತುಮಕೂರು.
8. ಕಚೇರಿ ಪ್ರತಿ.

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and

For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

Bachelor of Arts (Three major scheme)							
Sem.	DSC Subject1 (Credits) (L+T+P)	DSC Subject 2 (Credits) (L+T+P)	DSC Subject 3 (Credits) (L+T+P)	Languages (Credits) (L+T+P)	Elective Paper (Credits) (L+T+P)	Compulsory Courses (Credits) (L+T+P)	Total Credits
I	DSC-A (5) (6+0+0)* (4+0+4)**	DSC-B (5) (6+0+0)* (4+0+4)**	DSC-C (5) (6+0+0)* (4+0+4)**	L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	23
II	DSC-A (5) (6+0+0)* (4+0+4)**	DSC-B (5) (6+0+0)* (4+0+4)**	DSC-C (5) (6+0+0)* (4+0+4)**	L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	23
III	DSC-A (5) (6+0+0)* (4+0+4)**	DSC-B (5) (6+0+0)* (4+0+4)**	DSC-C (5) (6+0+0)* (4+0+4)**	L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (A or B or C) (3) (3+0+0)	-	24
IV	DSC-A (5) (6+0+0)* (4+0+4)**	DSC-B (5) (6+0+0)* (4+0+4)**	DSC-C (5) (6+0+0)* (4+0+4)**	L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (A or B or C) (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	26
V	DSC-A1 (5) DSC-A2 (5) (5+0+0)*	DSC-B1 (5) DSC-B2 (5) (5+0+0)*	DSC-C1 (5) DSC-C2 (5) (5+0+0)*	-	-	SEC: (2) (1+0+2)	32
	DSC-A1 (4) DSC-A2 (4) (4+0+0)**	DSC-B1 (4) DSC-B2 (4) (4+0+0)**	DSC-C1 (4) DSC-C2 (4) (4+0+0)**				
	DSC-A3 (2) (0+0+4)**	DSC-B3 (2) (0+0+4)**	DSC-C3 (2) (0+0+4)**				
VI	DSC-A1 (5) DSC-A2 (5) (5+0+0)*	DSC-B1 (5) DSC-B2 (5) (5+0+0)*	DSC-C1 (5) DSC-C2 (5) (5+0+0)*	-	-	SEC: (2) (1+0+2)	32
	DSC-A1 (4) DSC-A2 (4) (4+0+0)**	DSC-B1 (4) DSC-B2 (4) (4+0+0)**	DSC-C1 (4) DSC-C2 (4) (4+0+0)**				
	DSC-A3 (2) (0+0+4)**	DSC-B3 (2) (0+0+4)**	DSC-C3 (2) (0+0+4)**				
						TOTAL CREDITS	160

*For papers having theory component only; ** For papers having theory and practical components.
Note: Two Credit DSC practical papers A3/B3/C3 may cover experiments related to both theory papers A1 & A2/B1 & B2/C1 & C2.

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PROGRAM STRUCTURE

For Students admitted to the 1st year in 2024-25, and subsequently promoted to 2nd and 3rd years in 2025-26 & 2026-27 respectively

and

For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

Bachelor of Social Work							
Sem.	DSC Subjects (Credits) (L+T+P)			Languages (Credits) (L+T+P)	Elective Paper (Credits) (L+T+P)	Compulsory Courses (Credits) (L+T+P)	Total Credits
I	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (0+0+8)			L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	24
II	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (0+0+8)			L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	24
III	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (0+0+8)			L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (3) (3+0+0)	-	25
IV	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (0+0+8)			L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	27
V	C1(4) (4+0+0), C2(4) (4+0+0) C3(4) (4+0+0), C4(4) (4+0+0) C5(4) (4+0+0), C6(4) (4+0+0) C7(4) (0+0+8)			-	-	SEC: (2) (1+0+2)	30
VI	C1(4) (4+0+0), C2(4) (4+0+0) C3(4) (4+0+0), C4(4) (4+0+0) C5(4) (4+0+0), C6(4) (4+0+0) C7(4) (0+0+8)			-	-	Research Methodology with Survey Project (2) (1+0+2)	30
						TOTAL CREDITS	160

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PROGRAM STRUCTURE

For Students admitted to the 1st year in 2024-25, and subsequently promoted to 2nd and 3rd years in 2025-26 & 2026-27 respectively

and
For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

Bachelor of Visual Arts					
Sem.	Visual Arts Disciplines (Credits) (L+T+P)	Languages (Credits) (L+T+P)	Elective papers	Skill/Compulsory Courses(Credits) (L+T+P).	Total Credits
I	DSC- VA1(5), VA2(4), VA3(4), VA4(3)	L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	24
II	DSC- VA1(5), VA2(4), VA3(4), VA4(3)	L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	24
III	DSC- VA1(5), VA2(4), VA3(4), VA4(3)	L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (3) (3+0+0)	-	25
IV	DSC- VA1(5), VA2(4), VA3(4), VA4(3)	L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	27
V	VA1(4) (4+0+0), VA2(4) (4+0+0), VA3(4) (4+0+0), VA4(4) (4+0+0), VA5(4) (4+0+0), VA6(4) (4+0+0), VA7(4) (0+0+8)	-	-	SEC: (2) (1+0+2)	30
VI	VA1(4) (4+0+0), VA2(4) (4+0+0), VA3(4) (4+0+0), VA4(4) (4+0+0), VA5(4) (4+0+0), VA6(4) (4+0+0), VA7(4) (0+0+8)	-	-	Research Methodology with Survey Project (2) (1+0+2)	30
				TOTAL CREDITS	160

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For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

Bachelor of Science							
Sem.	Subject1 (Credits) (L+T+P)	Subject 2 (Credits) (L+T+P)	Subject 3 (Credits) (L+T+P)	Languages (Credits) (L+T+P)	Elective papers	Skill/ Compulsory Courses (Credits) (L+T+P).	Total Credits
I	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	26
II	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	26
III	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (A1 or B1 or C1) (3) (3+0+0)	-	27
IV	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (A1 or B1 or C1) (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	29
V	DSC- A1(3)(3+0+0) A2(3)(3+0+0) A3(2)(0+0+4)	DSC- B1(3)(3+0+0) B2(3)(3+0+0) B3(2)(0+0+4)	DSC- C1(3)(3+0+0) C2(3)(3+0+0) C3(2)(0+0+4)	-	-	SEC: (2) (1+0+2)	26
VI	DSC- A1(3)(3+0+0) A2(3)(3+0+0) A3(2)(0+0+4)	DSC- B1(3)(3+0+0) B2(3)(3+0+0) B3(2)(0+0+4)	DSC- C1(3)(3+0+0) C2(3)(3+0+0) C3(2)(0+0+4)	-	-	SEC: (2) (1+0+2)	26
						TOTAL CREDITS	160

Note: Two Credit DSC practical papers A3/B3/C3 may cover experiments related to both theory papers A1 & A2/B1 & B2/C1 & C2.

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For c.

