



### List of Revised Courses

Department: **Mechanical Engineering**

Program Name : **B.Tech.**

Academic Year: **2021-22**

### List of Revised Courses

Sr. No.	Course Code	Name of the Course
01.	ME203TPC01	Engineering Thermodynamics
02.	ME204TPC05	Applied Thermodynamics
03.	ME204PPC01	Manufacturing Tech. Lab
04.	ME204PPC02	Computer Aided Machine Drawing

विभागाध्यक्ष/Head  
यांत्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept.  
प्रौद्योगिकी संस्थान / Institute of Technology  
गुरु घासीदास वि.वि. / Guru Ghasidas V.V.  
कोनी, बिलासपुर (छ.ग.) / Koni, Bilaspur (C.G.)



## Minutes of Meetings (MoM) of Board of Studies (BoS)

**Academic Year: 2021-22**

**School : School of Studies of Engineering and Technology**

**Department : Mechanical Engineering**

**Date and Time: October 01, 2021 - 02:15 PM**

**Venue : G-25**

### Minutes of Meeting

An online meeting of the **Board of Studies of Mechanical Engineering** was held on **01-10-2021** at **02:15 PM**. The meeting was attended by the following members:

1. Chairman, BOS	Prof. T. V. Arjunan Head, Dept. of Mechanical Engg.	Present
2. Member, Academic Expert	Prof. S. Murugan Dept. of Mechanical Engg., NIT Rourkela	Present
3. Member, BOS	Dr. Pankaj Kumar Gupta Assoc. Prof., Dept. of Mech. Engg.	Present
4. Member, BOS	Mrs. Shweta Singh Asst. Prof., Dept. of Mech. Engg.	Present
5. Member, Industry Expert	Mr. Vivek Singh, Executive Engineer, Damodar Valley Corporation Kodarma Thermal Power Station, Jharkhand	Present

The course syllabi for 3<sup>rd</sup> and 4<sup>th</sup> semesters of B.Tech. II Year as well was discussed. Furthermore, courses for Ph.D. work in the electives category were revised.

With the consent of all the members, the course scheme and syllabi for 3<sup>rd</sup> and 4<sup>th</sup> semesters in II year B.Tech. Mechanical Engineering was finalized, and new courses were added in the list of electives for Ph.D. course work. The following were the salient features discussed in the meeting:

1. In the course on **Engineering Thermodynamics** in 3<sup>rd</sup> semester, the sequence of Modules was slightly altered without adding/deleting any content.
2. The total number of classes for teaching the B.Tech. courses was changed according to **14 weeks** of working in both semesters.
3. The name of Manufacturing Science course was changed to Manufacturing Technology.
4. In the scheme of courses, all courses were re-typed in Sentence case changing from all Caps.
5. The Professional Electives offered in IV semester was dropped to equip students with fundamental core subjects. It was suggested to offer Professional Electives from the III year onwards.
6. The following list of courses were suggested to be included in the Electives category for Ph.D. course-work:
  - (a) Systems Engineering
  - (b) Advanced IC Engines Technology
  - (c) Fuel Cell and Electric Vehicle Technology
  - (d) Energy in Buildings
  - (e) Noise, Vibration & Harshness
  - (f) Waste Minimization Techniques and Applications
  - (g) Robotics
  - (h) Energy Modeling and Simulation

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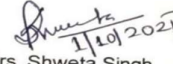
- (i) Vibration and Control
  - (j) Energy Modeling & Policy Analysis
  - (k) Energy Resource & Modeling
  - (l) Renewable Energy
  - (m) Industrial Automation & Controls
7. It was suggested to combine the Courses – **Solar Energy Engineering & Applications and Design of Solar Thermal Systems into one course.**

These changes shall be effective from Academic session 2021-2022.

The detailed Scheme of Credits and Syllabi in the 3<sup>rd</sup> and 4<sup>th</sup> semesters of II year B.Tech. (Mechanical Engineering) courses and in Ph.D. course work is attached herewith for reference.

