MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Minutes of Meeting Board of Studies

Department of Engineering Mathematics and Computing

(Conducted online on date, *01 June 2023*)

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE,

GWALIOR – 474005

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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

Reference: MAC/2023/ **Dated: 01.06.2023**

Department of Engineering Mathematics and Computing

Minutes of the Meeting of the Board of Studies held on 01/June/2023

A meeting of the Board of Studies of ***Department of Engineering Mathematics and Computing*** was held on 01/June/2023 on line at 11.30 AM. The BOS committee constituted the following members:

Name	Affiliation	Stature
Dr.V.P. Shinde	Professor & Head, Engineering Mathematics & Computing	Chairman, BOS
Dr.Aparna Mehra	Professor, Department of Mathematics, IIT, New Delhi	Vice-Chancellor Nominee
Dr. Madhu Jain	Associate Professor, Department of Mathematics, IIT Roorkee,	Subject Expert
Dr. Badam Singh Kushvah	Associate Professor, Department of Mathematics and Computing, IMS Dhanbad	Subject Expert
Dr. D.P. Agrawal	Department of Mathematics, Govt. SMS Science College, Gwalior	Alumnus
Mr. Ankit Mundra	Director plus 91 labs, Gwalior	Industry Expert

Faculty of the Department

Dr. D. K. Jain

Prof. Prabhakar Sharma

Dr. J. K. Muthele

Prof. A. S. Ojha

Dr. Atul Ku. Ray

Dr. Minakshi

Dr. Divya Chatuervedi

Dr. D. K. Mishra

Dr. S. K. bharadwaj

Mr. Ashish Shukla

The minutes of the BOS meeting are following:

1. The minutes of the previous BOS meeting held on 14.12.2022 have been confirmed.
2. The courses of Engineering Mathematics-I, II and III do not have any changes.
3. The course outcomes attainments have been analyzed with identified Gap thereof action taken report (ATR) has been prepared according to respective courses.
4. The syllabus for B. Tech. programme in Mathematics and Computing Fourth year (VII semester) has proposed by the department and approved by the committee.
5. The course outcomes of all courses have been discussed in detail.
6. The list of various subjects is proposed for Departmental elective, Minor and Honors specialization have been prepared.

Total No of courses	**Total number of COs**	**Number of COs not attained**	**Percentage of COs not attained**	**Page No.**
16	80	12	15	Item No. 16 (pp. 5-12)

Prof. Ashish Shukla (Member)

Dr. S. K. Bharadwaj (Member)

Dr. D. K. Mishra (Member)

Dr. Atul Ku. Ray (Member)

Dr. Minakshi (Member)

Dr. Divya Chatuervedi (Member)

Prof. A. S. Ojha (Member)

Dr. J. K. Muthele (Member)

Prof. Prabhakar Sharma (Member)

Dr. D. K. Jain (Member)

Dr. Badam Singh Kushvah (Subject Expert)

Dr. Madhu Jain (Subject Expert)

Dr. Aparna Mehra (Subject Expert)

Dr. D.P. Agrawal Alumnus

Mr. Ankit Mundra Industry Expert

Dr. V.P. Shinde (Professor & Head)

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Agenda of the BoS Meeting

(Approved by Academic Development Cell of the institute - BoS Meeting Scheduled during 01 June, 2023)

Instructions for preparing BoS Proceedings

{All information is to be uploaded on the webpage under suitable heading (such as Board of Studies) and separate links to be provided for each category mentioned below}