For Students admitted to the 1st year in 2024-25, and subsequently promoted to 2nd and 3rd years in 2026 & 2026-27 respectively

and

For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

Bachelor of Design / B. Sc. Electronics & Commun./ B. Sc. Fire & Industrial Safety/B. Sc. FAD						
Sem.	DSC Subjects (Credits) (L+T+P)	Languages (Credits) (L+T+P)	Elective Paper (Credits) (L+T+P)	Compulsory Courses (Credits) (L+T+P)	Total Credits	
I	DSC- C1(4)(4+0+0), C2(2)(0+0+4), C3(4)(4+0+0), C4(2)(0+0+4), C5(4)(4+0+0), C6(2)(0+0+4)	L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	26	
II	DSC- C1(4)(4+0+0), C2(2)(0+0+4), C3(4)(4+0+0), C4(2)(0+0+4), C5(4)(4+0+0), C6(2)(0+0+4)	L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	26	
III	DSC- C1(4)(4+0+0), C2(2)(0+0+4), C3(4)(4+0+0), C4(2)(0+0+4), C5(4)(4+0+0), C6(2)(0+0+4)	L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (3) (3+0+0)	-	27	
IV	DSC- C1(4)(4+0+0), C2(2)(0+0+4), C3(4)(4+0+0), C4(2)(0+0+4), C5(4)(4+0+0), C6(2)(0+0+4)	L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	29	
V	DSC- C1(3)(3+0+0), C2(3)(3+0+0), C3(3)(3+0+0), C4(3)(3+0+0), C5(3)(3+0+0), C6(3)(3+0+0), C7(2)(0+0+4), C8(2)(0+0+4), C9(2)(0+0+4)	-	-	SEC: (2) (1+0+2)	26	
VI	DSC- C1(3)(3+0+0), C2(3)(3+0+0), C3(3)(3+0+0), C4(3)(3+0+0), C5(3)(3+0+0), C6(3)(3+0+0), C7(2)(0+0+4), C8(2)(0+0+4), C9(2)(0+0+4)	-	-	Research Methodology with Survey Project (2) (1+0+2)	26	
				TOTAL CREDITS	160	

Note Two Credit DSC practical papers C7/C8/C9 may cover experiments related to theory papers C1 & C2/C3 & C4/C5 & C6.

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and
For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

Bachelor of Computer Applications							
Sem.	Subject 1 (Credits) (L+T+P)	Subject 2 (Credits) (L+T+P)	Subject 3 (Credits) (L+T+P)	Languages (Credits) (L+T+P)	Elective papers	Skill/ Compulsory Courses (Credits) (L+T+P).	Total Credits
I	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	26
II	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	26
III	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (3) (3+0+0)	-	27
IV	DSC- A1(4) (4+0+0), A2(2) (0+0+4)	DSC- B1(4) (4+0+0), B2(2) (0+0+4)	DSC- C1(4) (4+0+0), C2(2) (0+0+4)	L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	29
V	DSC- A1(3)(3+0+0) A2(3)(3+0+0) A3(2)(0+0+4)	DSC- B1(3)(3+0+0) B2(3)(3+0+0) B3(2)(0+0+4)	DSC- C1(3)(3+0+0) C2(3)(3+0+0) C3(2)(0+0+4)	-	-	SEC: (2) (1+0+2)	26
VI	DSC- A1(3)(3+0+0) A2(3)(3+0+0) A3(2)(0+0+4)	DSC- B1(3)(3+0+0) B2(3)(3+0+0) B3(2)(0+0+4)	DSC- C1(3)(3+0+0) C2(3)(3+0+0) C3(2)(0+0+4)	-	-	Research Methodology with Survey Project (2) (1+0+2)	26
						TOTAL CREDITS	160

Note: Two Credit DSC practical papers A3/B3/C3 may cover experiments related to both theory papers A1 & A2/B1 & B2/C1 & C2.



TUMKUR UNIVERSITY

PROGRAM STRUCTURE

For Students admitted to the 1st year in 2024-25, and subsequently promoted to 2nd and 3rd years in 2025-26 & 2026-27 respectively
and
For Students admitted to the 1st year in 2025-26, and subsequently promoted to 2nd and 3rd years in 2026-27 & 2027-28 respectively

B.Com. / BBA						
Sem.	DSC Subjects (Credits) (L+T+P)	Languages (Credits) (L+T+P)	Elective Paper (Credits) (L+T+P)	Compulsory Courses (Credits) (L+T+P)	Total Credits	
I	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (5+0+0)	L1-1 (3) (4+0+0) L2-1 (3) (4+0+0)	-	Compulsory-1: Constitutional values-1 (2) (2+0+0)	24	
II	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (5+0+0)	L1-2 (3) (4+0+0) L2-2 (3) (4+0+0)	-	Compulsory -2: Constitutional values-2 (2) (2+0+0)	24	
III	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (5+0+0)	L1-3 (3) (4+0+0) L2-3 (3) (4+0+0)	DSE-1 (3) (3+0+0)	-	25	
IV	C1(4) (5+0+0), C2(4) (5+0+0) C3(4) (5+0+0), C4(4) (5+0+0)	L1-4 (3) (4+0+0) L2-4 (3) (4+0+0)	DSE-2 (3) (3+0+0)	Compulsory -3: EVS (2) (2+0+0)	27	
V	C1(4) (4+0+0), C2(4) (4+0+0) C3(4) (4+0+0), C4(4) (4+0+0) C5(4) (4+0+0), C6(4) (4+0+0) C7(4) (4+0+0)	-	-	SEC: (2) (1+0+2)	30	
VI	C1(4) (4+0+0), C2(4) (4+0+0) C3(4) (4+0+0), C4(4) (4+0+0) C5(4) (4+0+0), C6(4) (4+0+0) C7(4) (4+0+0)	-	-	Research Methodology with Survey Project (2) (1+0+2)	30	
				TOTAL CREDITS	160	

Signature

Abbreviations used

1. **DSC:** Discipline Specific Core
2. **L1/L2:** Language-1/ Language-2
3. **DSE:** Discipline Specific Elective (One of the major subject must be offered as DSE)
4. **EVS:** Environmental Studies
5. **L+T+P:** Lecture+ Tutorial+ Practical (hrs/wk)
6. **SEC:** Skill Enhancement Course (Must be practical oriented and Chooosen among one of the major subjects)

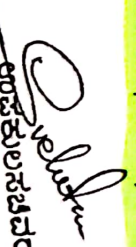
Instructions to BOS (While fixing titles of papers)

1. Do not use any special character (like dot, hyphen, space, colon, etc.) in the Course Codes.
2. Use subject-specific prefix for every course code (e.g. BOTDSC101 for Botany DSC Subject 1 of I semester, BOTDSC201 for Botany DSC Subject 1 of II semester, BOTDSE101A, BOTDSE101B, BOTDSE101C, etc.)
3. Assign unique Course Code to each course (paper).

Examination and distribution of marks

Papers	Duration of the exam	Internal Assessment marks	Semester End Exam	Total Marks	Credits
DSC Theory	03 Hours	20	80	100	3/4/5
DSC Practical	03 Hours	10	40	50	2
Languages	03 Hours	20	80	100	3
Compulsory paper	1.5 Hours	10	40	50	2
SEC	1.5 Hours	10	40*	50	2
Field work (BSW)	Viva	20	80 (Viva)	100	4
Research methodology in survey project	1.5 Hours	10	40*	50	2

*Single paper theory examination (which includes questions from both theory and practical components) shall be conducted.


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TUMKUR UNIVERSITY

PROCEEDINGS OF BOS MEETING IN ZOOLOGY (UG) DATE,

Agenda: Approval of Undergraduate B. Sc., V and VI semester Zoology syllabus under revised NEP.

