MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Chemical Engineering

Summary

Courses where revision was carried out*							
(Course/subject name)	Course Code	Year/Date of introduction	Year/Date of revision	Percentage of content added or replaced	Agenda Item No.	Page No.	Link of relevant documents/minutes
NIL							

Courses focusing on employability/entrepreneurship/ skill development*					
(Course/subject name)	Course Code	Activities/contents which have a bearing on increasing skill and employability	Agenda Item No.	Page No.	Link of relevant documents/minutes
Fluid Mechanics	2170311	Behavior of fluid under various forces, selection of proper fluid for various applications.	12	41	https://drive.google.com/file/d/1vUhnsQMyU0nkv1Xy39F96yU5V-k0oGnC/view?usp=sharing
Organic Process Technology	2170312	Process technologies of various organic process like pulp and paper, oil industry	12	43	https://drive.google.com/file/d/1vUhnsQMyU0nkv1Xy39F96yU5V-k0oGnC/view?usp=sharing
Chemical Engineering Thermodynamics	2170313	Define thermodynamic concept, Explains thermodynamics laws Equilibrium and phase rule Describe the PVT behaviour of pure substances Apply second law on various systems and define the 3rd law of thermodynamics	12	44	https://drive.google.com/file/d/1vUhnsQMyU0nkv1Xy39F96yU5V-k0oGnC/view?usp=sharing
Heat Transfer	2170314	Solving conduction, convection and radiation problems Design and analyze the performance of heat exchangers and evaporators	12	45	https://drive.google.com/file/d/1vUhnsQMyU0nkv1Xy39F96yU5V-k0oGnC/view?usp=sharing
Mass Transfer-II	170512	Distillation concepts, Calculation of plates by McCabe Thiele, Ponchon-Savarit, Lewis-Sorel Types of Distillation	09	22	https://drive.google.com/file/d/1uJBiUGmEG346eo3XrYHdNM9LA-7N026m/view?usp=sharing
Chemical reaction Engineering-I	170513	Analyse and differentiate between various types of chemical reactions. Express chemical reaction through a chemical equation. Examples for	09	24	https://drive.google.com/file/d/1uJBiUGmEG346eo3XrYHdNM9LA-

		different types of chemical reactions and reactors.			7N026m/view?usp=sharing
Inorganic Process Technology	170515	thorough understanding of some important process industries (chloro-alkali, fertilizers, soaps and detergents, sugar manufacture, petroleum, paper and fermentation etc.)	09	28	https://drive.google.com/file/d/1uJBiUGmEG346eo3XrYHdNM9LA-7N026m/view?usp=sharing
Heterogeneous Reaction Systems	170723	Heterogeneous catalysis enables faster, large-scale production and the selective product formation	03	08	https://drive.google.com/file/d/1n_ZAY-O2u-P5VkPVmxodLHVvkwHAJojL/view?usp=sharing
Equilibrium Staged Operations	170722	Utilising Successive stages to enhance the separation like extraction of edible oil from soya beans	03	07	https://drive.google.com/file/d/1n_ZAY-O2u-P5VkPVmxodLHVvkwHAJojL/view?usp=sharing
Multi Component Distillation	170724	Permits separation of more than two components. Use of component or matrix tray efficiencies or the non equilibrium-stage model to estimate the number of stages.	03	10	https://drive.google.com/file/d/1n_ZAY-O2u-P5VkPVmxodLHVvkwHAJojL/view?usp=sharing
Chemical Process Safety	170761	Minimize the risks associated with chemical manufacturing, prevent accidents from occurring, and protect the health and safety of employees and the environment.	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing
Sustainable Energy Technology	170762	Renewable in nature and offer less environmentally invasive ways to power the global community.	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing
Energy Conversion Technologies (Biomass And Coal)	170764	Recent advancement and technological developments (carbonization, torrefaction, sub and supercritical water gasification, thermochemical conversion to ethanol, green diesel) in the field of conventional (coal) and non-conventional energy sources (biomass) with emphasis on engineering and design aspects and concept of integration of energy system	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing
Petroleum Reservoir Engineering	170765	Techniques of drilling wells on wider spacing, unitizing earlier, and recovering a greater percentage of the oil in place	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing

Petroleum Technology	170766	Exploration, transportation and secondary conversion of petroleum and its related products	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing

New Courses added*					
(Course/subject name)	Course Code	Activities/contents which have a bearing on increasing skill and employability	Agenda Item No.	Page No.	Link of relevant documents/minutes
Heterogeneous Reaction Systems	170723	Heterogeneous catalysis enables faster, large-scale production and the selective product formation	03	08	https://drive.google.com/file/d/1n_ZAY-O2u-P5VkPVmxodLHVvkwHAJojL/view?usp=sharing
Multi Component Distillation	170724	Permits separation of more than two components. Use of component or matrix tray efficiencies or the non equilibrium-stage model to estimate the number of stages.	03	10	https://drive.google.com/file/d/1n_ZAY-O2u-P5VkPVmxodLHVvkwHAJojL/view?usp=sharing
Sustainable Energy Technology	170762	Renewable in nature and offer less environmentally invasive ways to power the global community.	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing
Energy Conversion Technologies (Biomass And Coal)	170764	Recent advancement and technological developments (carbonization, torrefaction, sub and supercritical water gasification, thermochemical conversion to ethanol, green diesel) in the field of conventional (coal) and non-conventional energy sources (biomass) with emphasis on engineering and design aspects and concept of integration of energy system	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing
Petroleum Reservoir Engineering	170765	Techniques of drilling wells on wider spacing, unitizing earlier, and recovering a greater percentage of the oil in place	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing
Petroleum Technology	170766	Exploration, transportation and secondary conversion of petroleum and its related products	04	11	https://drive.google.com/file/d/1yjRn7Q9aVU1TSdmZBmumHjt7W27O6Ak-/view?usp=sharing

Feedback on curriculum received from stakeholders: Analysis & ATR*

Stakeholder	Student	Faculty	Alumni	Employer
No. of responses	**29**	**5**	**37**	**11**
Link of Analysis	https://docs.google.com/spreadsheets/d/1wYniUEbR4iuL7lFix4EwukEWKVuVzHoo/edit?usp=drive_link&ouid=115143136436263341879&rtpof=true&sd=true	https://docs.google.com/document/d/1KHAcU4RClP3nt6_8WR8cs-guL5oQVt7U/edit?usp=sharing&ouid=106653567786604960031&rtpof=true&sd=true	https://docs.google.com/spreadsheets/d/1-2-Flriv23WkMCFsjSnzGleIPIDVTRvq/edit?usp=drive_link&ouid=115143136436263341879&rtpof=true&sd=true	https://docs.google.com/spreadsheets/d/1MVijPaaLWkCJV7ExmGgbXPsaEOfNoEDE/edit?usp=drive_link&ouid=115143136436263341879&rtpof=true&sd=true
ATR Link	https://drive.google.com/file/d/1aNYHL9-khr9Wqf8Z8dsS5wdieiUY5Rxr/view?usp=sharing	https://drive.google.com/file/d/1aNYHL9-khr9Wqf8Z8dsS5wdieiUY5Rxr/view?usp=sharing	https://drive.google.com/file/d/1aNYHL9-khr9Wqf8Z8dsS5wdieiUY5Rxr/view?usp=sharing	https://drive.google.com/file/d/1aNYHL9-khr9Wqf8Z8dsS5wdieiUY5Rxr/view?usp=sharing
Link showing Excel sheet of Google Form details of stakeholders	https://docs.google.com/spreadsheets/d/1scoYBswJfxl-TjdA0AEMWvTnVbl8SMiO/edit?usp=drive_link&ouid=115143136436263341879&rtpof=true&sd=true	https://docs.google.com/spreadsheets/d/1QkR396pmCW3dtmq77LssGWHHN-jfa5Jg/edit?usp=drive_link&ouid=115143136436263341879&rtpof=true&sd=true	https://docs.google.com/spreadsheets/d/12yTvJLHt_Sizen-QBLQtpmEu7mb9WWXu/edit?usp=sharing&ouid=106653567786604960031&rtpof=true&sd=true	https://docs.google.com/spreadsheets/d/1dkDszKQkdqe5NUgDM2puUaZaNCV-66Oj/edit?usp=sharing&ouid=106653567786604960031&rtpof=true&sd=true

Department of Chemical Engineering
Minutes of BOS Meeting

Date: 02/06/2023

The BOS Meeting was held on 2nd June 2023 through online mode on Google Meet from 12 Noon Onwards. During the meeting, following were present