1. Minutes should have a summary/cover page mentioning all the significant changes made in the following Given format

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
Computer Programming	**250122**	This subject provides the basic knowledge of programming skills using C language, which is the basic need of industry. Students are taught to develop basic to middle level programming exercise to enable them for developing higher-level applications.	15	3	https://drive.google.com/file/d/12VqQP3lzSKrt0iQfX2fgcKjXhz2gJK7k/view?usp=drive_link
Data Structures and Algorithms	**250324**	This subject develops the problem solving ability and analytical skills of students. Questions based on Data Structures and Algorithms are scaled up or down according to the knowledge level of the candidate. All recruiting companies test the knowledge of data structures by asking concepts of stack, queue, linked list, tree, graph, searching, sorting etc.	12	8	https://drive.google.com/file/d/1ODNDFdp7js35BybdMZRAOFBliNhMtG5N/view?usp=drive_link
Data Science using Python	**250524**	With the increased use of computers for day-to-day business and personal operations, there is a demand for intelligent machines that can learn human behaviour and work patterns. This brings Data science and big data analytics to the forefront. Students are trained to effectively tackle many real-world problems in various domains like banking and finance, communication, education, etc. by giving projects using Python.	9	5	https://drive.google.com/file/d/17d-L1lpPp0nkbp8rtb6bzKUgoKTlA6_U/view?usp=drive_link
Java Technologies	**250526**	Java is very popular in software industry in almost all domains. Students are given medium level projects for creating Web apps, Android apps, and software development tools such as IntelliJ IDEA, Eclipse, NetBeans IDE, and others. Java applications have now grown to include Data Science, Machine Learning, and even the Internet of Things.	9	7-8	
Discrete Mathematical Structures	**OC-II**	Discrete m*aths* is the essential math for computer programming. Without the tools of *discrete math* you will unable to do *advanced* computer. Practically every software engineering job that deals in tracking possible combinations and permutations of items or properties of items or people will use at least some of the skills learned in discrete mathematics, since items and customers are counted using whole numbers.	3	5	https://drive.google.com/file/d/1ODNDFdp7js35BybdMZRAOFBliNhMtG5N/view?usp=drive_link
Optimization Techniques	**OC-II**	It consists of modern optimization applications and techniques in newly emerging areas spanning optimization, data science, machine intelligence, engineering, and computer sciences. It is essential course to solve real life problems as Traveling salesman problem (TSP) ... Vehicle routing problem (VRP) ...	3	6	https://drive.google.com/file/d/17d-L1lpPp0nkbp8rtb6bzKUgoKTlA6_U/view?usp=drive_link

		Financial markets. ... Manufacturing system. ... Mechanical engineering design. ... Data clustering and mining. ... Image processing. ... Neural networks			
Advanced Mathematical Statistics	**OC-III**	It has many uses in various sectors like psychology, sociology, probability, geology, weather forecasting and more. The main objective here is to obtain understanding from data so we regard it distinctively as Mathematical science.	5	3	https://drive.google.com/file/d/12Nk2Uh1w31F1coCCC_6tU2VvbwV8SXzf/view?usp=drive_link
Engineering Reliability	**DE-II**	Reliability engineering can be applied to many business functions, from design to maintenance. This type of engineering has been referred to as operations or activities that produce goods in the manufacturing world to minimize equipment downtime, lower maintenance costs, and avoid business operations interruption.	3	4	https://drive.google.com/file/d/1AASfJpTUAC687Bl-nnir8__u24h13w2d/view?usp=drive_link
Distributed Computing	**DE-II**	Distributed computing is the method of making multiple computers work together to solve a common problem. It makes a computer network appear as a powerful single computer that provides large-scale resources to deal with complex challenges.	3	2	
Image Processing	**DE-II**	It has applicability in various emerging areas Medical Image Retrieval. Image processing has been extensively used in medical research and has enabled more efficient and accurate treatment plans. Traffic Sensing Technologies. . Image Reconstruction. ... Face Detection.	3	3	
Deep learning	**DE-III**	Deep learning applications are used in industries from automated driving to medical devices as Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost. It is the key to voice control in consumer devices like phones, tablets, TVs, and hands-free speakers	3	2	https://drive.google.com/file/d/1JP-MDbzsg5M93WorZcdDAMihOdTFA11I/view?usp=drive_link
Software Testing	**DE-III**	Software Testers are responsible for the quality of software development and deployment. Areas of employability are : Junior Software Tester / QA Engineer, quality assurance analysts, Senior Software Tester / Senior QA Engineer Test Architect. QA Lead / Test Lead. ... Quality Lead.	3	3	
Natural Language Processing	**DE- III**	High demand for intelligent virtual assistants, catboats, and sentiment analysis tools is driving the growth of the Natural LanguageProcessing. NLP is used across the financial industry, cyber security, health care and agriculture as Farmers can use NLP tools to monitor crop growth and health by analyzing data from sensors, satellite images, and weather forecasts	3		