The BOS meeting in Zoology (UG) started at 11AM in the Chairman's chamber of DOSR in Zoology, Tumkur University, Jannasiri Campus, Bidarakatte. The Chairman, BOS welcomed the Members of the BOS and conveyed the agenda of the BOS meeting.

The draft syllabus of undergraduate B.Sc., V and VI semester was already circulated to all the BOS members and sought appropriate changes to be made to the syllabus. The BOS members had thorough discussions on the draft syllabus and included some of the corrections in the syllabus. After the deliberate discussions, all the BOS members unanimously agreed to approve the undergraduate B.Sc., V and VI semester syllabus of Tumkur University.

Following members were present in the meeting.

Sl. No.	Name of the BOS Members	Affiliation	Signature	Remarks
1	Dr. Manohar Shinde (Chairman, BOS, UG)	Professor in Biochemistry Tumkur University		Approved
2	Dr. Asiya Nuzhat F. B.	Asso. Professor in Zoology, Tumkur University	Sd/-	Approved
3	Dr. H. M. Lalitha	Professor in Zoology, UCS, Tumkur University		Approved
4	Dr. Parimala B.	Professor in Zoology, UCS, Tumkur University		Approved
5	Smt. Bhavani Patil	Assistant Professor in Zoology, GFGC, Tumakuru		Approved
6	Dr. K. Nagaraju (External Member)	Professor in Zoology, Kuvempu University	Sd/-	Approved online
7	Dr. Pulikeshi M. Biradar (External Member)	Professor of Zoology, Karnatak University	Sd/-	Approved online

Chairman

BOS in Zoology (UG)

Tumkur University
Chairman B.O.S. in Zoology
Tumkur University
TUMAKURU- 572103.

TUMKUR



UNIVERSITY

Syllabus
for

B.Sc., Zoology

(UG)

SEP

V & VI SEMESTER

ACADEMIC YEAR 2026-27

Handwritten signature
Jyoti S.

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Chairman B.O.S. in Zoology
Tumkur University
TUMAKURU- 572103.

TUMKUR UNIVERSITY

III BSc., Programme: Course Structure for semester V& VI in Zoology

Semester	Course Title	Theory/ Practical	Course code	Course credit / Hrs per week	SEE	IA	Total Marks	Total Hours	Hours/ week
V	Paper-V Genetics and Histology	Theory	DSC	03	80	20	100	48	03
	Paper-VI Molecular Biology, Animal Biotechnology and Immunology	Theory	DSC	03	80	20	100	48	03
	Practical-V	Practical	DSCP	02	40	10	50	64	04
	Skill Enhancement in Zoology (Vermiculture)	Theory	Compulsory	1	40	10	50	32	03
		Practical		1					
VI	Environmental Biology, Wildlife Management and Conservation (VI Semester) Paper-VII	Theory	DSC	03	80	20	100	48	03
	Human Anatomy, Evolutionary Biology, Parasitology and Biostatistics (VI Semester) Paper-VIII	Theory	DSC	03	80	20	100	48	03
	Practical-VI	Practical	DSCP	02	40	10	50	64	04
	Skill Enhancement in Zoology (Sericulture and Apiculture)	Theory	Compulsory	1	40	10	50	32	03
		Practical		1					

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[Handwritten Signature]
Chairman B.C.S. in Zoology
Tumkur University
TUMKUR- 572103



V - SEMESTER
B.Sc., ZOOLOGY THEORY SYLLABUS
DISCIPLINE SPECIFIC CORE
PAPER-V
GENETICS AND HISTOLOGY

Program	B.Sc.	V Semester	Paper-V
Course Title	GENETICS AND HISTOLOGY(Theory)		
Course Code:	DSC	No. of Credits	3
Contact hours	48 Hours	Duration of SEE	3 Hours
Formative Assessment Marks	20	Summative Assessment Marks	80

Objectives:

- To provide a comprehensive understanding of the fundamental principles of genetics including Mendelian and non-Mendelian inheritance, gene interactions, and multiple alleles.
- To enable understanding the influence of heredity and environment on phenotypic expression through the study of nature–nurture interactions and related genetic concepts.
- To provide a comprehensive understanding of mechanisms of inheritance, genetic variation, human genetic disorders, and contemporary developments in human genomics and epigenetics.
- To provide knowledge of the histological organization and functional significance of mammalian organs, correlating microscopic structure with physiological functions.
- To analyze the structural and functional relationships of major mammalian organs through histological studies.

Course Outcomes (COs): At the end of the course, students will be able to:

- Understand fundamental principles of heredity and inheritance, Mendelian and non-Mendelian inheritance patterns, gain insight into various types of gene interaction.
- Gain knowledge on the principles of Linkage and crossing over, and sex determination and construction of genetic map.
- Describe gene mutations and their types, explain the role of physical and chemical mutagens and discuss genetic disorders and inborn errors of metabolism caused by mutant genes in humans.
- Explain the concepts of Eugenics, Epigenetics, Human genomics, and Epigenetics and evaluate their applications, advantages, disadvantages, and significance in human health and genetics.
- Identify and describe the histological structure of major mammalian organs and correlate their microscopic organization with their physiological functions.

UNIT-1: GENETICS - I

16 Hrs.

Introduction to Genetics: Definition- Heredity, Genotype and Phenotype,

Mendel's Laws, Monohybrid and Dihybrid cross, Back cross and Test cross. Problems related to topics.

Non-Mendelian inheritance: Incomplete dominance (*Andalusian fowl*), Cytoplasmic inheritance (Kappa particles in *Paramecium*), Maternal inheritance (Shell coiling in *Limnaea*).

Nature and Nurture: Definition. Experiments on *Potentilla glandulosa*.

Himalayan albino rabbit and Human twins. Norm of reaction, Homeostasis, Phenocopy.

Interaction of genes:

Supplementary factors – 9: 3: 3: 1 (comb pattern in fowls). Epistasis (Dominant and Recessive),

Complementary factors - 9: 7 (Flower colour in sweet peas).

Polygenic inheritance - Skin colour in man.

Lethal genes – Yellow coat colour in mice.

Multiple Alleles: ABO blood groups in man, Rh-factor, Erythroblastosis foetalis, Problems related to topics.

Pleiotropism (Sickle-cell Anemia).

UNIT-2: GENETICS - II

16 Hrs.

Linkage: Definition, Types of Linkage, factors affecting linkage. Significance of linkage.

Crossing over: Definition, Types- Germinal and Somatic Mechanism of crossing over. Significance of crossing over.

Linkage and crossing over in *Drosophila*

Sex linked inheritance: Sex linked inheritance in *Drosophila* (white eye colour) and man (Haemophilia and Colour blindness), Y-linked genes (Hypertrichosis of ear).

Sex determination: Chromosomal basis of sex determination (XX-XY, XX-XO and ZZ-ZW). Genic balance theory in *Drosophila*. Gynandromorphs and Intersexes in *Drosophila*, Klinefelter's syndrome and Turner's Syndrome in man. Free martin in cattle.

Gene mutation: Definition, Types-Point mutation and Frameshift mutation. Disorders due to mutant genes in man: Brachydactyly, Sickle cell anemia, Thalassemia.

Mutagens- Physical and chemical agents. Inborn errors of metabolism: Phenylketonuria, Alkaptonuria, Albinism.

