SCHOOL OF ENGINEERING & TECHNOLOGY

COURSE FILE

Program: B.Tech CSE
Course Code: DSC 4804
Course Title: Statistical Learning
Module Semester: 2024
Session: July 2024

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1. Course Details

- Course Code: DSC 4804
- Course Title: Statistical Learning
- **Module/Semester: 2024**
- Session: July 2024

2. Vision, Mission of the University

Vision

BML Munjal University seeks to nurture ethical leaders who are skilled, knowledgeable and have the life skills required for leading their organizations to success. The university shall seek the advancement and dissemination of practically oriented knowledge benchmarked with the best global standards.

Mission

BML Munjal University aims to be a leading university for the quality and impact of its teaching, research and linkages with major stakeholders. The focus of the university is to find creative solutions to problems through application of knowledge. The university aims to create a talented community of students and faculty who excel in teaching, learning and research, in a creative and stimulating environment. The university will collaborate with other institutions for development of science, technology and arts in the global context.

3. Graduate Attributes

- Acquire and apply practical understanding of discipline knowledge.
- Demonstrate a sense of ethics and display excellence in both personal and professional life.
- Exhibit problem solving, critical thinking skills and investigative capability to address real world problems.
- Manifest leadership qualities and work effectively in teams across globally diverse environments.
- Be a lifelong learner with an entrepreneurial mindset to innovate in the constantly changing global scenario.
- Possess a strong sense of inquiry and design innovative solutions for positive societal impact.
- Be effective communicators and possess an empathetic outlook.

4. Vision, Mission of the School

Vision of School:

To be amongst the leading engineering schools of the country recognized globally for excellence in teaching and research with focus on experiential learning, innovation and entrepreneurship.

Mission of School:

* Providing high-quality learning experience to our students, preparing them to be global leaders, and contributing to the development of society through research, innovation, and entrepreneurship.
* Creating an inclusive and diverse learning environment that fosters creativity, critical thinking, and ethical values.
* Collaborating with industry, government, and other institutions to address complex societal challenges and promote sustainable development.

5. PEOs and POs & PSOs of the Program

Program Educational Objectives (PEO):

a) PEO 1: Identify real-life problems and develop creative and innovative hardware/software-based solutions.
b) PEO 2: Achieve professional development through self-learning to adapt to the technological changes in the ever changing field of computing.
c) PEO 3: Engage in life-long learning of computer engineering technologies, critical thinking and continuous ingenuity and apply them in real-life applications.
d) PEO 4: Accomplish leadership roles by imbibing ethics and professionalism with emphasis on sustainable development of the society.

Program Outcomes (PO):

e) PO1: Apply the foundational concepts of mathematics, science and computer engineering to find novel solutions for complex real-life engineering problems.
f) PO2: Identify, formulate, review literature and analyze complex computer engineering problems reaching substantiated conclusions and derive a coherent logic that can be implemented by computers.
g) PO3: Design analytical and computational models for solving complex engineering problems giving due consideration to issues related to public health and safety, cultural and societal constraints, and environmental concerns.
h) PO4: Use research-based knowledge, methods, tools and techniques for data collection, designing digital computing systems, analyzing and interpreting the results to provide substantiated conclusions.
i) PO5: Use appropriate tools to model complex computer engineering problems through identification of the limitations and creating solutions to predict the real-world phenomena.
j) PO6: Use appropriate contextual knowledge of computer engineering to review and assess societal, health, legal, cultural, safety and contemporary issues and rationalize the ensuing responsibilities towards the society.
k) PO7: Adopt computer engineering practices in congruence with societal need, understand the working practices and its impact on natural resources for sustainable development.
l) PO8: Use ethical principles to pursue excellence in developing computer engineering systems and behave appropriately to develop a reliable and trustworthy relationship with others.
m) PO9: Function effectively as a reliable and responsible individual, and as a member or leader in diverse computer engineering teams, and in multidisciplinary settings, thereby placing team goals ahead of individual interests.
n) PO10: Communicate effectively by capturing the desirable computer system requirements for preparation of specification documents, write clear and concise report such as laboratory files, research papers, thesis, and presentation materials.
o) PO11: Demonstrate knowledge of computer engineering and management principles for the completion of individual or group projects in multidisciplinary environments.
p) PO12: Recognize the evolving technological changes and engage as an independent and life-long learner in both computing and non-computing fields.