External Members:-

1. Dr. Ashok Sharma, Professor, Department of Chemical Engg, UEC, Ujjain **(Expert nominated by the Vice Chancellor, RGPV)**
2. Dr. Pankaj Tiwari, Associate Professor, Department of Chemical Engg., IIT Guwahati **(Expert nominated by the Academic Council)**
3. Dr. Manish Vashishtha, Associate Professor, Department of Chemical Engg., MNIT Jaipur **(Expert nominated by the Academic Council)**
4. Mr. Rakesh Agrawal, Director, Myriadly Engineering and Business Solutions Pvt Ltd., Malanpur, Gwalior **(Expert from Industry)**
5. Ms. Priyanka Jain, Production Engineer, IOCL Mathura, Mathura - 281005, U.P. **(Alumnus)**

Internal Members:-

1. Prof. Swati Gupta, Assistant Professor, Dept. of Chemical Engg., MITS
2. Prof. Anish P. Jacob, Assistant Professor & Co-ordinator,Dept. of Chemical Engg., MITS
3. Dr. Shourabh Singh Raghuwanshi, Assistant Professor, Dept. of Chemical Engg., MITS
4. Dr. R.K. Dubey, Assistant Professor, Dept. of Chemical Engg., MITS
5. Prof. Shivangi Sharma, Assistant Professor, Dept. of Chemical Engg., MITS

The following points were discussed and resolved & item wise discussion as follows:-

Item CM 1	To confirm the minutes of the previous BoS meeting held in the month of December 2022. The minutes of the previous Board of studies (BoS) meeting held on 16 December 2022 (Through Google meet) were confirmed.
Item CM 2	To prepare and finalize the **scheme structure of B.Tech. VII Semester** with the provision of *Three Departmental Electives (DEs)***(in which two Departmental Elective is to be offered in online mode with credit transfer)***and one Open Category (OC) Course* ***for the batch admitted in 2020-21.*** **Scheme structure of B.Tech. VII Semester** with the provision of Three Departmental Electives (DEs) and Two Open Category (OC) Course **(in which two Departmental Elective is to be offered in online mode with credit transfer)** for the batch admitted in 2020-21 has been proposed.
Item CM 3	To prepare and finalize the syllabus of courses to be offered ***(for the batch admitted in 2020-21)***under ***Departmental Elective (DE) Course***(in traditional mode) for B. Tech. ***VII Semester*** along with their COs

<table>
<tr><td></td><td>The syllabus of courses to be offered (for batch admitted in 2020-21)under Departmental Elective (DE) Course(in traditional mode) for B.Tech. VII Semester along with their Cos has been prepared and finalized.</td></tr>
<tr><td>Item CM 4</td><td>To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC based Platforms, to be offered in online mode under Departmental Elective (DE) Courses, with credit transfer in the B. Tech. VII Semester under the flexible curriculum (for the batch admitted in 2020-21)
The list of courses which the students can opt from SWAYAM/NPTEL/MOOC based Platforms, to be offered in online mode under Departmental Elective (DE) Course, with credit transfer in the B.Tech. VII Semester under the flexible curriculum (Batch admitted in 2020-21) were discussed and finalized.
As per the following detail:-
Elective- III, VII Semester through SWAYAM /NPTEL/MOOC (Online Mode)
<table>
<tr><th>S.No.</th><th>Course Name</th><th>Course Code</th><th>Duration</th></tr>
<tr><td>1.</td><td>Chemical Process Safety</td><td>170761</td><td>12 Weeks</td></tr>
<tr><td>2.</td><td>Sustainable Energy Technology</td><td>170762</td><td>12 Weeks</td></tr>
<tr><td>3.</td><td>Rheology and Processing of Paints, Plastic, and Elastomer Based Composites</td><td>170763</td><td>08 Weeks</td></tr>
</table>
Elective- IV, VII Semester through SWAYAM /NPTEL/MOOC (Online Mode)
<table>
<tr><th>S.No.</th><th>Course Name</th><th>Course Code</th><th>Duration</th></tr>
<tr><td>1.</td><td>Energy Conversion Technologies (Biomass And Coal)</td><td>170764</td><td>08 Weeks</td></tr>
<tr><td>2.</td><td>Petroleum Reservoir Engineering</td><td>170765</td><td>08 Weeks</td></tr>
<tr><td>3.</td><td>Petroleum Technology</td><td>170766</td><td>08 Weeks</td></tr>
</table>
</td></tr>
<tr><td>Item CM 5</td><td>To prepare and finalize the syllabus of courses to be offered (for the batch admitted in 2020-21) under the Open Category (OC) Courses (in traditional mode) for B. Tech. VII semester students of other departments along with their COs
The syllabus of courses to be offered (for batch admitted in 2020-21) under the Open Category (OC) Courses (in traditional mode) for B.Tech. VII semester students of other departments along with their COs have been prepared and finalized .</td></tr>
<tr><td>Item CM 6</td><td>To prepare and finalize the Experiment list/ Lab manual for Departmental Laboratory Course (DLC) to be offered in B. Tech. VII semester (for the batch admitted in 2020-21)
The Experiment list/ Lab manual for Departmental Laboratory Course (DLC) to be offered in B.Tech. VII semester (for batches admitted in 2020-21) were discussed and finalized.</td></tr>
<tr><td>Item CM 7</td><td>To propose the list of “Additional Courses” which can be opted for getting an
(i) Honours (for students of the host department)
(ii) Minor Specialization (for students of other departments)

[These will be offered through SWAYAM/NPTEL/MOOC based Platforms for the B.Tech. VII Semester students (for the batch admitted in 2020-21)] and forB.Tech. V Semester (for the batch admitted in 2021-22)]
The list of “Additional Courses” which can be opted for getting an
(i) Honours (for students of the host department)</td></tr>
</table>

(ii) Minor Specialization (for students of other departments)

for the B.Tech. **VII semester students** (for the batch admitted in 2020-21)] and for B.Tech. **V semester** (for the batch admitted in 2021-22)]were proposed. The courses available on SWAYAM/NPTEL/MOOC based Platforms for the **V semester** and for VII Semester for Honours & Minor specialization were discussed & recommended are as follows:

S.No.	Purpose	Name of Course	Duration of the course in weeks
1	For Honours(VII Semester)	Colloids and Surfaces	8 Week
		Trace and ultra-trace analysis of metals using atomic absorption spectrometry	8 Week
		Heat Exchangers: Fundamentals and Design Analysis	12 Week
2.	For Minor Specialization(Others Department) (VII Semester)	Fluidization Engineering	12 Week
		Polymers: concepts, properties, uses and sustainability	12 Week
		Transport Phenomena of Non-Newtonian Fluids	12 Week
3.	For Honours(V Semester)	Technologies For Clean And Renewable Energy Production	8 Week
		Chemical Process Intensification	12 Week
		Basic Environmental Engineering and Pollution Abatement	12 Week
4.	For Minor Specialization (Others Department) (V Semester)	Heat Transfer	12 Weeks
		Chemical Reaction Engineering-I	12 Weeks
		Mechanical Unit Operations	12 Weeks

Item CM 8	To prepare and recommend the ***scheme structure of B.Tech. V Semester under*** the flexible curriculum (for the *Batch admitted in 2021-22)* The **scheme structure of B.Tech. V Semester under** the flexible curriculum (Batch admitted in 2021-22)has been prepared.
Item CM 9	To prepare and recommend the syllabi for all ***Departmental Core (DC) Courses*** of B. Tech. ***V Semester (for the batch admitted in 2021-22)*** under the flexible curriculum along with their COs. The syllabi for all **Departmental Core (DC) Courses** of B.Tech. **V Semester (for batch admitted in 2021-22)** under the flexible curriculum along with their Cos were discussed & prepared.
Item CM 10	To prepare and recommend the suggestive Experiment list/ Lab manual and list of projects which can be assigned under the 'Skill based mini-project' category in various laboratory component based courses to be offered in B. Tech. V Semester ***(for the batch admitted in 2021-22)***. The Experiment list/ Lab manual and list of projects which can be assigned under the 'Skill based mini-project' category for all the Laboratory Courses to be offered in B.Tech.V semester **(for batch admitted in 2021-22)** has been prepared.

Item CM 11

To propose the list of courses from SWAYAM/NPTEL/MOOC Platforms to be offered ***(for the batch admitted in 2021-22)*** in online mode under ***Self-Learning/ Presentation***, in the B. Tech. ***VSemester.***
The list of courses from SWAYAM/NPTEL/MOOC Platforms to be offered **(for batch admitted in 2021-22)** in online mode under **Self-Learning/ Presentation**, in the B.Tech. **V Semester** was proposed.