Human Genetics: Eugenics and Euphenics. Human genomics – Definition, advantages and disadvantages. Epigenetics.

UNIT – 3: HISTOLOGY

Histological Structure and functions of the following mammalian organs: Tongue, stomach, small intestine, liver, pancreas, spleen, kidney, testis, ovary, pituitary, thyroid and adrenal.

16 Hrs.

References:

1. Advanced Genetics. G. S. Miglani. Alpha Science International, Ltd. 2012.
2. Cell and Molecular Biology, 4th Edition, P.K. Gupta. 2014
3. Genes- IX, 9th Ed., Benjamin Lewin. Jones and Bartlett Publishers, 2008.
4. Genetics – Classical to modern, 1st Edition. P.K. Gupta. 2013.
5. Principles of Genetics, 7th Edition, Robert H. Tamarin. 2002. Tata- Mc Graw H publications.
6. Theory and Problems of Genetics. W. D. Stansfield. 2002. Mc Graw Hill publications.
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8. Genetics: A Conceptual Approach- Benjamin A. Pierce.
9. Histology: A Text and Atlas, Ross, M.H. &W. Pawlina (2010). 6th Edition, Lippincott Williams & Wilkins, Maryland.
10. Bailey's Textbook of Histology, Bailey, F.R. (1978)
11. Ham's Histology. Ham, A W and Cormack, D H, Lippincott.
12. Animal Histology. A.K. Berry, Emkay publications.

FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TEST)	15
ASSIGNMENT/SEMINAR	05
TOTAL	20

V - SEMESTER
B.Sc., ZOOLOGY THEORY SYLLABUS
DISCIPLINE SPECIFIC CORE

PAPER-VI

MOLECULAR BIOLOGY, ANIMAL BIOTECHNOLOGY AND IMMUNOLOGY

Program Name	B.Sc.	V Semester	PAPER-VI
Course Title	MOLECULAR BIOLOGY, ANIMAL BIOTECHNOLOGY AND IMMUNOLOGY		
Course Code:	DSC	No. of Credits	3
Contact hours	48 Hours	Duration of SEE	3 Hours
Formative Assessment Marks	20	Summative Assessment Marks	80

Objectives:

- To make the students aware of the scope of Molecular Biology, Animal biotechnology and Immunology.
- To provide an understanding of structure-function relationships of nucleic acids and protein and the regulatory processes.
- To introduce students to the principle, practices and application of Animal biotechnology.
- To familiarize the students with the basic concept of genetic engineering.
- To learn scientific and engineering principles related to the processing and production of the recombinant proteins.
- To impart an in-depth knowledge on how our immune system fights with infection and foreign substances that can harm our body.
- To learn how the immune system responds to various infections and foreign substances that adversely affect our body.
- To help comprehend the concept of hypersensitivity.
- To acquaint the students on the role of immune system in prevention and altered response to diseases.

Course Outcomes (COs): At the end of the course, students will be able to:

- Understand principles and working of different types of microscopes.
- Familiarize students with the structural and functional aspects of cell, the basic unit of life, and its different organelles.
- Enable students to make a strategy to manipulate genetic structure of an organism for improvement of any trait.
- Gain knowledge of DNA and RNS replication.
- Explain post-transcriptional modification mechanisms for the processing of eukaryotic mRNA.
- Execute the application of recombinant DNA technology in designing research project.
- Acquire technical skills required for joining research labs/industry/institute/pharmaceutical etc.

- Have a better understanding of the concepts of innate and acquired immunity.
- Acquire knowledge of the immunogenicity of biomolecules.
- Provide students with knowledge on how the immune system works building on the previous knowledge.
- Clearly state the role of the immune system.
- Comprehend the role of immune system in health and disease.
- Gain knowledge of autoimmunity, immunodeficiency and hypersensitivity.

UNIT - 1

16 Hrs

Microscopy: Principle and applications of Light, Electron (SEM and TEM) and Phase contrast microscopes.

Nucleic acids: Structure and functions of DNA, Watson and Crick DNA model, Types of DNA and Replication of DNA, RNA: Types, structure and functions.

Gene concept: Cistron, Recon and Muton, Test for allelism: Bar locus in *Drosophila*, Jumping genes (transposable elements- Maize) and Properties of overlapping gene with example.

Genetic code: Salient features of Genetic code.

Protein Synthesis: Transcription in prokaryotes: RNA polymerase, binding, initiation, elongation, termination. Post Transcriptional modification of mRNA-in Eukaryotes, addition of cap and tail, split genes and RNA splicing. Translation in Prokaryotes: Amino- acylation of tRNA, elongation, termination. Regulation of gene expression- Lac Operon model.

UNIT-2

16Hrs.

Animal tissue culture: Introduction and importance. Cell Culture procedures.

Recombinant DNA Technology: Introduction, Steps involved.

Genetic Engineering: Nucleic acid modifying enzymes; Definitions, types (Restriction Enzymes and Ligases) and functions.

Animal tissue culture media: Culture media containing naturally occurring ingredients, blood plasma, blood serum, serum-free media and tissue extracts.

Gene cloning Vector: Concept and applications of plasmids-pBR322, Lamda phage vectors, Cosmids, Production of Human Recombinant insulin, Hybridoma technology: Synthesis and applications of Monoclonal Antibodies. Cloning- Sheep. Transgenic animal- Cow and Zebra fish. Bio vaccines.

Gene transfer techniques-Physical (Electroporation), Chemical (Lipofection), and biological method (Viral vectors). Gene silencing (Knockout and Knock-in mice); Gene Therapy (SCID).

UNIT - 3

16 Hrs.

Immune system: Introduction, Immunity: Innate and acquired immunity, APC, MHC molecules.

Immune response: Primary and secondary immune response.

Role of B and T Lymphocytes-Humoral and cell mediated immunity.

Functional Aspects of organs of immune system: Bone marrow, Thymus, Spleen and Lymph node.

Antigen, Haptens, Epitopes and Adjuvant.

Immunoglobulins: Types and functions. Structure and functions of IgG.

Hypersensitivity and Autoimmune diseases: Rheumatoid Arthritis, Multiple sclerosis, Psoriasis and Inflammatory Bowel disease.

References:

1. N Arumugam and R. P. Meyyan "Cell biology, Molecular Biology, Genetics, Evolution and Ecology Volume I Saras Publication
2. V. K. Agarwal ZOOLOGY for BSc., students Molecular Biology, principles of GeneticsS. Chand Publication
3. Verma , P. S. and Agarwal, V. K. Cell biology genetics molecular biology evolution and ecologyS .Chand and Company Ltd, Newdelhi.
4. Gupta, P.K Cytology genetics and molecular biology Rastogi publication, Meerut
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19. Singh B. U. Biotechnology Kalyani Publishers, Ludhiyana
20. Smith John . E BiotechnologyCambridge University Press,N-Delhi
21. Baskar Rao,Digumarti , Harshitha Digumarti & Sambha Shiva Rao.K.B.S Suneja Kavitha Advanced biotechnology Discovery publication, New Delhi