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
Advanced Mathematical Statistics	OC- III	Reliability engineering can be applied to many business functions, from design to maintenance. This type of engineering has been referred to as operations or activities that produce goods in the manufacturing world to minimize equipment downtime,	5	3	https://drive.google.com/file/d/12Nk2Uh1w31F1coCCC_6tU2VvbwV8SXzf/view?usp=drive_link

		lower maintenance costs, and avoid business operations interruption.			
Distributed Computing	**DE- II 250701**	Deep learning applications are used in industries from automated driving to medical devices as Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost. It is the key to voice control in consumer devices like phones, tablets, TVs, and hands-free speakers	3	2	https://drive.google.com/file/d/1AASfJpTUAC687Bl-nnir8__u24h13w2d/view?usp=drive_link
Image Processing		Software Testers are responsible for the quality of software development and deployment. Areas of employability are : Junior Software Tester / QA Engineer, quality assurance analysts, Senior Software Tester / Senior QA Engineer Test Architect. QA Lead / Test Lead. ... Quality Lead.	3	3	
Deep learning	**DE- III 250702**	Deep learning applications are used in industries from automated driving to medical devices as Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost. It is the key to voice control in consumer devices like phones, tablets, TVs, and hands-free speakers	3	2	https://drive.google.com/file/d/1JP-MDbzsg5M93WorZcdDAMihOdTFA11I/view?usp=drive_link
Software Testing		Software Testers are responsible for the quality of software development and deployment. Areas of employability are : Junior Software Tester / QA Engineer, quality assurance analysts, Senior Software Tester / Senior QA Engineer Test Architect. QA Lead / Test Lead. ... Quality Lead.	3	3	
Natural Language Processing		High demand for intelligent virtual assistants, catboats, and sentiment analysis tools is driving the growth of the Natural Language Processing. NLP is used across the financial industry, cyber security, health care and agriculture as Farmers can use NLP tools to monitor crop growth and health by analyzing data from sensors, satellite images, and weather forecasts	3		

Feedback on curriculum received from stakeholders: Analysis& ATR*

Stakeholder	Student	Faculty	Alumni	Employer
No. of responses	388	11		
Link of Analysis	https://drive.google.com/file/d/1xPO6lZSKXYEefDc1EY7jPVvDnrIIiiiN/view?usp=drive_link	https://drive.google.com/file/d/1WaajbH2fOShpTwjmN17-r5yRulyaSNM6/view?usp=drive_link	----	-----
ATR Link	https://drive.google.com/file/d/1Mlka9skfeUgdHS1O1upX5chdHMoRchaV/view?usp=drive_link		-----	----
Link showing Excel sheet of Google Form details of stakeholders	https://drive.google.com/file/d/1oLQPaGJfLXN6zPa3GDdbW_12Ow7aG5E4/view?usp=drive_link	https://drive.google.com/file/d/1zwEG_hlVpWm35sbJFGhXFY0SdyemlMFE/view?usp=drive_link	----	----

* *Separate page(s) for each of the above four points; Agenda point wise minutes to be appended with each point and a separate link to be given in the appropriate columnfor each point*

2. The BoS minutes along with the cover/summary page (under point number 1, above) must be uploaded on the departmental web page and link for the same must be shared with the office of the Dean Academics.

3.	Stakeholder feedback analysis must also contain an action taken report (ATR). The details/data of the stakeholder responded through GOOGLE form (such as Name, organization, mail id, phone no if available) must also be shared along with the feedback for the alumni/employer.
4.	The following must be uploaded on the departmental web page and link for the same must be shared with the office of the Dean Academics. (i) The Stakeholder feedback collected & analyzed to find the index out of five (ii) Action taken report (iii) Google form showing responses from alumni, employer, student, faculty etc.
5.	Minutes should have footer with department name, page number, month of meeting.
6.	Each page should be signed by all faculty, scanned and then submitted to the Dean Academics office.