Program Specific Outcomes (PSO):

q) PSO1: Identify applicable tools and techniques related to data science practice such as data

collection, cleaning, analysis, modelling, evaluation and result interpretation and apply them for deriving hidden and meaningful patterns for appropriate actionable insights.

r) PSO2: Develop intelligent systems for various real-life domains like healthcare, transportation, finance etc. using Artificial Intelligence methodologies.

s) PSO3: Understand the foundational concepts and techniques to protect computing systems against constantly evolving cybersecurity threats and analyze security breaches and violations of cyber systems and networks to provide appropriate solutions.

t) PSO4: Design effective security systems to mitigate risks, threats and vulnerabilities for protecting the organizations against cyber threats.

6. Course Description and its objectives

Statistical Learning is an open elective course for the B.Tech undergraduate program.
This course deals with the principles and methods of statistical learning, and computational application of statistical
methods to analyze and mine various types of data. At first, general principles of statistical learning methods will be
discussed, and then applications on problems of simple and moderate complexities will be practiced. The course will
follow a project-centric approach to reveal the underlying principles of data driven model development.

7. Course Outcomes and CO-PO Mapping

Course Outcomes:

CO1: Understand basic concepts of statistical learning methods, supervised and unsupervised learning.

CO/PO Mapping:

Course Outcomes (CO)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1			2	2												

8. Course Syllabus

Sr. No.	Content	CO	Sessions
1			

9. Learning Resources

Text Books:

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Reference Links:

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10. Weekly Timetable

2021 Batch - VII Sem - 21-CYB. SEC +BASIC. CSE IV	9:15 AM-10:10 AM	10:15 AM-11:10 AM	11:15 AM-12:10 PM	12:15 PM-01:10 PM	01:10 PM-02:10 PM	02:15 PM-03:10 PM	03:15 PM-04:10 PM	04:15 PM-05:10 PM	05:15 PM-06:10 PM
MON	MP	OE -BSKT 2	OE -BSKT 2	LUNCH	INFO. RETR. Room No. 205	CYB. FOR. Room No. GA204	MINOR	MINOR	INT. ASSESS. / OFFERING VALUE-ADDED COURSES / MENTOR MENTEE
TUE	MINOR	MINOR	OE -BSKT 1	OE -BSKT 1	MICROSOFT (SELF STUDY) Room No. 205	LUNCH			
WED	MICROSOFT (SELF STUDY) Room No. 205	CYB. FOR. Room No. GA204		LUNCH	OE -BSKT 2	DSW	DSW	DSW	DSW
THU	MICROSOFT (SELF STUDY) Room No. 205	INFO. RETR. Room No. 205	CYB. FOR. Room No. GA204	LUNCH	OE -BSKT 1	INFO. RETR. Room No. 205	MINOR	MINOR	INT. ASSESS. / OFFERING VALUE-ADDED COURSES / MENTOR MENTEE
FRI	MINOR	MINOR	MINOR	LUNCH	MP	MP	MP	MP	