22. Mackinnon, Doris L Genetic engineering & animal biotechnology Kalyani, Ludhiana
23. Ranga M M Animal Biotechnology Agrobios India, Jodhpur
24. Sasidhara, R Animal biotechnology M.J. P publishers, Chennai
25. Singh B D Genetic Engineering & Animal Biotechnology V SEM Kalyani publish
Ludhiyana
26. Shetty, Nandini Immunology and medical microbiology VI sem New Age interation
Bangalore
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Bangalore
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Delhi
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& Co., New York
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Scientific, London.
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FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TEST)	15
ASSIGNMENT/SEMINAR	05
TOTAL	20

V - SEMESTER
B.Sc., ZOOLOGY PRACTICAL SYLLABUS
DISCIPLINE SPECIFIC CORE
PRACTICAL: V

Program Name	B.Sc.	V Semester	PRACTICAL-V
Course Title	GENETICS, HISTOLOGY, MOLECULAR BIOLOGY, ANIMAL BIOTECHNOLOGY AND IMMUNOLOGY (PRACTICAL)		
Course Code:	DSCP	No. of Credits	2
Contact hours	64 Hours	Duration of SEE	3 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

Course Outcomes (COs): At the end of the course, students will be able to:

- Identify and distinguish male and female *Drosophila* and recognize common mutant phenotypes such as white eye, bar eye, vestigial wing, and yellow body.
- Apply principles of genetics to solve problems related to monohybrid, dihybrid, and sex-linked inheritance in *Drosophila* and humans.
- Examine and interpret the histological organization of selected mammalian organs and lymphoid tissues, correlating their structure with function.
- Demonstrate proficiency in the use of simple and compound microscopes for observation and analysis of biological specimens and basic laboratory techniques in molecular biology.
- Perform basic molecular biology and biochemical techniques, including DNA isolation, preparation of tissue culture media, and amino acid identification using paper chromatography.
- Develop practical skills in advanced biological techniques such as SDS-PAGE, PCR, and ELISA and understand their applications in biological and biomedical research.

List of labs to be conducted		16x4=64 Hrs.
1	General morphology and Identification of Male and Female <i>Drosophila</i> .	1
2	Identification of mutants in <i>Drosophila</i> - white eye, bar eye, vestigial wing and yellow body.	1
3	Genetic problems: a. Monohybrid and Dihybrid inheritance in <i>Drosophila</i> . (Two problems in each) b. Sex linked inheritance: <i>Drosophila</i> and man. (One problem in each)	2
4	Study of tongue, small intestine, liver, pancreas, testis and	4
5	Molecular Biology: To study the principles and applications of simple and compound microscope.	2
6	Isolation of DNA from the animal tissue.	1
7	To identify different unknown amino acids using Ascending paper chromatography.	1

8	Animal tissue culture: Preparation of animal tissue culture media (Natural media).	1
9	Instruments/Demonstrate: SDS -PAGE, PCR, ELISA.	2
10	Study of lymphoid organs: Bone marrow, Thymus, spleen and Lymph node	1

V - SEMESTER
B.Sc., ZOOLOGY PRACTICAL-V
GENETICS, HISTOLOGY, MOLECULAR BIOLOGY, ANIMAL BIOTECHNOLOGY
AND IMMUNOLOGY
SCHEME OF PRACTICAL EXAMINATION

Max. Marks: 40

Time: 3 Hours

1. Genetic problems on:
Monohybrid /Dihybrid cross/ Sex -linked inheritance 4M
2. Identify A and B with suitable reasons
(A- Male/Female Drosophila, B- Mutants). 2X3=6M
3. Identify C, D and E by giving histological reasons. 3X3=9M
4. Isolation of DNA from the given animal tissue/ Identify different unknown amino acids
using Ascending paper chromatography. 8M
5. Identify and comment on 'E' (Chapter 9) 3M
6. Identify and comment on 'F' (Chapter 10) 3M
7. Class Records. 5M

V - SEMESTER
B.Sc., ZOOLOGY PRACTICAL-V
GENETICS, HISTOLOGY, MOLECULAR BIOLOGY, ANIMAL BIOTECHNOLOGY
AND IMMUNOLOGY
SCHEME OF VALUATION

1. Genetic problem 4 marks
2. Identification- 1 mark, diagram-1 mark, comment- 1 mark
3. Identification- 1 mark, diagram-1-mark, histological reasons- 1 mark
4. Isolation of DNA / Ascending paper chromatography
Principle-2 marks, procedure-2 marks, result-2 marks and discussion- 2 marks
5. Identification- 1 mark, Principle-1 mark, applications- 1 mark
6. Identification- 1 mark, Diagram-1 mark, comments- 1 mark
7. Class Records. 5marks

References:

1. Principles of Genetics. 8th Edition. Gardner, E.J., Simmons, M.J., and Snustad, D.P. (2006). John Wiley & Sons.
2. Textbook of Human Histology, Singh, Inderbir (2022). Jaypee Brothers Medical Publishers.
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4. Molecular Biology of the Cell. Alberts, Bruce, Johnson, Alexander, Lewis, Julian, Morgan, David, Raff, Martin, Roberts, Keith, and Walter, Peter (2022). Garland Science
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8. Principles and Techniques of Biochemistry and Molecular Biology. Wilson, Keith and Walker, John

FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
ASSIGNMENT/REPORT	05
CONTINUOUS EVALUATION AND CLASS TEST	05
TOTAL	10

V - SEMESTER
B.Sc., ZOOLOGY THEORY AND PRACTICAL SYLLABUS *
Skill Enhancement in Zoology (SEC)
Vermiculture

Program Name	B.Sc.	V Semester	Paper-SEC
Course Title	Skill Enhancement in Zoology- Vermiculture		
Course Code:	SEC	No. of Credits	Theory-1 Practical-1
Contact hours	32 Hours	Duration of SEE	1.5 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

Objectives:

- Students will be able to compost in a limited space and describe the decomposing process.
- The interested students will get the knowledge of composting.
- They can generate employments.
- They will also turn towards organic farming.
- They will help to maintain the environment pollution free.
- They will get the knowledge of biodiversity of local earthworms.

Course Outcomes (COs): At the end of the course, students will be able to:

- Understands the importance of earthworms in maintaining soil quality.
- Understand concepts of biofertilizers.
- Understand techniques in Vermicomposting.
- Learn that the vermicomposting is an effective organic solid waste management method.
- Get acquainted with the importance of earthworms in agro-based economic activity.
- Vermicomposting may be taken up as a small-scale industry by the farmers and unemployed youth.
- Learn the concept of vermicomposting as bio fertilizers thus student can become an entrepreneur after completion of the course.
- Best opportunity for self-employment and lifelong learning with farmers.
- Enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions and assignments.

Theory

16hrs

Vermiculture: Definition, Scope of vermiculture, Difference between vermiculture and vermicomposting. Food habit and habitat of Earthworms, Ecological requirements (moisture, temperature, pH, organic matter)

Study of external morphology of Earthworm:- Prostomium, Peristomium, Metamerism, Cuticle, Setae, Different body pores, Clitellum. Digestive system.

Types of earthworms (Habit categories) - Epigeic, Endogeic and Anecic.

Indigenous and exotic species: Native Indian earthworms: *Perionyx excavatus*, *Perionyx*

ceylanensis. European earthworms: *Eisenia fetida*, *Eisenia andrei*, South African earthworms. *Eudrilus eugeniae*.

Selective features of earthworm species for vermicomposting. Types of vermiculture (Bin culture, Pit culture, Pot culture).