BoS Agenda Items

Item 1	The BoS committee confirmed the minutes of previous BoS meeting held in the 14th December 2022. https://drive.google.com/file/d/1x538DvkpoOOvAW5W-vM24WlLykh1gGNo/view?usp=drive_link
Item 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 Electiveis to be offered in online mode with credit transfer)** *and one Open Category (OC) Course* ***for the batch admitted in 2020-21.*** https://drive.google.com/file/d/1HGs-OUDTDkCU69KVVU2XFjtC0Q0jifxa/view?usp=drive_link
Item 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 *https://drive.google.com/file/d/1AASfJpTUAC687Bl-nnir8__u24h13w2d/view?usp=drive_link*
Item 4	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****)* *https://drive.google.com/file/d/1JP-MDbzsq5M93WorZcdDAMihOdTFA11I/view?usp=drive_link*
Item 5	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 https://drive.google.com/file/d/12Nk2Uh1w31F1coCCC_6tU2VvbwV8SXzf/view?usp=drive_link
Item 6	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)*** *https://drive.google.com/file/d/125CIAreWuy5p1-SJ9RrCspF7v1Gl1BHn/view?usp=drive_link*
Item 7	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***

List of SWAYAM/NPTEL Courses for B. Tech. VII Sem.

Minor Specialization

S. No.	Subject Code	Subject name	Time Duration (Weeks)	Faculty Coordinator	Mentor Name and Affiliation
1		A Primer to Mathematical Optimization	12	*Dr. Minakshi Dhaiya*	*Prof. Debdas Ghosh from IIT (BHU), Varanasi*
2		Advanced Linear Algebra	12		*Prof. PremanandaBera from IIT Roorkee*
3		Advanced Probability Theory	12		*Prof. NiladriChatterjee from IIT Delhi*

students *(for the batch admitted in 2020-21)] and for*B.Tech. ***Vsemester*** *(for the batch admitted in 2021-22)]*

List of SWAYAM/NPTEL Courses for B. Tech. VII Sem.
Honors Specialization

S. No.	Subject Code	Subject name	Time Duration (Weeks)	Faculty Coordinator	Mentor Name and Affiliation
1		Getting Started with Competitive Programming	12	*Dr. Minakshi Dhaiya*	*Prof. NeeldharaMisra from IIT Gandhinagar*
2		Advanced Graph Theory	8		*Prof. Rajiv Misra from IIT Patna*
3		Computer Vision & Image Processing Fundamental and Applications	12		*Prof. M. K. Bhuyan from IIT Guwahati*

List of SWAYAM/NPTEL Courses for B. Tech. V Sem.	
Minor Programme	1. First Course on Partial Differential Equations 2. Introduction To Methods of Applied Mathematics 3. Matrix Analysis with Its Applications
Honors Programme	1. Artificial Intelligence Search Methods for Problem Solving 2. Big Data Computing 3. Deep Learning for Computer Vision

Item 8

To prepare and recommend the ***scheme structure of B.Tech. V Semester under*** the flexible curriculum (for the *Batch admitted in 2021-22)*
https://drive.google.com/file/d/1TCWWDQ8Lq1qOQk6QBwLdF_NNLZKbSXfB/view?usp=drive_link

Item 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.
https://drive.google.com/file/d/1FTOuaeYH4HI_leB66fi04IyJweq89jQH/view?usp=drive_link

Item 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)***.
https://drive.google.com/file/d/1fSwMGUFduYuFC_fl2GotYebXVmY_2VBV/view?usp=drive_link

Item 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. ***V Semester***

List of SWAYAM/NPTEL Courses for B. Tech. V Sem.	
Minor Programme	1. First Course on Partial Differential Equations 2. