

**Motilal Nehru National Institute of Technology,  
Allahabad – 211004**

**Minutes of the Twenty Ninth (29<sup>th</sup>) meeting of the Senate of MNNIT, Allahabad held on 28.10.2009 (Wednesday) at 3.30 p.m. in the Conference Room of the Institute.**

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Following members were present:

1.	Prof. A B Samaddar , Director	Chairman
2.	Prof. Krishna kant	Member
3.	Prof. Satish Chand	"
4.	Prof. S.K. Agrawal	"
5.	Prof. Satya Sheel	"
6.	Prof. T. N. Sharma	"
7.	Prof. R.K. Srivastava, CED	"
8.	Prof. P. R. Agarwal	"
9.	Prof. Raghuvir Kumar	"
10.	Prof. S. C. Prasad	"
11.	Prof. P. K. Mishra	"
12.	Prof. Sudarshan Tiwari	"
13.	Prof. Nirjhar Roy	"
14.	Prof. Rakesh Mathur	"
15.	Prof. K. M. Gupta	"
16.	Prof. Dinesh Chandra	"
17.	Prof. Vineeta Agarwal	"
18.	Prof. R. K. Srivastava, MED	"
19.	Prof. Peetam Singh	"
20.	Prof. Rajeev Tripathi, Dean (Academic Affairs)	"
21.	Prof. M.M. Gore	"
22.	Prof. Rakesh Narain	"
23.	Prof. N. D. Pandey	"
24.	Prof. Geetika	"
25.	Prof. Suneeta Agrawal	"
26.	Prof. H. N. Kar	"
27.	Prof. Vinod Yadav	"
28.	Prof. P. K. Dutta	"
29.	Prof. A.K. Sachan	"
30.	Prof. P. P. Sahay	"
31.	Prof. A. K. Singh	"
32.	Prof. R. D. Gupta	"
33.	Prof. A. D. Bhatt	"
34.	Sri Sarvesh K Tiwari, Registrar	Secretary

**Special Invitee**

1.	Dr. R. K. Tripathi, Dy. Dean (Academic Affairs)	"
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The Chairman extended welcome to the members and thanked them for taking their time out to attend the meeting. The Chairman also extended welcome to Prof. Rajeev Tripathi, Dean (Academic Affairs) who was attending the first meeting after his appointment as Dean (Academic Affairs).

*Personal*

Following resolutions were passed.

**Res. No. 29.01**            **To confirm the minutes of the 28<sup>th</sup> meeting of the Senate held on 23.07.2009.**

*The Senate confirmed the minutes of its 28<sup>th</sup> meeting held on 23.07.2009 with some modifications in resolution No. 4(d), and will now be read as:*

*"The Senate considered the proposal of the Department of Physics for revision of syllabus of the course offered by the department for B.Tech. 1<sup>st</sup> year of all the branches. After discussion it has been resolved that the following committee may look into the revised course, in light of the courses offered by other departments for B.Tech. II<sup>nd</sup> and III<sup>rd</sup> semester onwards and submit its recommendations to the Chairman, Senate for consideration."*

In place of

*"The Senate considered the proposal of the Department of Physics for revision of course structure and syllabus of the course offered by the department for B.Tech. 1<sup>st</sup> year of all the branches. After discussion it has been resolved that the following committee may look into the revised course, in light of the courses offered by other departments for B.Tech. II<sup>nd</sup> and III<sup>rd</sup> semester onwards and submit its recommendations to the Chairman, Senate for consideration."*

**Res. No. 29.02**            **To consider the action taken report on the resolution passed in the 28<sup>th</sup> meeting of the Senate held on 23.07.2009.**

The Senate noted the action taken on the resolutions made by the Senate in its 28<sup>th</sup> meeting held on 23.07.2009 as circulated.

**Res. No. 29.03**            **To consider the procedure of issue of Duplicate Degree.**

The Senate considered the proposal for the modification in the procedure for issuance of Duplicate Degree as resolved in the 19<sup>th</sup> meeting of Senate held on 21.02.2007 and approved the same. As per approved modified proposal Duplicate degree will be issued in the Format attached as Annexure – I, in accordance with the procedure as detailed below:

"In case of loss of original degree, the student will make an application to the Chairman, Senate, MNNIT, Allahabad for the issuance of Duplicate Degree along with following documents:

- (i) Receipt of Rs. 500/- deposited in Account Section or draft of Rs. 500/- in favour of Director, MNNIT, Allahabad, payable at Allahabad as fee for duplicate degree,
- (ii) Copy of FIR made in a police station to the effect the degree of the student concerned is lost,



- (iii) An affidavit on a non-judicial stamp paper of Rs.10.00 in the Court of Law,  
(iv) Copy of notification made in newspaper of repute that the degree of student is lost mentioning the city where the degree has been lost.

After receiving the application along with the above-mentioned documents, the office of the Dean (Academic Affairs) will process the application for the approval of the Chairman Senate, and after the approval Duplicate Degree will be issued to the student. Duplicate degree will bear an indication 'DUPLICATE' on the top of the degree and it will be issued under signature of the Dean (Academic Affairs) and Registrar".