Vermicomposting: Methodology of vermicomposting: containers for culturing, raw materials required, preparation of bed, environmental pre-requisites, feeding, harvesting and storage of Vermicompost. Importance of Vermicompost and Vermi wash. Significances of vermicomposting. Predators of Earthworms: Rat, mice, ants, birds. Diseases and pests of earthworms.

16hrs

Practicals

List of labs to be conducted		8x2=16Hrs.
1	Keys to identify different species of earth worm.	1
2	Externals of <i>Eisenia fetida</i>	1
3	Externals of <i>Eudrilus eugeniae</i> .	1
4	Digestive system of earthworm.	1
5	Study of vermicomposting equipments and devices.	1
6	Preparation of vermi beds and their maintenance.	1
7	Diseases of earth worms and their control measures.	1
8	Natural enemies of earth worms and their control measures.	1

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11. P. K. Gupta, "Vermicomposting for Sustainable Agriculture", Publisher: Agrobio: publication.

***Single paper theory examination (which includes questions from both theory and practical components) shall be conducted.**

FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
ASSIGNMENT/REPORT	05
CONTINUOUS EVALUATION AND CLASS TEST	05
TOTAL	10

VI - SEMESTER
B.Sc., ZOOLOGY THEORY SYLLABUS
DISCIPLINE SPECIFIC CORE
PAPER-VII

ENVIRONMENTAL BIOLOGY, WILDLIFE MANAGEMENT AND CONSERVATION

Program Name	B.Sc.	VI Semester	PAPER-VII
Course Title	ENVIRONMENTAL BIOLOGY, WILDLIFE MANAGEMENT AND CONSERVATION		
Course Code:	DSC	No. of Credits	3
Contact hours	48 Hours	Duration of SEE	3 Hours
Formative Assessment Marks	20	Summative Assessment Marks	80

Objectives:

- To understand the fundamental concepts of ecology.
- To analyse the effects of biotic and abiotic factors.
- To explain ecological processes to maintain ecosystem functioning.
- To describe population and community ecology principles.
- To evaluate the structure and functioning of major ecosystems.
- To assess environmental pollution issues, including sources, impacts, and control measures, and their effects on ecological health.
- To understand the principles and practices of wildlife conservation.
- To apply ecological and conservation knowledge to promote biodiversity conservation, sustainable resource management, and environmental protection.

Course Outcomes (COs): At the end of the course, students will be able to:

- Explain the fundamental concepts of ecology, including ecological subdivisions, habitat, ecological niche, and the role of biotic and abiotic factors in shaping ecosystem dynamics.
- Analyze the role of ecological interactions, limiting factors, energy flow, biogeochemical cycles, population dynamics, and community structure in maintaining ecosystem stability and functioning.
- Describe the structure, functions, and ecological significance of major ecosystems.
- Assess the sources and impacts of environmental pollution and distinguish between biodegradable and non-biodegradable pollutants.
- Evaluate the importance of wildlife conservation and analyse the role of conservation strategies, policies, protected areas, and management practices in the protection of biodiversity and wildlife habitats.
- Apply ecological concepts and modern conservation techniques, including animal census methods, remote sensing, and GIS, for sustainable environmental and wildlife management.

UNIT - 1

16 Hrs.

Fundamentals of Ecology:

Introduction to ecology, Subdivisions of ecology- Autecology, synecology and other subdivisions.

Concept of habitat, Microhabitat, Macro habitat with examples.

Concept of Ecological niche, Habitat (Spatial) niche, Tropical niche, Hyper volume niche (Multidimensional niche)

Ecological factors:

Abiotic factors:

Temperature: Thermal stratification, Range of tolerance, Poikilothermy and Homeothermy.

Light: Distribution, Ecological effects, Photoperiodism, and bioluminescence.

Limiting factors:

Liebig's Law of Minimum, Shelford's Law of Tolerance and Combined concept of limiting factors.

Biogeochemical cycles:

Definition, Types- Gaseous type (Nitrogen cycle), Sedimentary type (Phosphorus cycle)

Energy: Definition, Types of energy, laws of thermodynamics (I and II law) and their applications.

Energy flow with a diagram.

Food chains: Definition, types of food chains with examples and food webs with examples.

Ecological pyramids- number, biomass and energy with examples.

16 Hrs.

UNIT - 2

Population biology and community ecology:

Population ecology –Population density, natality and mortality; age distribution and population growth.

Community ecology –Community structure, ecological determinants, Bio indicators, ecological stratification, Ecotone and edge effect with examples.

Interspecific and Intraspecific relationships: Positive interactions (symbiosis)- commensalism, proto-cooperation and mutualism. Negative interaction (Antagonism)- competition, Gause principle, predation, parasitism and antibiosis

Ecosystems: Definition, structure and functions of pond, marine, desert and forest ecosystems
Lentic and lotic ecosystems.

Pollution: Definition and types of pollutions. Degradable and non- degradable pollutants. Sources effects and control of Air, Water, Soil and Noise pollution.

16 Hrs.

UNIT - 3

Wildlife Conservation:

Importance of wildlife, Ex-situ Conservation- Zoo, botanical garden and gene and sperm bank. In situ conservation - National parks, Wildlife sanctuaries, Biosphere reserve, Hotspots.

Wildlife Protection Act 1972-Project tiger. Project Elephant. Red Data book.

Values of wildlife, Causes and depletion of wildlife, Conservation strategies, and issues, concept of home range, wildlife corridors and territory.

Animal census- tracing movement and remote sensing and GIS.

References:

1. Fundamentals of Ecology. Odum, E.P. and Barrett, G.W. (2005). Cengage Learning.
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FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TEST)	15
ASSIGNMENT/SEMINAR	05
TOTAL	20

VI - SEMESTER
B.Sc., ZOOLOGY THEORY SYLLABUS
DISCIPLINE SPECIFIC CORE
PAPER-VIII

**HUMAN ANATOMY, EVOLUTIONARY BIOLOGY, PARASITOLOGY AND
 BIostatISTICS.**

Program Name	B.Sc.	VI Semester	PAPER-
Course Title	HUMAN ANATOMY, EVOLUTIONARY BIOLOGY, PARASITOLOGY BIostatISTICS.		
Course Code:	DSC	No. of Credits	3
Contact hours	48 Hours	Duration of SEE	3 Hour
Formative Assessment Marks	20	Summative Assessment Marks	80

Objectives:

- Identify and describe the anatomical locations, shapes, and structures of the major human organ systems.
- Identify the names, locations, and unique anatomical landmarks of all the bones in the human skeleton.
- Understands the theories of origin of life on earth.
- Define the Lamarckism and Darwinism concepts of evolution.
- Analyze the evidences supporting the evolutionary process.
- Study the phases in the evolution of horse and man.
- To enable the students to see, appreciate and understand the diversity of parasites.
- To learn about Parasitology that will enable students to diagnose parasites correctly.
- To acquire understanding of study of life cycles of parasites, that can help in defying the stigmas and religious taboos for many societies making free many of the people from superstition and ill health.
- To provide an overview of the fundamental concepts of biostatistics.
- To apprise students to the various statistical methods and software tools for understanding data analysis in biological sciences.