  
Prof. T. V. Agunjan  
Chairman, BOS

  
Dr. Pankaj K. Gupta  
Member, BOS


  
Mrs. Shweta Singh  
Member, BOS

  
Dr. S. Murugan  
Professor  
Department of Mechanical Engineering  
NIT, Rourkela

Prof. S. Murugan  
Academic Expert

Email Consent Given

Mr. Vivek Singh  
Industry Expert

  
विभागाध्यक्ष/Head  
यांत्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept.  
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Gmail - Re: Approval of the BOS minutes

<https://mail.google.com/mail/u/0/?ik=8bfbe818c6&view=pt&search=all...>



Pankaj Kumar Gupta <pankajkgupta@gmail.com>

**Re: Approval of the BOS minutes**

vivek singh <vivek.singh.dvc@gmail.com>

Fri, Nov 19, 2021 at 3:08 PM

To: Pankaj Kumar Gupta <pankajkgupta@gmail.com>

Cc: s murugan <murugans@nitrrkl.ac.in>, muruganresearch@yahoo.com, "T.V.Arjunan" <arjun\_nivi@yahoo.com>

Dear sir,

The attached syllabus of M Tech. machine design and B Tech. 2nd year had been checked and found OK.  
Approval from my end is accorded.

With Regards  
Vivek Singh  
Sr. Divisional Engg. (M)  
DVC KTPS

[Quoted text hidden]

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यांत्रिकी अभियांत्रिकी विभाग / Mechanical Engg. Dept.  
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**SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY**  
**GURU GHASIDAS VISHWAVIDYALAYA (A CENTRAL UNIVERSITY)**  
**CBCS-NEW, STUDY & EVALUATION SCHEME**  
**PROPOSED W.E.F. SESSION 2021-2022**  
**B.Tech. II Year (SEMESTER III)**

SN	Course No.	SUBJECT	PERIODS			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	SUB-TOTAL	
1.	MA203TBS07	Statistical Methods	3	1	-	30	70	100	4
2.	ME203TPC01	Engineering Thermodynamics	3	1	-	30	70	100	4
3.	ME203TPC02	Fluid Mechanics	3	1	-	30	70	100	4
4.	ME203TPC03	Mechanics of Solids-I	3	1	-	30	70	100	4
5.	ME203TPC04	Manufacturing Processes	3	-	-	30	70	100	3
6.	ME203TMC02	Mandatory Course – Indian Knowledge System-I	1	-	-	-	-	-	-
<b>Total</b>			<b>16</b>	<b>4</b>	<b>-</b>	<b>150</b>	<b>350</b>	<b>500</b>	<b>19</b>
<b>PRACTICALS</b>									
1.	ME203PPC01	Fluid Mechanics Lab	-	-	2	30	20	50	1
2.	ME203PPC02	Mechanics of Solids Lab	-	-	2	30	20	50	1
<b>Total</b>			<b>-</b>	<b>-</b>	<b>4</b>	<b>60</b>	<b>40</b>	<b>100</b>	<b>2</b>
<b>GRAND TOTAL</b>			<b>16</b>	<b>4</b>	<b>4</b>	<b>210</b>	<b>390</b>	<b>600</b>	<b>21</b>

Total Credits : 21  
Total Contact Hour : 24  
Total Marks : 650

\*INTERNAL ASSESSMENT- Two Class Test of 15 Marks each will be conducted.

L-LECTURE, T-TUTORIAL, P-PRACTICAL, ESE –END SEMESTER EXAMINATION

  
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SCHOOL OF STUDIES OF ENGINEERING & TECHNOLOGY  
GURU GHASIDAS VISHWAVIDYALAYA(A CENTRAL UNIVERSITY)  
CBCS-NEW, STUDY & EVALUATION SCHEME  
PROPOSED W.E.F. SESSION 2021-2022  
B.Tech. II Year (SEMESTER IV)

SN	Course No.	SUBJECT	PERIODS			EVALUATION SCHEME			CREDITS
			L	T	P	IA	ESE	SUB-TOTAL	
1.	MA204TBS09	Numerical Analysis & Computer Programming	3	1	-	30	70	100	4
2.	ME204TPC05	Applied Thermodynamics	2	1	-	30	70	100	3
3.	ME204TPC06	Kinematics Of Machinery	2	1	-	30	70	100	3
4.	ME204TPC07	Mechanics Of Solid-II	3	1	-	30	70	100	4
5.	ME204TPC08	Machine Tool Technology	3	-	-	30	70	100	3
6.	ME204TPC09	Materials Science & Metallurgy	3	-	-	30	70	100	3
<b>Total</b>			<b>16</b>	<b>4</b>	<b>-</b>	<b>180</b>	<b>420</b>	<b>600</b>	<b>20</b>
<b>PRACTICALS</b>									
1.	ME204PPC01	Manufacturing Tech. Lab	-	-	2	30	20	50	1
2.	ME204PPC02	Computer Aided Machine Drawing	2	-	2	30	20	50	3
<b>Total</b>			<b>2</b>	<b>-</b>	<b>4</b>	<b>60</b>	<b>40</b>	<b>100</b>	<b>4</b>
<b>GRAND TOTAL</b>			<b>18</b>	<b>4</b>	<b>4</b>	<b>240</b>	<b>460</b>	<b>700</b>	<b>24</b>

