

## **Rules and Regulations For M. Tech Project (AR17)**

Project Course shall be evaluated for 200 marks, out of which, 80 marks shall be for Sessional Evaluation and 120 marks for the End Examination (Viva–Voce). Every student shall be required to submit a thesis or dissertation on a topic approved by the Department Project Review Committee (DPRC).

1. A DPRC shall be constituted with the Head of the Department, PG Coordinator, Supervisor and two senior faculty members.
2. A student is permitted to register for the project work after satisfying the attendance requirements of all the courses in I & II semesters.
3. A student has to submit area of interest to the PG Coordinator in the 1<sup>st</sup> week of commencement of III Semester.
4. PG Coordinator has to collect area of interest from students and the faculty. He/she has to allot the guide in consultation with HOD. The priority will be given based on the performance of the student in the examinations conducted till date.
5. Allotment of guide should be completed by the 2<sup>nd</sup> week of commencement of III Semester.
6. A student has to submit, in consultation with his project supervisor, the title, abstract and plan of action of his project work before DPRC for approval. The student can initiate the Project work, by obtaining the approval from the DPRC. The project duration is for two semesters.
7. A student is permitted to submit Project Thesis only after successful completion of theory and practical courses with the approval of DPRC and not earlier than 40 weeks from the date of registration of the project work.
8. If a student wishes to change his supervisor or topic of the project, he can do so with the approval of the DPRC. However, the DPRC shall examine whether or not the change of topic / supervisor leads to a major change of his initial plans of project proposal. If yes, his date of registration for the project work starts from the date of change of Supervisor or topic as the case may be.
9. A student shall submit his status report with at least 4 reviews (2 reviews per Semester) conducted by the DPRC.
10. A student should publish / present the research findings of his/her Project work in the form of research paper to a National or International Peer Reviewed Journal / International Conference with due permission from the supervisor after getting Plagiarism Check.

11. The Sessional Evaluation shall be made on the basis of reviews and on the progress of the work evaluated by DPRC.
12. Four copies of the Project Thesis certified by the supervisor and HOD shall be submitted to the Exam Section after getting plagiarism check (Similarity index should be less than 50%).
13. The external examiner shall be appointed by the Principal from a panel of three examiners, who are eminent in that particular field given by the HOD. The project thesis is sent to the same examiner for the adjudication.
14. If the report of the examiner is favorable, Viva–Voce examination shall be conducted by the Guide, HOD & External Examiner who adjudicated the Thesis.
  - (a) Student has to secure 40% of marks in the Viva–Voce examination and a minimum aggregate of 50% of total marks (Viva–Voce examination and Sessional evaluation taken together) to pass.
  - (b) If the report of the Viva–Voce is fail (Viva Voce marks <40%), the student shall retake the Viva–Voce examination only after three months. If he fails to get a satisfactory report at the second Viva–Voce examination, the student has to re-register for the project and complete the project within the stipulated time after taking the approval from the Principal.
15. If the report of the examiner is unfavorable, the student shall revise and resubmit the Thesis, in the time frame as decided by the DPRC. If the report of the examiner is unfavorable again, the thesis shall be summarily rejected. The student has to re-register for the project and complete the project within the stipulated time after taking the approval from the Principal.

## **ORGANIZATION OF THESIS**

1. Title page
2. Certificate
3. Certificate issued by outside organization (if any)
4. Acknowledgements
5. Abstract
6. Index
7. List of Figures
8. List of Tables
9. Body of the thesis as follows:
  1. Introduction to the problem
  2. State of the Art/Literature Survey
  3. Present Work with diagrams
  4. Implementation
  5. Results along with test cases
  6. Conclusions and Future Work
  7. Bibliography
  8. Appendix - I

### **Guidelines**

- Every copy should be accompanied by a softcopy in CD along with required software and tools
- No. of copies are 04(Four) **1 for Guide, 1 for Department, 1 for Library and 1 copy for student.**

