

B. TECH PROJECT

EVALUATION MANUAL

The manual, prescribed by Internal Quality Assurance Cell (IQAC) of MLVTEC Bhilwara, contains stage-wise evaluation schemes of UG students' project during Final Year of their program of study in partial fulfillment of degree of Rajasthan Technical University, Kota.



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The Internal Quality Assurance Cell (IQAC) was established in the College to suggest the best practice for improving the standard of teaching – learning process which aligns with the Outcome Based Education (OBE) and approaching the benchmarks of quality of technical education in the College. The IQAC consists of the next generation of faculty members in whose hands the process of evolution of the education system is supposed to be safe.

The Cell is headed by the Head of the Institution and is composed of faculty members, one each from six academic Departments in the College, administrative officers, Industrialists, alumni and student representatives. Coordinator, IQAC shoulders the responsibility of organizing periodical meetings of the cell and to maintain the records of it.



The Publication Club of students was established in the College under the guidance of faculty advisor Sh. Krishna Gopal Bhadada, Associate Professor (Textile Technology). There are three categories of self-motivated student office bearers in the club viz., Club Head (Final Year B. Tech.), a Club Executive (III Year B. Tech.) and Club Convener(s) (II Year B. Tech.). There are other student members who are contributing self-less for the activities of the club.

M. L. V. Textile & Engineering College, Bhilwara

(A Constituent College of Rajasthan Technical University, Kota)

VISION

- To contribute to India and the world through excellence in Technical education;
- To serve as a valuable resource for industry, research and society; and remain a source of pride for our state Rajasthan.

MISSION

- To create technical manpower for meeting the current and future demands of industry;
- To provide education in close interaction with industry with emphasis on development of leadership qualities in students of our college with sensitivity to social development and eye for opportunity for growth in international perspective.



FOREWORD

Taking up a project as a mandatory part of the curriculum is considered to be a journey of learning passing through various levels. Indeed, it is the outcome of systematic use of knowledge they gather crossing six levels of learning, i.e., L₁ – Remembering; L₂ – Understanding, L₃ – Applying; L₄ – Evaluating; L₅ – Analyzing and L₆ – Creating.

A project completed by the student or group of students reveals the quality of understanding of the content across the four years' investment in the College. Therefore, it is imperative to measure the final output of learning and evaluate the project study by following a transparent system of evaluation. Rubrics set for such evaluation need to be sensitized among students and the faculty undertaking the projects. It becomes more important when a students' project is sponsored by any State/Central Government agency or industry/ organization or any other funding agency.

This manual describes the evaluation process in exhaustive manner so as to maintain academic discipline and their sincerity towards creativity and innovations amongst the students as one of the best practices to prevail. It helps evaluating the consolidated efforts of the team vis-à-vis predicts a reflection of every individual who contributed towards it.

Hope you would certainly find it useful and workable in your department for realistic learning outcomes over a capricious system.

Dr. D.N. Vyas
Principal, M.L.V.T.E.C. Bhilwara

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Project Evaluation Guidelines

These are the guidelines for successful completion of the B. Tech. projects in effective and uniform conduction of projects to be carried out by undergraduate students in Semester VIII. It is expected that these guidelines will help in overall improvement in the quality of UG (B. Tech.) projects along with improvement in the evaluation process. The UG project is a partial requirement for successful completion of the degree. There can be two types: Projects based on implementation of any application oriented problem, which will be more or less experimental in nature, and the others will be based on some innovative/ theoretical work.

In order to monitor the overall functioning of the activities related to the UG projects and to have academic bridge among the various groups, it is proposed to create a Department Evaluation Committee (DEC).

DEC will comprise the In-charge (Students' Projects) as the Convener along with Head of the department and two other faculties from the department . The In-charge will form the cell within a month from the start of odd semester and will inform the Director/ Principal of the Institute accordingly.

(A) Roles of Department Evaluation Committee (DEC):

- This committee will be responsible for evaluating the timely progress of the projects and communicating the progress report to the students.
- In VII semester the Department Evaluation Committee should float the list of projects to be offered by the department along with the concerned supervisor's name.
- In case it is observed by the DEC that any group of students is not performing well, this committee should take special care to improve their performance by counseling them.