Total Credits : 24  
Total Contact Hour : 26  
Total Marks : 700

\*INTERNAL ASSESSMENT- Two Class Test of 15 Marks each will be conducted.  
L-LECTURE,T-TUTORIAL,P-PRACTICAL, ESE –END SEMESTER EXAMINATION

  
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 इंजीनियरिंग विभाग / Mechanical Engg. Dept.  
 शिक्षण संस्थान / Institute of Technology  
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**ME203TPC01 – ENGINEERING THERMODYNAMICS**

1.	<b>Department/Center proposing the course</b>	Mechanical Engineering
2.	<b>Course title</b>	<b>Engineering Thermodynamics</b>
3.	<b>L-T-P Structure</b>	3-1-0
4.	<b>Credits</b>	4
5.	<b>Course number</b>	ME203TPC01
6.	<b>Status (Category for program)</b>	<b>Professional Core</b>

7.	<b>Pre-requisites</b>	Nil
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8.	Status vis-à-vis other courses (Give Course number/title)	
8.1.	Overlap with any UG/PG course of the Dept./Centre	No
8.2.	Overlap with any UG/PG course of other Dept./Centre	No
8.3.	Super cedes any existing course	No

9.	Not allowed for ( <b>indicate program names</b> )	
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10.	Frequency of offering	<input type="checkbox"/> Every sem <input type="checkbox"/> 1 <sup>st</sup> Sem <input type="checkbox"/> 2 <sup>nd</sup> Sem <input type="checkbox"/> Either Sem: <b>3<sup>th</sup> sem</b>
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11.	<b>Faculty who will teach the course</b>	Expertise or specialization in the Fluid Thermal sciences
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12.	<b>Will the course require any visiting faculty</b>	No.
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13.	<b>Course contents</b> (about 100 words) (include laboratory/design activities): First and Second laws of thermodynamics, Entropy, Availability, Properties of gases and mixtures, Thermodynamic relations	
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**14. Lecture outline**(with topics and number of lectures)

Module No.	Topics	No. of hours
1	Introduction, thermodynamic properties, equilibrium, zeroth and first laws of thermodynamics, work and heat transfer interactions	11



2	First law for closed system, first law for open system, second law of thermodynamics	12
3	Entropy, Availability, exergy and irreversibility	11
4	Thermodynamic relations, equilibrium and third law	11
5	Properties of Gases and Mixtures	11
TOTAL HOURS (including Tutorials)		56

**15. Brief description of tutorial activities**

Tutorial classes are for application-based problem solving

**16. Suggested texts and reference materials**

**Text Books:**

- Engineering Thermodynamics – P.K. Nag, McGraw Hill
- Basic and Applied Thermodynamics – P.K. Nag, McGraw Hill

**Reference Books:**

- Fundamentals of Thermodynamics – Sonntag, Borgnakke, Van Wylen, Wiley
- Thermodynamics-An engineering approach – Cengel and Boles, McGraw Hill

  
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**ME204TPC05 – APPLIED THERMODYNAMICS**

1.	<b>Department/Center proposing the course</b>	Mechanical Engineering
2.	<b>Course title</b>	<b>Applied Thermodynamics</b>
3.	<b>L-T-P Structure</b>	2-1-0
4.	<b>Credits</b>	3
5.	<b>Course number</b>	ME204TPC06
6.	<b>Status (Category for program)</b>	<b>Professional Core</b>

7.	<b>Pre-requisites</b>	Engineering Thermodynamics
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8.	Status vis-à-vis other courses (Give Course number/title)	
8.1.	Overlap with any UG/PG course of the Dept./Centre	Yes
8.2.	Overlap with any UG/PG course of other Dept./Centre	No
8.3.	Super cedes any existing course	Yes