#### **The following should be used for thesis preparation**

- Black cover with Gold printing should be used for binding.
- A4 executive bond paper should be used.
- Page No's should be in the centre with font size 11 and font style Times New Roman.
- A margin of 3.75 cm (1½ inch) is to be given on the binding edge while on the other sides it is to be 2.5 cm (1 inch).
- All the text should be in Times New Roman style with 1.5 paragraph spacing.
  - Chapter Names – Size 16 Bold
  - Topics of Chapter – Size 14
  - Sub Topics – Size 12
  - Any Other text – Size 11

A Project Report on

# Optimal Placement of Capacitors in Radial Distribution Systems Using Teaching Learning Based Optimization Algorithm

*Submitted in partial fulfillment of the requirements for the award of the degree of*

**MASTER OF TECHNOLOGY**  
**IN**  
**POWER ELECTRONICS AND DRIVES**

By

**APPANA AMMAJI**  
**16A91D5201**

Under the guidance of

**Dr. K V S R Murthy,**  
**Professor & Head -R&D**



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
**ADITYA ENGINEERING COLLEGE (A)**

An Autonomous Institution

(Approved by AICTE, Affiliated to JNTUK, Accredited by NBA, NAAC with 'A' Grade)

Aditya Nagar, ADB Road, Surampalem

2017-2021

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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING



### CERTIFICATE

This is to certify that the project report entitled “**Optimal Placement of Capacitors in Radial Distribution Systems Using Teaching Learning Based Optimization Algorithm**” is a bonafide record of the project work done by A. AMMAJI (16A91D5201) under my supervision and guidance, in partial fulfillment of the requirements for the award of Degree of Master of Technology in Power Electronics and Drives from JNTU Kakinada.

**Dr. K V S R Murthy**  
**Project Guide**

**Dr. V. SRINIVASA RAO**  
**Head of the Department**

## **DECLARATION**

I hereby declare that the project **“Optimal Placement of Capacitors in Radial Distribution Systems Using Teaching Learning Based Optimization Algorithm”** has been carried out by me and this work has been submitted to Aditya Engineering College(A), Surampalem, affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA in partial fulfillment of the requirements for the award of degree of Master of Technology.

I further declare that this project work has not been submitted in full or part for the award of any other degree in any other educational institutions.

**A.AMMAJI**  
**16A91D5201**

## **ACKNOWLEDGEMENT**

I am thankful to my guide **Dr. K. V. S. R. MURTHY**, Professor and Head - R&D who has spared his valuable time. I am indebted to him without whom I would not have successfully completed the project.

I also wish to convey my sincere thanks to Dr. V. SRINIVASA RAO, Professor and HOD of Electrical and Electronics Department for his technical support and valuable suggestions. I also wish to convey my sincere thanks to all faculty of EEE Department for their support and valuable suggestions.

I am thankful to the Dr. M. SREENIVASA REDDY, Principal, Aditya Engineering College for providing appropriate environment required for this project and thankful to Faculty of Electrical and Electronics Engineering Department for this encouragement and cooperation for this successful completion of the project.

**A.AMMAJI**  
**16A91D5201**

# Optimal Placement of Capacitors in Radial Distribution Systems Using Teaching Learning Based Optimization Algorithm

## **Abstract:**

This project presents Teaching Learning Based Optimization (TLBO) approach to minimize power loss and energy cost by optimal placement of capacitors in radial distribution systems. The proposed algorithm is based on two basic concept of education namely teaching phase and learning phase. In first phase, learners improve their knowledge or ability through the teaching methodology of teacher and in second part learners increase their knowledge by interactions among themselves. To check the feasibility, the proposed method is applied on standard 15, 33, 69 and 85 bus radial distribution systems. Numerical experiments are included to demonstrate that the proposed TLBO can obtain better quality solution than many existing techniques like genetic algorithm (GA), particle swarm optimization (PSO), direct search algorithm (DSA) and mixed integer linear programming (MILP) approach.

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