Each project activity must be supervised by the faculty members of the department. These faculty members are termed as Supervisors. There can be at most two supervisors for a UG Project; out of which at least one has to be from the Department and other can be from outside the Department/ Institute.

It is the responsibility of the Department to provide the Supervisor(s) for each UG Project. Supervisors may be assigned to each project group either by the choice of student groups or by faculty expertise. A faculty member of the department can supervise UG projects only if he/ she is having at least 2 years teaching experience in an engineering college. However, a faculty member not having sufficient teaching experience can be a co-supervisor. An eligible faculty member can supervise at most 4 UG projects in an academic year. However, as a special case the Principal/Director of the institute can permit a faculty member to supervise at most 6 such projects.

(B) Role of Supervisor is given below:

- By the middle of VII semester the supervisor should send the detailed information about the projects to be offered by him/ her to the Department Evaluation Committee.
- The supervisor must monitor the progress being carried out by the project groups on a regular basis. In case it is found that progress is unsatisfactory it should be reported to the Department Evaluation Committee for necessary action.
- It is expected that the supervisor looks into the project report for the desired format before the final submission.

Each B. Tech Project has to be carried by a group of students of that Institute. In order to ensure participation of each student, the group size should be preferably at least 2 but not more than 5 students. Formation of project groups should be done such that each group has representation of students with varying academic merit from best to average.

(C) In view of this following practice may be followed:

- Decide total number of feasible groups. Any left out student(s) should be randomly attached to any group.
- Depending upon the number of groups to be formed identify the group members in order of merit. *For example; if in a class there are 'n' number of students, then number of groups (m) will be $\frac{n}{5}$ to $\frac{n}{4}$. First prepare the list of "m' number of students in order of their merit. Assign group leaders for each group such that he/she is out of the top 'm' students and other members of the group may be decided by the group leaders in consultation with the Project Coordinator. Any left out student(s) may be assigned to any group.*

In case the project is of multidisciplinary nature, the Project group can be formed consisting of the students from other Departments. But there must be at least one student from the Department who is offering the Project.

(D) Evaluation Procedure:

In the preliminary presentation each group of students will present before DEC the variety of topics under the subjects of their common interest with justification of each and their respective scope. No awards will be allocated for it (**#R0: Subject and Topic Finalization**).

Course Outcome: At the end of the course students will be able to:

CO No.	Statement	Mapped POs
CO-1	Identify and solve complex engineering problems effectively.	PO1, PO2, PO12
CO-2	Develop innovative solutions considering technical, economic, and societal factors.	PO2, PO3, PO12
CO-3	Collaborate efficiently within multidisciplinary teams.	PO9, PO11, PO12
CO-4	Conduct thorough research and incorporate innovative approaches.	PO2, PO4, PO12
CO-5	Adhere to professional ethics and sustainability principles.	PO7, PO8, PO10, PO11, PO12

Internal Assessment

To ensure proper conduction of each project, progress of each project should be monitored on a continuous basis first by the supervisor and then by the Department Evaluation Committee. In order to do so, it is planned to hold 3 presentations to be made by each project group throughout the semester.

In Semester VIII, the **first presentation** will be a purely synopsis presentation, which will be taken by the DEC in the second week of the VIII semester. The project is assumed to be already selected by the students. In this presentation they are required to show a brief powerpoint presentation describing the main Aim/ Objective of the project, the methodology to be used, the pert chart and the references in not more than 10-15 slides. This presentation shall be made before the respective project supervisor first and on his approval it should be made before the Department Evaluation Committee. The project is considered to be approved only if it is passed in this presentation.

If the presentation is not up to the mark either the Committee will ask the students along with their supervisor to modify the project slightly within a week and present again or change the project (in case the committee finds the project not of sufficient standard or not feasible). The list of all the finalized projects should be sent to the HoD. A DEC meeting within a week after the first presentation is made to discuss the quality of the projects taken by students and any changes required should be communicated to the supervisors and thereafter the students immediately. In this presentation the DEC is supposed to mark each student/ group based on their project synopsis content, presentation made, queries answered and attendance out of **10 marks** (the break up can be decided by DEC). (**#R1: Project Synopsis / Proposal Evaluation**).

The **second presentation** will be planned by the DEC after about one month from the first presentation. This presentation will review the progress of the students. Each group will first show their progress to their respective supervisors first and get the brief project report signed from them and present the same before the DEC. The groups are also required to make a powerpoint presentation (not more than 10-15 slides) and present before the DEC. They are also required to clearly state the agenda for the next one month in their presentation. In this presentation the DEC is supposed to mark each student/ group based on their project content, presentation made, project progress, queries answered and attendance out of **20 marks** (the break up can be decided by DEC). The DEC shall finalize the marks just after the presentation and these marks should be displayed along with the comments within two days from the date of the presentation. The record of the same should be circulated to all the concerned supervisors and one copy should be sent to the IQAC. (**#R2: 1st Mid-Term Project Evaluation**).

After about one month from the date of the second presentation, DEC should plan for the **third presentation**. It shall be made in the same way as the 2nd presentation was conducted and the groups should be evaluated in the same manner. In this presentation the DEC is supposed to mark each student/group based on their project content, presentation made, project progress, queries answered and attendance out of **30 marks** (the break up can be decided by DEC). (**#R3: 2nd Mid-Term Project Evaluation**).

Each project group has to prepare the project report and to submit it to the Department after duly certified by the Supervisors at least 3 days before the final internal presentation. This report has to be prepared based on the format prescribed by the DEC.

End Term Examination

Final presentation will be taken as an end term examination which will be given in the **project calendar** already by the DEC (as per university Calendar). This presentation will be made before the DEC, supervisors and co-supervisors should be present in this presentation. The final project report should be extensively checked and signed by the supervisors and also by the DEC. The groups are also required to make a final powerpoint presentation and present before the final Committee. This presentation shall demonstrate the complete working project. In this presentation the DEC is supposed to mark each student/group based on their project content, presentation made, project progress, queries answered, Project Report evaluation and evaluation by guide (out of **40 marks** (the break up can be decided by DEC).

The total external marks of each student shall be decided within two days from the date of final presentation by the DEC and the copy of the same should be circulated to all supervisors and co-supervisors.(**# R4:End Semester Project, and Evaluation by Guide, #R5:Project Report Evaluation & #R6 :Evaluation by Guide**)

(E) Normalization of Marks:

There is a possibility that the marks obtained in projects by various groups across the department may not be uniform because of the involvement of many examiners. Hence, it is suggested to introduce the concept of normalizing these marks. For this we need to formulate a proper normalization scheme.

(F) Awards:

DEC will nominate at most one project for the best B. Tech. Project of the department. The project group may be given an award along with a certificate on some occasions. Same may be communicated to the

group of students/faculty dealing with publication of departmental/institutional progress reports and the departmental/institutional newsletter every year.

Project Evaluation Rubrics

Sem #	Review #	Agenda	CO covered	Assessment	Review Assessment Marks
VII	Review 0	Subject and Topic Finalization	--	Rubric # R0	--
VIII	Review 1	Project Synopsis / Proposal Evaluation	CO1	Rubric # R1	10
	Review 2	1st Mid-Term Project Evaluation	CO2, CO3,CO4	Rubric # R2	20
	Review 3	2nd Mid-Term Project Evaluation	CO2,CO3,CO4, CO5	Rubric # R3	30
	Review 4	End Semester Project & Project Report Evaluation and Evaluation by Guide	--	Rubric # R4, R5 & R6	40
Total					100

Note: These guidelines are generic in nature and academic departments may modify wherever deemed necessary.

Rubric # R1: Project Synopsis/Proposal Evaluation

Maximum Marks*: 10

Level of Achievement

		Excellent (10)	Good (8)	Average (6)	Poor (4)	Score
a	Identification of Problem Domain and Detailed analysis of Feasibility, Objectives and Methodology of Project Proposal	<ul style="list-style-type: none"> · Detailed and extensive explanation of the purpose and need of the project · All objectives of the proposed work are well defined; Steps to be followed to solve the defined problem are clearly specified · Detailed and extensive explanation of the specifications and the limitations of the existing systems 	<ul style="list-style-type: none"> · Good explanation of the purpose and need of the project · Collects a great deal of information and good study of the existing systems; · Good justification to the objectives; Methodology to be followed is specified but detailing is not done 	<ul style="list-style-type: none"> · Average explanation of the purpose and need of the project; · Moderate study of the existing systems; collects some basic information · Incomplete justification to the objectives proposed; Steps are mentioned but unclear; without justification to objectives 	<ul style="list-style-type: none"> · Moderate explanation of the purpose and need of the project · Explanation of the specifications and the limitations of the existing systems not very satisfactory; limited information · Only Some objectives of the proposed work are well defined; Steps to be followed to solve the defined problem are not specified properly 	

Rubric # R2: 1st Mid-term Project Evaluation

Maximum Marks*: 20

Level of Achievement

		Excellent (20)	Good (16)	Average (12)	Poor (8)	Score
a	Design Methodology	<ul style="list-style-type: none"> · Division of problem into modules and good selection of computing framework · Appropriate design methodology and properly justified 	<ul style="list-style-type: none"> · Division of problem into modules and good selection of computing framework · Design methodology not properly justified 	<ul style="list-style-type: none"> · Division of problem into modules but inappropriate selection of computing Framework · Design methodology not defined properly 	<ul style="list-style-type: none"> · Partial division of problem into modules and inappropriate selection of computing framework · Design methodology not defined properly 	
b	Planning of Project Work	<ul style="list-style-type: none"> · Time frame properly specified and being followed 	<ul style="list-style-type: none"> · Time frame properly specified but being followed partly 	<ul style="list-style-type: none"> · Time frame properly specified, but not being Followed 	<ul style="list-style-type: none"> · Time frame not properly specified 	
c	Demonstration and Presentation	<ul style="list-style-type: none"> · Objectives achieved as per time frame · Contents of presentations are appropriate and well arranged · Proper eye contact with audience and clear voice with good spoken language 	<ul style="list-style-type: none"> · Objectives achieved as per time frame · Contents of presentations are appropriate but not well arranged · Satisfactory demonstration, clear voice with good spoken language but eye contact not proper 	<ul style="list-style-type: none"> · Objectives achieved as per time frame · Contents of presentations are appropriate but not well Arranged · Eye contact with few people and unclear Voice 	<ul style="list-style-type: none"> · Objectives not achieved as per time frame · Contents of presentations are not appropriate · Demonstration not satisfactory 	

TOTAL MARKS SCORED = (a + b + c)/3

Rubric # R3: 2nd Mid-Term Project Evaluation

Maximum Marks*: 20

Level of Achievement

		Excellent (20)	Good (16)	Average (12)	Poor (8)	Score
a	Incorporation of Suggestions	<ul style="list-style-type: none"> · Changes are made as per modifications suggested during mid-term evaluation and new innovations added 	<ul style="list-style-type: none"> · Changes are made as per modifications suggested during mid-term evaluation and good justification 	<ul style="list-style-type: none"> · All major changes are made as per modifications suggested during mid-term evaluation 	<ul style="list-style-type: none"> · Suggestions during mid-term evaluation are not incorporated 	
b	Project Demonstration	<ul style="list-style-type: none"> · All defined objectives are achieved · Each module working well and properly demonstrated · All modules of project are well integrated and system working is accurate 	<ul style="list-style-type: none"> · All defined objectives are achieved · Each module working well and properly demonstrated · Integration of all modules not done and system working is not very satisfactory 	<ul style="list-style-type: none"> · All defined objectives are achieved · Modules are working well in isolation and properly demonstrated · Modules of project are not properly integrated 	<ul style="list-style-type: none"> · Only some of the defined objectives are achieved · Modules are not in proper working form that further leads to failure of integrated system 	
c	Presentation	<ul style="list-style-type: none"> · Contents of presentations are appropriate and well delivered · Proper eye contact with audience and clear voice with good spoken language 	<ul style="list-style-type: none"> · Contents of presentations are appropriate and well delivered · Clear voice with good spoken language but less eye contact with audience 	<ul style="list-style-type: none"> · Contents of presentations are appropriate but not well delivered · Eye contact with only few people and unclear voice 	<ul style="list-style-type: none"> · Contents of presentations are not appropriate and not well delivered · Poor eye contact with audience and unclear voice 	