11. studentList

Sr. No.	Roll No	Student Name
1	200C2030009	Mahi Singhal
2	200C2030010	Ajeet Kumar Verma
3	200C2030016	Aditya Bisht
4	200C2030018	Gonuguntla Udaya Kiran
5	200C2030019	Ishita Chauhan
6	200C2030025	K Sri Sai Sri Vamsi Krishna
7	200C2030035	Nitish Kuntal
8	200C2030041	Kedarisetti Siva Bhadra Sai Vaibhav
9	200C2030044	Vishesh Garg
10	200C2030049	Vishnu Sudagani
11	200C2030050	Marali Jayaram Uday
12	200C2030068	Tanmay Rajeev Khurana
13	200C2030069	Pradyumn Garg
14	200C2030074	Kethepally Ajith
15	200C2030078	Divyanshu Goyal
16	200C2030081	Aryan Singhal
17	200C2030083	Ekansh Singh Bisht
18	200C2030091	Ishaan Pandey
19	200C2030094	Monika Raghav
20	200C2030098	Tanya Ahuja
21	200C2030099	Priyanshu Kaushik
22	200C2030102	Khushi Mahawar
23	200C2030103	Prachi Bagga
24	200C2030104	Manan Chadha
25	200C2030106	Raghav Khandelwal
26	200C2030108	Parveen
27	200C2030109	Shreya Sheoran
28	200C2030111	Razina Khanam
29	200C2030112	Umang Garg
30	200C2030113	Himanshu Bhalla
31	200C2030114	Hardikya Gupta
32	200C2030125	Saketh Kudupudi
33	200C2030127	Karan Singh Patrick
34	200C2030137	Aditi Goel
35	200C2030139	Kriti Shrivastava
36	200C2030140	Nippuleti Tarun Sai
37	200C2030147	Aditya Raj Agrawal
38	200C2030148	Divyam Jain
39	200C2030152	Dharyatra Chauhan
40	200C2030164	Jyotiraditya Singh Rathore
41	200C2030175	Nishant Sharma
42	200C2030181	Bagul Suyash Sunil
43	200C2030191	Sujit Dalai

44	200C2030197	Divyanshi Singhal

12. Internal Assessment Data

Component	Duration	Weightage	Evaluation	Week	Remarks

14. Actions taken for weak students

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15. marksDetails

TU GRAZ	**Registration for the academic year 2025/26: 15 October to 15 December 2024**	**https://www.tugraz.at/en/studying-and-teaching/studying-at-tu-graz/prospective-students/registration-and-admission/admission-procedure/masters-degree-programme-computer-science**
TU Munich	Application period for winter semester: 01.01. – 31.05.	https://www.tum.de/en/studies/degree-programs/detail/computational-science-and-engineering-cse-master-of-science-msc
TU Vienna	for the winter semester by 15 July ---- for the summer semester by 15 January	https://www.tuwien.at/en/studies/admission/the-conditions-for-international-students/masters-programme/step-1-application
Ruhr Bochum	For applicants from outside the EU or with a Bachelor's degree from outside the EU the deadline is always 15 December! The application portal will open about beginning of November. When applying, you can indicate whether you wish to start your studies in the summer semester 2025 (only on request) or the following winter semester (2025/26).	https://informatik.rub.de/en/studies/application/msc-cs/

16. assignmentsTaken

Sr. No.	Roll No	Student Name
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41	200C2030175	Nishant Sharma
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43	200C2030191	Sujit Dalai

44	200C2030197	Divyanshi Singhal

17. attendanceReport

TU GRAZ	**Registration for the academic year 2025/26: 15 October to 15 December 2024**	**https://www.tugraz.at/en/studying-and-teaching/studying-at-tu-graz/prospective-students/registration-and-admission/admission-procedure/masters-degree-programme-computer-science**
TU Munich	Application period for winter semester: 01.01. – 31.05.	https://www.tum.de/en/studies/degree-programs/detail/computational-science-and-engineering-cse-master-of-science-msc
TU Vienna	for the winter semester by 15 July ---- for the summer semester by 15 January	https://www.tuwien.at/en/studies/admission/the-conditions-for-international-students/masters-programme/step-1-application
Ruhr Bochum	For applicants from outside the EU or with a Bachelor's degree from outside the EU the deadline is always 15 December! The application portal will open about beginning of November. When applying, you can indicate whether you wish to start your studies in the summer semester 2025 (only on request) or the following winter semester (2025/26).	https://informatik.rub.de/en/studies/application/msc-cs/