



VARDHAMAN
COLLEGE OF ENGINEERING

Academic Regulations (R25)
for
B.Tech. Honours Degree Program

With
B. Tech. - Regular Degree Program
(For batches admitted from the academic year 2025 - 2026)

&

B. Tech. - Lateral Entry Scheme
(For batches admitted from the academic year 2026 - 2027)

Under
Choice Based Credit System (CBCS)

August 2025



VARDHAMAN COLLEGE OF ENGINEERING
(Autonomous)

Affiliated to JNTUH, Approved by AICTE, Accredited by NAAC with A++ Grade
Kacharam, Shamshabad, Hyderabad- 501 218, Telangana, India
www.vardhaman.org, info@vardhaman.org

Academic Regulations of B.Tech. with Honours Program (with effect from Academic Year 2027–2028)

1.0 Introduction

An Honours degree typically refers to a higher level of academic achievement in the major area. Students having good academic record can enhance their knowledge and skills in wide range of specializations to enhance their employability and research opportunities by pursuing additional courses apart from their regular degree program.

2.0 Objectives

The key objectives of offering B. Tech. with Honours program are:

- To expand the domain knowledge of the students laterally and vertically.
- To increase the employability of undergraduate students with expanded knowledge in one of the core engineering disciplines.
- To provide an opportunity to students to pursue their higher studies in wider range of specializations.

3.0 Eligibility conditions of the students for the Honours degree

1. A student can opt for B.Tech. degree with Honours, if she/he passed all subjects in first attempt in all the semesters till the results announced and maintaining 7.5 or more CGPA.
2. If a student fails in any registered course of either B. Tech. or Honours in any semester of four years' program, he/she will not be eligible for obtaining Honours degree. He will be eligible for only B. Tech. degree.
3. Prior approval of mentor and Head of the Department for the enrolment into Honours program, before commencement of III year I Semester (V Semester), is mandatory.
4. If more than 30% of the students in a branch fulfil the eligibility criteria (as stated above), the number of students given eligibility should be limited to 30%. The criteria to be followed for choosing 30% candidates in a branch may be the CGPA secured by the students till II year I semester.
5. The department concerned should be preferably NBA accredited and shall offer atleast one M. Tech. Program.
6. Successful completion of 18 credits earmarked for honours program with atleast 7.5 CGPA along with successful completion of 160 credits earmarked for regular B. Tech. Program with at least 7.5 CGPA and passing all subjects in first attempt gives the eligibility for the award of B. Tech. (Honours) degree.
7. For CGPA calculation of B. Tech. course, the 18 credits of Honours program will not be considered.

4.0 Academic Regulations for B. Tech. Honours Degree

1. The weekly instruction hours, internal & external evaluation and award of grades are on par with regular 4-Years B. Tech. program.
2. For B. Tech with Honours program, a student needs to earn additional 18 credits (over and above the required 160 credits for B. Tech degree). All these 18 credits need to be completed in III year and IV year only.
3. After registering for the Honours programme, If the student fails in any course of either B.Tech. degree or Honours program in any semester he/she shall not be awarded Honours degree. Such students will be awarded only B.Tech. degree in the concerned branch if they earn the required 160 credits. The student has to forego his/her Honours program.
4. The student can withdraw from the Honours program at any time.