TOTAL MARKS SCORED = (a + b + c)/3

Rubric # R4: End Semester Internal Project Evaluation

Maximum Marks*: 20

Level of Achievement

		Excellent (20)	Good (16)	Average (12)	Poor (8)	Score
a	Incorporation of Suggestions	<ul style="list-style-type: none"> · Changes are made as per modifications suggested during mid-term evaluation and new innovations added 	<ul style="list-style-type: none"> · Changes are made as per modifications suggested during mid-term evaluation and good justification 	<ul style="list-style-type: none"> · All major changes are made as per modifications suggested during mid-term evaluation 	<ul style="list-style-type: none"> · Suggestions during mid-term evaluation are not incorporated 	
b	Project Demonstration	<ul style="list-style-type: none"> · All defined objectives are achieved · Each module working well and properly demonstrated · All modules of project are well integrated and system working is accurate 	<ul style="list-style-type: none"> · All defined objectives are achieved system working is not very satisfactory · Each module working well and properly demonstrated · Integration of all modules not done and system working is not very satisfactory 	<ul style="list-style-type: none"> · All defined objectives are achieved · Modules are working well in isolation and properly demonstrated · Modules of project are not properly integrated 	<ul style="list-style-type: none"> · Only some of the defined objectives are achieved · Modules are not in proper working form that further leads to failure of integrated system 	
c	Presentation	<ul style="list-style-type: none"> · Contents of presentations are appropriate and well delivered · Proper eye contact with audience and clear voice with good spoken language 	<ul style="list-style-type: none"> · Contents of presentations are appropriate and well delivered · Clear voice with good spoken language but less eye contact with audience 	<ul style="list-style-type: none"> · Contents of presentations are appropriate but not well delivered · Eye contact with only few people and unclear voice 	<ul style="list-style-type: none"> · Contents of presentations are not appropriate and not well delivered · Poor eye contact with audience and unclear voice 	

TOTAL MARKS SCORED = (a + b + c)/3

Rubric # R5: Project Report Evaluation						
Maximum Marks*: 10						
Level of Achievement						
		Excellent (10)	Good (8)	Average (6)	Poor (4)	Score
a	Project Report	<ul style="list-style-type: none"> · Project report is according to the specified format · References and citations are appropriate and well mentioned 	<ul style="list-style-type: none"> · Project report is according to the specified format · References and citations are appropriate but not mentioned well 	<ul style="list-style-type: none"> · Project report is according to the specified format but some mistakes · In-sufficient references and citations 	<ul style="list-style-type: none"> · Project report not prepared according to the specified format · References and citations are not appropriate 	
b	Description of Concepts and Technical Details	<ul style="list-style-type: none"> · Complete explanation of the key concepts and strong description of the technical requirements of the project 	<ul style="list-style-type: none"> · Complete explanation of the key concepts but in-sufficient description of the technical requirements of the project 	<ul style="list-style-type: none"> · Incomplete explanation of the key concepts and in-sufficient description of the technical requirements of the project 	<ul style="list-style-type: none"> · Inappropriate explanation of the key concepts and poor description of the technical requirements of the project 	
c	Conclusion and Discussion	<ul style="list-style-type: none"> · Results are presented in very appropriate manner · Project work is well summarized and concluded · Future scope in the project is well specified 	<ul style="list-style-type: none"> · Results are presented in good manner · Project work summary and conclusion not very appropriate · Future scope in the project is well specified 	<ul style="list-style-type: none"> · Results presented are not much satisfactory · Project work summary and conclusion not very appropriate · Future scope in the project is well specified 	<ul style="list-style-type: none"> · Results are not presented properly · Project work is not summarized and concluded · Future scope in the project is well specified 	
TOTAL MARKS SCORED = (a + b + c)/3						

Rubric # R6: Evaluation by Guide						
Maximum Marks*: 10						
Level of Achievement						
		Excellent (4)	Good (3)	Average (2)	Poor (1)	Score
a	Technical Knowledge and Awareness related to the Project	Extensive knowledge and awareness related to the project	Fair knowledge and awareness related to the project	Lacks sufficient knowledge and Awareness	Poor knowledge and no awareness related to project	
Level of Achievement						
		Excellent (6)	Good (5)	Average (3)	Poor (1)	Score
b	Regularity and Attendance	Reports to the guide regularly and consistent in work	Reports to the guide very often but not very consistent	Reports to the guide but lacks Consistency	Irregular and inconsistent in work	
TOTAL MARKS SCORED = a + b						