9.	Not allowed for (indicate program names)	
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10.	Frequency of offering	<input type="checkbox"/> Every sem <input type="checkbox"/> 1 <sup>st</sup> Sem <input type="checkbox"/> 2 <sup>nd</sup> Sem <input type="checkbox"/> Either Sem: 4 <sup>th</sup> sem
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11.	<b>Faculty who will teach the course</b>	Expertise or specialization in the Fluid Thermal sciences
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12.	<b>Will the course require any visiting faculty</b>	No
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13.	<b>Course contents</b> (about 100 words) (include laboratory/design activities): Properties of Pure substances, Vapour power cycles, Gas power cycles, Refrigeration Cycles, Compressible fluid flow, Kinetic theory of gases	
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**14. Lecture outline**(with topics and number of lectures)

Module No.	Topics	No. of hours
1	Gas power cycles – Carnot, Stirling Ericsson, Air standard, Otto, Diesel, Dual Brayton cycles, Aircraft propulsion	9
2	Properties of pure substances, thermodynamic processes for pure substance, steam tables, charts of thermodynamic properties	8
3	Vapour Power cycles, Rankine cycle, regenerative cycle, exergy analysis of vapor power cycles binary vapor cycles	9
4	Refrigeration cycles – reverses heat engine cycle, vapor compression, vapor absorption, gas refrigeration cycle, production of solid ice, Psychrometrics	8
5	Compressible fluid flow – stagnation properties, one dimensional steady isentropic flow, critical properties, shocks, introduction to kinetic theory of gases	8
TOTAL HOURS (including Tutorials)		42



**ME204TPE01 – MACHINE TOOL TECHNOLOGY**

1.	<b>Department/Center proposing the course</b>	Mechanical Engineering
2.	<b>Course title</b>	<b>Machine Tool Technology</b>
3.	<b>L-T-P Structure</b>	3-0-0
4.	<b>Credits</b>	3
5.	<b>Course number</b>	<b>ME204TPC08</b>
6.	<b>Status (Category for program)</b>	<b>Professional Elective-01</b>

7.	<b>Pre-requisites</b>	Knowledge of Workshop and Machine operations.
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8.	Status vis-à-vis other courses (Give Course number/title)	
8.1	Overlap with any UG/PG course of the Dept./Centre	No
8.2	Overlap with any UG/PG course of other Dept./Centre	No
8.3	Super cedes any existing course	No

9.	Not allowed for (indicate program names)	
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10.	Frequency of offering	<input type="checkbox"/> Every sem <input type="checkbox"/> 1 <sup>st</sup> Sem <input type="checkbox"/> 2 <sup>nd</sup> Sem <input type="checkbox"/> Either Sem: 4 <sup>th</sup> sem
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11.	<b>Faculty who will teach the course</b>	Expertise or specialization in the Manufacturing Engineering
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12.	<b>Will the course require any visiting faculty</b>	No.
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13.	<b>Course contents</b> (about 100 words) (include laboratory/design activities):	
	Introduction to manufacturing and machining, Manufacturing need and concepts, Machining purpose principle and definition, Function of machine tool and machining requirements,	

14. **Lecture outline**(with topics and number of lectures)

Module No.	Topics	No. of hours
1	General purpose machine tools, mechanics, tools, geometry and	9



	chip formation, surface finish and machinability.	
2	Machine tool: Generation and machining principles, setting and operations on machines: lathe, milling, shaping, slotting, planning, drilling, boring, broaching, grinding, gear cutting.	8
3	Tooling: Jigs and Fixtures, principles of location, clamping, indexing and design of simple jigs and fixtures.	8
4	Batch production: NC Part programming. CNC machines, Finishing: Micro finishing, Introduction to 3D and 4D printing	8
5	Non-conventional machining: EDM, LBM, EBM, ECM, USM, AJM, Rapid prototyping	9
TOTAL HOURS		42

#### 15. Brief description of tutorial activities

Tutorial classes are for application-based problem solving

#### 16. Suggested texts and reference materials

##### Text Books and reference books:

1. Manufacturing technology (Vol.-I & II) by P.N. Rao Tata McGraw Hill Publishers.
2. Manufacturing Engg. And technology by S. Kalpakjian& S.R. Schmid, Addison Wesley Longman, New Delhi
3. Manufacturing science By A. Ghosh& A.K. Mallik East West Press Pvt. Ltd New Delhi
4. Manufacturing Process by O P Khanna Dhanpat Rai Publication
5. A Textbook of Production Engineering by Dr P C Sharma S Chand Publications
6. Metal Working Technology Narayanaswamy. R. , PHI

  
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