5. If the student withdraws or unable to complete the Honours program, the grade memos for the courses completed in the Honours program shall be issued but not the Honours Degree.
6. There is no transfer of credits from courses of Honours program to regular B. Tech. degree course & vice versa.
7. These 18 credits are to be earned from the additional courses offered by the host department or from a closely related department or from the MOOCs platform.
8. For the courses selected under MOOCs platform, the following guidelines may be followed:
 - a) Prior to registration of MOOCs courses, formal approval of the courses, by the concerned standing committee of the institute is essential. The committee before the issue of approval considers the parameters like the institute / agency which is offering the course, syllabus, credits, duration of the programme and mode of evaluation etc.
 - b) Minimum credits for a MOOCs course must be equal to or more than the credits specified in the Honours course structure provided in Table 1.
 - c) Only Pass-grade/marks or above shall be considered for inclusion of grades in the Honours grade memo.
 - d) Any expenses incurred for the MOOCs courses are to be met by the students only.
7. The choice to opt/take the Honours program is purely on the choice of the students.
9. The students of every branch can choose Honours program in their respective branches if they are eligible for the Honours program. A student who chooses an Honours program is not eligible to choose a Minor program and vice-versa.
10. The B. Tech. with Honours program shall be offered from the AY 2027-2028 onwards. The students who are pursuing their III year I semester in the current academic year can register for the Honours program if they fulfil the eligibility criteria.
11. A student can graduate with Honours if he/she fulfils the requirements for his/her regular B. Tech. program as well as fulfils the requirements for Honours program.
12. The institute shall maintain a record of students registered and pursuing their Honours programs branch-wise. The same report needs to be sent to the University once the enrolment process is complete.
13. The department shall prepare the time-tables for each Honours program offered at their respective departments without any overlap/clash with other courses of study in the respective semesters.
14. Project report writing:
 - a) The student shall take up a problem/topic of engineering branches (inter-disciplinary nature) and apply the knowledge which they acquired while pursuing their engineering branch. It is expected to analyse, design and develop an application for the identified problem and write a technical paper/document. Alternatively, the student i) shall identify a research topic, analyse the problem, carryout the experiments, write a technical paper and publish in /communicate for a Scopus indexed journal/any journal with decent reputation or ii) Demonstrate a talent/an idea/development of an innovative product.
 - b) The evaluation shall be done by the same committee which is constituted for project evaluation, along with the final semester project work.
 - c) The students should start exploration for the Technical Paper Writing immediately after the semester exams of III-II semester. Only the evaluation part shall be carried in IV- II semester.

5.0 Registration for the courses in Honours program

1. Students shall select courses from the prescribed Honours course structure for each semester.
2. No course shall be identical to those included in the regular B.Tech. curriculum.
3. The maximum number of Honours courses permitted is two per semester, in addition to regular semester courses.
4. The registration fee shall be Rs. 1,000 per credit.
5. Students shall register for the Honours program in III B.Tech. I Semester and complete all requirements by IV B.Tech. II Semester.
6. The registration fee is to be paid by the students during the submission of application form for admission to Honours program subject to satisfying the eligibility conditions.
7. A fee for late registration may be imposed as per the norms.

Table1:Semester-wise Course Structure of B.Tech. Honours Program

S.No.	Year/Semester	Course to be chosen	Number of Credits
1	III B.Tech. I Semester	Professional Elective – 1 (or) Professional Elective – 2	3
2	III B.Tech. II Semester	H2001 - Research Methodologies	2
3	III B.Tech. II Semester	Professional Elective – 3	3
4	IV B.Tech. I Semester	Professional Elective – 4	3
5	IV B.Tech. I Semester	Professional Elective – 5 (or) Professional Elective – 6	3
6	IV B.Tech. II Semester	Project/ Experiential Learning	4
Total			18

8. The institute shall offer a course on Research Methodologies by combining the students of all branches (if the number of students is more, multiple parallel sessions may be conducted). The time slots in the timetables of respective branches should be aligned. There shall be an internal and external evaluation for Research Methodologies course.

H2001 – Research Methodologies

Teaching and Learning Scheme				Hours	Credits	Assessment Marks		
CI		LI	TW+SL	H	C	CIE	SEE	Total
L	T	P	SL					
30	0	0	30	60	2	40	60	100

Course Description

Course Overview

This course introduces students to the fundamental principles and systematic processes involved in scientific and engineering research. It covers essential aspects such as research problem identification, literature review, plagiarism awareness, and research ethics, enabling students to understand existing knowledge and identify research gaps. The course also focuses on data collection methods, statistical analysis, research design, and hypothesis formulation and testing. In addition, students gain practical knowledge of technical writing, report preparation, and presentation of research work, including publication of research papers and understanding intellectual property rights, thereby preparing them to conduct effective research and communicate their findings professionally.