Course Outcomes (COs): At the end of the course, students will be able to:

- Use correct anatomical vocabulary to describe bone structures, spatial relationships, and joint movements.
- Connect basic anatomical structures to their physiological functions.
- Understand the Evolutionary Concept and theories in evolution.
- Understand the different interacting evolutionary process of Horse and Man.
- Better understand the variation amongst parasites, parasitic invasion in animals; applicable to medical and agriculture aspects.
- Comprehend the life cycles of various parasites, including their modes of transmission, intermediate hosts, and definitive hosts.
- Gain insights into the interactions between parasites and their hosts; including mechanisms of host invasion, evasion of host defenses, and pathogenesis.
- Understand biological data and analysis of the data and learn about statistical data presentation.
- Develop critical thinking to analyze and represent the significance of the statistical data.
- Develop the skills to collect and represent data in tabular and graphical forms.

UNIT – 1: HUMAN ANATOMY

16 Hrs.

Skeletal system (except bones of hands and foot).

Structure of digestive system including oral cavity.

Circulatory system: Structure of heart, arterial and venous system.

Respiratory and Excretory system.

Structure of brain and spinal cord.

UNIT – 2: EVOLUTIONARY BIOLOGY

16 Hrs.

Introduction to evolutionary theories: Lamarckism, Darwinism and Neo-Darwinism

Direct evidences of organic evolution: Evidences from Homologues and Analogues organs.

Embryological evidences. Serological evidences. Evidences from vestigial organs

Paleontological evidences. Definition of Fossils, Formation of fossil, Types of fossils, Dating of fossils – Carbon-14, Uranium – Lead method. Significance of fossils.

Zoogeographical evidences: Continental drift, Speciation – Sympatric and Allopatric Isolation, Isolating mechanism – pre-zygotic and post-zygotic.

Evolution of Man: Trends in Evolution of Man. Ramapithecus, Australopithecus, Neanderthal man and Cro-Magnon man.

Evolution of Horse: Trends in Evolution of Horse. Hyracotherium, Meshippus, Merychippus, Plihippus and Equus.

UNIT – 3: PARASITOLOGY AND BIOSTATISTICS

16 Hrs.

Chapter 1: Parasitology

8 Hrs.

1. General Concepts:

- Introduction, Parasites, Parasitoids, host, zoonosis
- Parasite adaptations (Taenia solium, Flea)

2. Parasitic Platyhelminthes

- Study of morphology, life cycle, Pathogenicity and control measures of Taenia solium.

3. Parasitic Protists

- Study of morphology, life cycle, Pathogenicity and control measures of Plasmodium vivax.

4. Parasitic Nematodes

- Study of morphology, life cycle, Pathogenicity and control measures of Ascaris lumbricoides.

5. Parasitic Arthropods

- Biology, importance and control of Flea (Xenopsylla)

6. Parasitic Vertebrates

- Vampire bat and their parasitic behaviour and effect on host.

8Hrs.

Chapter 2: Biostatistics:

Measures of central tendency: Mean, Median, Mode. Data summarizing: Frequency distribution, Graphical presentation—Line diagram, Pie diagram, Bar diagram and Histogram. Measures of dispersion: Range, Standard Deviation, Standard error, Variance.

References:

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13. Tomar and Sing General biology :evolution distribution and paleontology Rastogi publication, Meerut
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17. Arumugam, N; Meyyan R P Genetics and Evolution Saras publication, Kottai Nagercoil
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24. N Arumugam Research Methodology for Life Science Saras Publication
25. P. Ramakrishnan Biostatistics Saras Publication
26. Dr. Pranab Kumar Banerjee Introduction to Biostatistics S. Chand Publication
27. Dr. N. Arumugam Basic concepts of Biostatistics Saras Publication
28. Mario Triola Marc Triola Biostatistics for the Biological and Health Sciences Pearson Publication
29. Prasad, Satguru Fundamentals of Biostatistics (Biometry) Emkay publications, Delhi
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FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
CLASS TEST (2 CLASS TEST)	15
ASSIGNMENT/SEMINAR	05
TOTAL	20

VI - SEMESTER
B.Sc., ZOOLOGY PRACTICAL SYLLABUS
DISCIPLINE SPECIFIC CORE
PRACTICAL: VI

Program Name	B.Sc.	VI Semester	PRACTICAL-VI
Course Title	ENVIRONMENTAL BIOLOGY, WILDLIFE MANAGEMENT AND CONSERVATION, HUMAN ANATOMY, EVOLUTIONARY BIOLOGY, PARASITOLOGY AND BIOSTATISTICS. (PRACTICAL)		
Course Code:	DSCP	No. of Credits	2
Contact hours	64 Hours	Duration of SEE	3 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

Course Outcomes (COs): At the end of the course, students will be able to:

- Understand the anatomical structure of organs of human body.
- Comprehend the intricate structure of human skeletal system.
- Distinguish different types of homologous and analogous organs, and evolutionary pattern in horse and man.
- Perform microscopic identification of parasites, distinguish parasite life stages, and understand host-parasite interactions
- Organize and Classify Biological Data
- Measure Biological Variance and Dispersion Calculate and interpret metrics of data spread, such as the range, standard deviation, variance, standard error.

List of labs to be conducted		16x4=64 Hrs.
1	Study of Pond ecosystem	1
2	Estimation of Dissolved Oxygen in water. Estimation of free CO ₂ in water.	2
3	Estimation of Salinity and chlorinity in water.	1
4	Tracking of wild animals: Pug marks, hoof marks, pellet groups, nest and antlers.	1
5	Demonstration of field equipments used in wild life census: Compass, Binoculars, Global Positioning System, Types of cameras.	1
6	Animal associations: Symbiosis: Mutualism- Termite and Triconympha. Commensalism- Echeneis and Shark. Proto- cooperation- Hermit crab and sea anemone.	1
7	Human Skeletal system: Axial and Appendicular skeleton. (except bones of hand and foot)	03

8	Study of fossils: Ichthyosaurus, Brontosaurus, and Archaeopteryx.	01
9	Study of Homologous organs: Mouth parts of cockroach and female mosquito. Study of Analogous organs: Wing of bird, wing of insect and Patagium of bat.	01
10	Evolution of Horse: Eohippus, Meshippus, Merychippus, Pliohippus and Equus. OR Evolution of Man: Ramapithecus, Australopithecus, Neanderthal man and Cro-Magnon man.	01
11	Helminthic parasites: <i>Taenia solium</i> and <i>Ascaris lumbricoides</i> (Classification, morphology, life cycle, pathogenesis, disease caused, laboratory diagnosis, treatment, preventive measures)	01
12	Biostatistics problems: Mean, SD, SE (Four Problems).	02

VI - SEMESTER
B.Sc., ZOOLOGY PRACTICAL

**ENVIRONMENTAL BIOLOGY, WILDLIFE MANAGEMENT
AND CONSERVATION, HUMAN ANATOMY, EVOLUTIONARY BIOLOGY,
PARASITOLOGY AND BIOSTATISTICS.**

SCHEME OF PRACTICAL EXAMINATION

Time: 3 Hours

Max. Marks: 40

1. Estimate the amount of Dissolved Oxygen/ Salinity and Chlorinity/ free CO₂ in water. 8M
1X3=3M
2. Identify and comment on the given equipment A.
(A- Chapter- 5) 1X3=3M
3. Identify the given Animal association B and comment.
(B-Chapter- 6) 4X3=12M
4. a. Identify and comment on C, D, E, and F.
(C-Axial and D-Appendicular skeleton – Chapter-7
E- Chapter - 8 and 9
F- Chapter – 10) 1X4=4M
- b. Identify and comment on G.
(G –Chapter- 11)
5. Biostatistics problem 5M
6. Class Records. 5M