**Res. No. 29.04**

**To consider the recommendations of SUGC on the proposal of departments of Electrical Engineering Department and Electronics and Communication Engineering for the replacement of course Introduction to Engineering Profession (CS101) for B.Tech. 1<sup>st</sup> semester students.**

The Senate considered the recommendations of SUGC on the proposal of departments of Electrical Engineering and Electronics & Communication Engineering for the replacement of course "Introduction to Engineering Profession (CS101)" for B.Tech. 1<sup>st</sup> semester students and resolved that all the departments may discuss the proposal in their faculty meetings and observations on the same may be forwarded to the Chairman SUGC for discussion in the SUGC meeting. SUGC may put up a proposal for consideration by the Senate in its next meeting.

**Res. No. 29.05**

**To ratify the approval accorded by the Chairman Senate on:**

**(a.) Recommendation of Ph.D. Oral Boards of various departments.**

The Senate noted and ratified the approval accorded by the Chairman, Senate on the recommendations of the Ph.D. Oral Boards of the different departments of the following students:

S. No.	Name	Reg. No.	Department
1.	Mr. L. K. Mishra	2007RCE06	CED
2.	Mr. Nikam Shankar Bhausahab	2005RCS01	CSED

**(b.) Change of date of examination of End semester of Odd semester 2009-10.**

The Senate noted and ratified the approval accorded by the Chairman Senate for the change of date of End Semester Examination (Odd Semester) 2009-10.

As per revised schedule End Semester (Odd Semester) Examination 2009-10 will be held from 05.12.2009 to 11.12.2009 in place of 30.11.2009 to 05.12.2009.



**Any other matter with permission of the Chair.**

The Senate considered the following matters with the permission of the Chairman Senate:


- (a.) The proposal for framing the provisions for dealing the cases related to Unfair Means and resolved that the following committee may deliberate/consider the proposal and submit its recommendations in the next Senate meeting.
- (i) Dean (Academic Affairs)
  - (ii) Chairman, SPGC
  - (iii) Chairman, SUGC
  - (iv) Dean (Student Affairs)
  - (v) Prof. Rakesh Mathur
  - (vi) Prof. Raghuvir Kumar
- (b.) The proposal of the Department of Mechanical Engineering for addition of two new elective courses namely "Design of Experiments" and "Fatigue Damage and Life Prediction of Engineering Materials" for the M.Tech. programmes of the department and approved the same. Course structure and syllabus of the two new electives are enclosed as Annexure – II.
- (c.) The Senate constituted a committee with following members for preparing draft ordinances as desired under para 28 of the NIT Act – 2007 (29 of 2007) "Ordinances How Made":
- (i) Dean (Academic Affairs)
  - (ii) Dean (Research and Consultancy)
  - (iii) Chairman, SPGC
  - (iv) Chairman, SUGC
  - (v) Registrar

The meeting concluded with a vote of thanks to the Chair.

Approved

  
(A B Samaddar) 20/11/19  
Director/ Chairman

  
(Sarvesh K Tiwari)  
Registrar/Secretary

Confirmed  
  
(Chairman, Senate) 10/12/19

# **ANNEXURE-I**

मोतीलाल नेहरू राष्ट्रीय प्रौद्योगिकी संस्थान  
इलाहाबाद

विद्या परिषद् की अनुशंसा पर

विकास कुमार

को

मेकॅनिकल इंजीनियरिंग

में

बैचलर ऑफ टेक्नॉलॉजी

की संस्थान मुद्रा अंकित यह उपाधि आज, १६ नवम्बर २००७ को, इलाहाबाद (भारत) में प्रदान करता है।

**Motilal Nehru National Institute of Technology  
Allahabad**

on the recommendation of the Senate, hereby confers on

**VIKAS KUMAR**

the Degree of

**Bachelor of Technology**

in

**MECHANICAL ENGINEERING**

on this day, the 16<sup>th</sup> November 2007, under the Seal of the Institute at Allahabad (India).

Sd/-

अध्यक्ष, प्रशासकीय परिषद्  
Chairman, Board of Governors

Sd/-

अध्यक्ष, विद्या परिषद्  
Chairman, Senate

अधिष्ठाता (शैक्षिक)

Dean (Academic Affairs)

Date of Issue: 06.11.2009

कुलसचिव

Registrar



## **ANNEXURE-II**

Received  
Despatched  
on 27/10/09  
Time  
Dean (AA)

Department of Mechanical Engineering  
Motilal Nahru National Institute of Technology  
Allahabad-211004

No. 617/MED/F-36/


Date: 27.10.2009

Chairman  
SPGC

Please find enclosed herewith the list of two electives which are proposed for M.Tech. programmes of the department. The names of the proposed electives are:


- Design of Experiments
- Fatigue Damage and life prediction of engineering Materials

You are requested do needful for approval of above mentioned courses in senate.