Course Pre/Co-requisites

This course has no specific prerequisite and co-requisite.

Relevant Sustainable Development Goals (SDGs)

SDG 4: Quality Education

SDG 9: Industry, Innovation and Infrastructure

Course Outcomes

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

- H2001.1. Distinguish different research methods and understand the fundamental concepts of the research process.
- H2001.2. Conduct a comprehensive literature review to identify current research problems and research gaps.
- H2001.3. Apply appropriate techniques for data collection, classification, and statistical analysis.
- H2001.4. Prepare and present technical reports and research papers following standard scientific writing practices.
- H2001.5. Critically review and evaluate research papers with an understanding of research ethics and plagiarism.

Course Syllabus

Unit-I:

INTRODUCTION: Objective of Research; Definition and Motivation; Types of Research; Research Approaches; Steps in Research Process; Criteria of Good Research.

Unit-II:

RESEARCH FORMULATION AND LITERATURE REVIEW: Definition and Formulation; Literature Review; Characteristics of Good Research Problem; Literature Review Process; Plagiarism, Ethics in Research.

Unit-III:

DATA COLLECTION: Primary and Secondary Data; Primary and Secondary Data Sources; Data Collection Methods; Data Processing; Classification of Data. **DATA ANALYSIS:** Statistical Analysis; Multivariate Analysis; Correlation Analysis; Regression Analysis; Principle Component Analysis; Samplings

Unit-IV:

RESEARCH DESIGN: Need for Research Design; Features of a Good Design; Types of Research Designs; Induction and Deduction. **HYPOTHESIS FORMULATION AND TESTING:** Hypothesis; Important Terms; Types of Research Hypothesis; Hypothesis Testing; Z-Test; t-Test; f- Test; Making a Decision; Types of Errors; ROC Graphics.

Unit-V:

PRESENTATION OF THE RESEARCH WORK: Business Report; Technical Report; Research Report; General Tips for Writing Report; Presentation of Data; Oral Presentation; Bibliography and References; Intellectual Property Rights; Open-Access Initiatives; Plagiarism.

Books and Materials

Text Books:

1. Kothari, C. R., and Gaurav Garg. *Research Methodology: Methods and Techniques*. 4th ed., New Age International Publishers, New Delhi, 2019.
2. Melville, Stuart, and Wayne Goddard. *Research Methodology: An Introduction for Science and Engineering Students*. 2nd ed., Juta and Company Ltd., Cape Town, 2004.

Reference Books:

1. Leedy, Paul D., and Jeanne Ellis Ormrod. *Practical Research: Planning and Design*. 8th ed., Pearson Education, Upper Saddle River, NJ, 2005.
2. National Council for Teacher Education (NCTE). *A Handbook of Educational Research*. NCTE Publications, New Delhi.
3. Sidhu, K. S. *Methodology of Educational Research*. Sterling Publishers Pvt. Ltd., New Delhi.
4. Singh, A. K. *Tests, Measurements and Research Methods in Behavioural Sciences*. Bharati Bhawan Publishers, New Delhi.
5. Agarwal, Y. P. *Statistical Methods*. Sterling Publishers Pvt. Ltd., New Delhi.
6. Grewal, P. S. *Methods of Statistical Analysis*. Sterling Publishers Pvt. Ltd., New Delhi.
7. Gupta, S. C., and V. K. Kapoor. *Fundamentals of Statistics*. Sultan Chand & Sons, New Delhi.
8. Bouchoux, Deborah E. *Intellectual Property Rights*. Cengage Learning, Boston.
9. Sople, Vinod V. *Managing Intellectual Property: The Strategic Imperative*. 2nd ed., PHI Learning Pvt. Ltd., New Delhi.
10. Vinod Chandra, S. S., and S. Anand Hareendran. *Research Methodology*. APH Publishing Corporation, New Delhi.