Tentative list of Seminar/Self Study Courses V Semester

S.No.	Course Name (From SWAYAM/NPTEL)	Semester	Name of Faculty
1	Natural Gas Engineering (08 Weeks)	V Sem	Dr. Shourabh Singh Raghuwanshi
2	Body Language: Key To Professional Success (04 Weeks)	V Sem	
3	Water, Society And Sustainability (04 Weeks)	V Sem	
4	Moral Thinking: An Introduction To Values And Ethic (04 Weeks)	V Sem	

Item CM 12

To review, prepare, finalize and recommend the ***Scheme & Syllabi (along with the Course Outcomes) of III semester*** **B. Tech. programmes (for the batch admitted 2022-23 Session**
The **Scheme & Syllabi (along with the Course Outcomes) of III semester B. Tech. programmes (batch admitted 2022-23 Session) were reviewed and finalized.**

Item CM 13

To review, prepare, finalize and recommend the list of experiments/ Lab manual and skill based mini projects for various laboratory courses to be offered in III Semester ***(for the batch admitted in 2022-23)***.
The list of experiments/ Lab manual and skill based mini projects for various laboratory courses to be offered in III Semester **(for the batch admitted in 2022-23) were** reviewed , prepared & finalized.

Item CM 14

To propose the list of courses from SWAYAM/NPTEL/MOOC Platforms to be offered ***(for the batch admitted in 2022-23)*** in online mode under ***Self-Learning/ Presentation***, in the ***III Semester***
The list of courses from SWAYAM/NPTEL/MOOC Platforms to be offered **(for batches admitted in 2022-23)** in online mode under **Self-Learning/ Presentation**, in the **III Semester** has been proposed.

S.No.	Course Name (From SWAYAM/NPTEL)	Semester	Name of Faculty
1	Ecology and Environment (08 Weeks)	III Sem	Dr. Rakesh Kr. Dubey
2	Mechanical Operations (04 Weeks)	III Sem	

Item CM 15

To Review, prepare and recommend the scheme structure, Syllabi (along with the Course Outcomes), list of experiments/ Lab manual and skill based mini projects for various laboratory courses **of *I semester*** **B. Tech. programmes (for the batch admitted in 2023-24 Session)**

	The **Scheme structure, Syllabi (along with the Course Outcomes),** list of experiments/ Lab manual and skill based mini projects for various laboratory courses **of *I semester* B. Tech. programmes (for the batch admitted in 2023-24 Session) were reviewed and finalized.**
Item CM 16	To review the CO attainments, to identify gaps and to suggest corrective measures for the improvement in the CO attainment levels for July-Dec 2022. The CO attainments have been reviewed, gaps identified and corrective measures for the improvement in the CO attainment levels have been suggested for July-Dec 2022.
Item CM 17	To review PO attainment of 2018-2022 batch, CO-PO mapping matrix with attainments and gap analysis The PO attainment of 2018-2022 batch, CO-PO mapping matrix with attainments and gaps have been reviewed.
Item CM 18	To prepare and recommend the syllabi of Mandatory Audit Course: Universal Human Values & Professional Ethics (UHVPE). (at institute level) This item is NOT APPLICABLE in Chemical Engineering Department
Item CM 19	To review curricula feedback from various stakeholders, its analysis and impact **{Stakeholder feedback analysis must also contain an Action Taken Report (ATR) and the details/data of the stakeholders who have responded through GOOGLE form (such as Name, organization, mail id, phone no., if available) must also be shared along with the feedback of the alumni/employer}** The curricula feedback from various stakeholders, its analysis and impact has been done & reviewed.
Item CM 20	To review the Course Outcomes (COs) feedback of various courses, its analysis, and ATR (for July –Dec. 2022 semester) The Course Outcomes (COs) feedback of various courses, its analysis, and ATR has been reviewed.
Item CM 21	To discuss and recommend the scheme structure & syllabi of PG Programme (M.E./M.Tech./MCA/MBA) along with their Course Outcomes (COs) This item is NOT APPLICABLE in Chemical Engineering Department
Item CM 22	To recommend the scheme structure and Syllabus of Ph.D. Course Work (specific to Doctoral Research Scholars, if any) This item is NOT APPLICABLE in the Chemical Engineering Department.
Item CM 23	Any other matter Nil

The meeting ended with the vote of thanks to all the members

Suggestion & Comment

1. The experts suggested Minor specialization must be offered in some specialized track of Chemical Engineering.
2. The experts appreciated the proposed scheme and were satisfied with the list of Electives, Open courses and the Core courses included in the curriculum.

Anish J

Prof. Anish P. Jacob
(Assistant Prof. & Coordinator)