VI - SEMESTER
B.Sc., ZOOLOGY PRACTICAL-VI
ENVIRONMENTAL BIOLOGY, WILDLIFE MANAGEMENT
AND CONSERVATION, HUMAN ANATOMY, EVOLUTIONARY BIOLOGY,
PARASITOLOGY AND BIOSTATISTICS

SCHEME OF VALUATION

- | | |
|---|----|
| 1. Principle and Procedure- 3M
Conducting experiment- 3 M
Result and Discussion- 2M | 8M |
| 2. For A- Identification- 1 Mark, comment with applications- 2 marks | |
| 3. For B - Identification 1M and comments 2 M | |
| 4. a. For C, D and E - Identification 1M, diagram 1 M and comments 1 M | |
| For F - Identification 1M and comments 2 M | |
| b. G - Identification 1M, diagram 1 M and comments 2 M | |
| 5. Biostatistics problem | 5M |
| 6. Class Records. | 5M |

References:

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14. Chordate Embryology and Evolution. Verma, P. S., & Agarwal, V. K. S. Chand & Company, New Delhi.
15. Organic Evolution. Sharma, P. D. Rastogi Publications, Meerut.
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FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
ASSIGNMENT/REPORT	05
CONTINUOUS EVALUATION AND CLASS TEST	05
TOTAL	10

VI - SEMESTER
B.Sc., ZOOLOGY THEORY/ PRACTICE SYLLABUS *
SKILL ENHANCEMENT IN ZOOLOGY (SEC)

Program Name	B.Sc.	VI Semester	Paper-SEC
Course Title	Skill Enhancement in Zoology- Sericulture and Apiculture		Theory-1
Course Code:	SEC	No. of Credits	Practical-1
Contact hours	32 Hours	Duration of SEE	1.5 Hours
Formative Assessment Marks	10	Summative Assessment Marks	40

Objectives:

- To make the students aware about the significance of sericulture and Apiculture as a profit making enterprise.
- To help the students to understand the biology of silkworms and Honey bees
- To give an understanding about the techniques of silkworm rearing
- To help the students to know about various uses of silk
- To train the students to learn the techniques of silkworm rearing and honey bee rearing,
- To understand the significance of sericulture and beekeeping in the diversification of agriculture for the rural communities to increase their income
- To create employment opportunities and at the same time to develop entrepreneurial skills required for self-employment.

Course Outcomes (COs): At the end of the course, students will be able to:

- Recognize various species of silk moths in India, and exotic and indigenous races.
- Be aware about the opportunities and employment in sericulture industry- in public, private and government sector.
- Gain thorough knowledge about the techniques involved in silkworm rearing
- Develop entrepreneurial skills necessary for self-employment in mulberry and be apprised about practicing sericulture as a profit-making enterprise.
- Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.
- Comprehend the various species of honey bees in India, their social organization and its importance.
- Appreciate the opportunities and employment in apiculture – in public, private and government sector.
- Develop entrepreneurial skills necessary for self-employment in beekeeping sector.
- Enhance collaborative learning and communication skills through practical sessions teamwork, group discussions and assignments.

16hrs

Theory

Unit 1: Sericulture: Definition, Classification, Species of Silkworm (Mulberry and Non-Mulberry), Races of Silkworms, Brief account of Mulberry cultivation, Life cycle of *Bombyx mori*, Structure and functions of Silk glands. Diseases of Silkworm: Pebrine, Muscardine Grassarie and Flacherie. Uzi fly as a pest. Bi-products of silk industry.

Unit 2: Apiculture: Definition, Classification of honey bees. Morphology of honey bees. Social organization of bee colony. Artificial bee rearing (Apiary), Beehives, Beekeeping equipments. Methods of extraction of honey. Bee Diseases and Enemies, Control and Preventive measures. Products of Apiculture Industry and their uses (Honey, Bee wax, Bee venom).

Practicals

16hrs

List of labs to be conducted		8x2=16Hrs.
1	Life cycle of <i>Bombyxi mori</i> .	1
2	Study of Silk gland of <i>Bombyxi mori</i> .	1
3	Silkworm Rearing Equipments- Rearing tray, Brush, Ant well, Leaf chopper, Wax sheet, Egg sheet).	1
4	Diseases and pests of silkworms: Protozoan, Fungal, Bacterial and Viral. Uzi fly. (Symptoms, nature of damage and control measures).	1
5	Identification of different species of honey bees: <i>Apis indica</i> , <i>Apis mellifera</i> , <i>Apis dorsata</i> , <i>Apis florea</i> .	1
6	Identification of queen, workers, drone. (Morphology of honeybee and different castes of honey bee colony.)	1
7	a. Identification of honeybee diseases: Protozoan, Bacterial, Viral (one each)-symptoms, nature of damage and control. b. Enemies: Insects, Birds, Mammals	1
8	Products of Apiculture: Honey, Bee wax.	1

References:

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4. Bisht. D.S. Apiculture, ICAR Publication.
5. Singh. S. Beekeeping in India, Indian Council of Agriculture Research, New Delhi.
6. Silk worm Biology: FAO Publications.
7. N. Arumugam. Applied Zoology Saras Publication, Nagercoil
8. P.K. Pandey, S.K. Sharan, Silk Culture, APH Publishing Corp.
9. Dr. P.K. Rajan, Silkworm Rearing Technology, Central Silk Board
10. R.K. Goel, Laboratory Techniques in Sericulture, APH Publishing Corp.
11. Singh, S. Beekeeping in India, Indian Council of Agricultural Research, New Delhi.
12. Mishra, R.C. Honeybees and their management in India. Indian Council of Agricultural Research, New Delhi.
13. Prost, P. J. Apiculture. Oxford and IBH, New Delhi.
14. Rahman, A. Beekeeping in India. Indian Council of Agricultural Research, New Delhi.
15. Gupta, J.K. Apiculture, Indian Council of Agricultural Research, New Delhi.

***Single paper theory examination (which includes questions from both theory and practical components) shall be conducted.**

FORMATIVE ASSESSMENT	
ASSESSMENT	WEIGHTAGE IN MARKS
ASSIGNMENT/REPORT	05
CONTINUOUS EVALUATION AND CLASS TEST	05
TOTAL	10

TUMKUR UNIVERSITY

III B.Sc., V and VI Semester: DSC

Theory Question paper pattern

Duration: 3 Hours

Max. Marks: 80

5x1=05

I. Answer any FIVE of the following.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

5x 3= 15

II. Write short notes on any FIVE of the following.

- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

5x 6= 30

III. Write explanatory notes on any FIVE of the following.

- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.

3x10=30

IV. Answer any THREE of the following.

- 22.
- 23.
- 24.
- 25.
- 26.

TUMKUR UNIVERSITY

III B.Sc., V and VI Semester: SEC

Theory Question paper pattern

Max. Marks: 40

Duration: 1.5 Hours

5x1=05

I. Answer any FIVE of the following.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

II. Write short notes on any THREE of the following.

3x5= 15

- 8.
- 9.
- 10.
- 11.
- 12.

III. Write explanatory notes on any TWO of the following.

2x 10= 20

- 13.
- 14.
- 15.
- 16.