  
26.10.09  
(P.K.Mishra)  
Head

Dean (AA)  
May be put up in the  
next Senate meeting.  
PKM  
27/10/09

0  
for the meeting on 28/10/09.  
in any other matter with  
permission to Chairman Senate.

  
27/10/09.



DEPARTMENT OF MECHANICAL ENGINEERING  
Motilal Nehru National Institute of Technology Allahabad

Syllabus of Proposed Elective for M. Tech. Courses

**Title:** DESIGN OF EXPERIMENTS  
**Credits:** 04  
**Contact Hours:** 04 (Lecture – 02, Tutorial -02) per week.

**CONTENTS**

**Basic Concepts:** Fundamentals of experimental design, Selection of an appropriate design, Criteria for evaluation, Factors and levels, Review of statistical inference, Importance of optimized design, Functional design, Parametric design. (4)

**Single Factor Experiments:** Completely randomized design, Analysis of variance (ANOVA), Effect of total sum of Squares, Randomized block design, Randomized incomplete block design, Latin square design. (6)

**Factorial Experiments:** Two way analysis of variance, Fixed, Random and Mixed models, Expected mean square rules, Nested and nested factorial designs, Effect of confounding, Fractional factorial design, Response Surface Methodology – Central composite designs, The method of steepest ascent, response surface designs. (15)

**Robust Design:** Steps in designing performance in to a product, Taguchi's definition of quality, Loss functions and manufacturing tolerances, Additivity, Orthogonal arrays vs. classical statistical experiments, Graphic evaluations of main effects, Selecting factors for Taguchi Experiments, Concept of S/N Ratios – its significance in robust design, Case studies of S/N ratios in optimization, Identifying control and noise factors, Ishikawa Diagram, Constrained Robust Design Approach, Applications. (15)

**REFERENCE BOOKS:**

1. Douglas C. Montgomery, Design and Analysis of Experiments, John Wiley & Sons, 1984.
2. Charles R. Hicks, Fundamental concepts in design of experiments, Holt, Rinehart and Winston, 1984.
3. Tapan P. Bagchi, Taguchi Methods Explained: Practical steps to Robust Design, Prentice-Hall, 1993.
4. Cochran, WG and Cox, GM, Experimental Designs, John Wiley & Sons, 1957.
5. Phadke M. S., Quality Engineering using robust design, Prentice-Hall, 1989.
6. Ross P. J., Taguchi Techniques for quality engineering, McGraw-Hill, 1996.



DEPARTMENT OF MECHANICAL ENGINEERING  
Motilal Nehru National Institute of Technology Allahabad

Syllabus of Proposed Elective for M. Tech. Courses

**Title** : Fatigue Damage and life prediction of Engineering Materials  
**Credits** : 04  
**Contact Hours** : 04 (Lecture - 04, Tutorial -00) per week.

**Contents:**

**General concepts of Fatigue:** Types of loading: rainflow counting method, Fatigue failure mechanisms, Factors affecting fatigue life, Fatigue design methodology: Safe-life design method, Fail-safe design method and damage tolerant design method. (3)

**Cyclic stress-strain response:** Material response to cyclic deformation, stable cyclic response: microstructural changes during cyclic loading, determination of the cyclic curve, mathematical description of the stress-strain relationship, Analysis of hysteresis loops, Effect of temperature, environment and strain rate on stable cyclic response. (4)

**Fatigue life prediction under uniaxial loading:** Stress, strain and energy based approaches, Cumulative damage: concept, multilevel cyclic loading, damage function, determination of the critical damage curve, residual stress influence on fatigue life. (4)

**Damage tolerant design:** Concept, Mechanics of fatigue crack growth: elastic plastic response to cyclic loading, Microstructural mechanisms of Fatigue Growth (FCG); fatigue crack propagation models, Paris Law, Cyclic Plastic Zone Size, Load Ratio Effects,  $\Delta K_{TH}$  Thresholds Stress/Strain Life Analysis, Low Cycle Fatigue, High Cycle Fatigue, Role of mean stress, crack closure, variable amplitude loading, Analytical methods for fatigue and life assessment in advanced materials. (8)

**Fatigue of notched members:** Notch analysis: elastic analysis, stress distribution, nonlinear analysis, general approach, initiation and growth of cracks in notched members: fatigue notch factor approach, local strain approach, energy approach, (5)

**Environmental fatigue:** Corrosion fatigue and fretting fatigue, low temperature and high temperature fatigue. (5)

**Fatigue and Failure of Joints and Structure,** Methods to enhance fatigue resistance (8)

**Experimental Fracture Mechanics:** ASTM standard for measurement of fatigue and fracture parameters (4)

**Suggested Reading:**

1. ASTM Standards, American Society for Testing and Materials
2. S. Suresh, Fatigue of Materials, Cambridge University Press, 1991.
3. J. Schijve, Fatigue of Structures and Materials, Kluwer Academic publ. 2001
4. D. Broek, Elementary Engineering Fracture Mechanics, Nordhoff Int. Pub., 1983.

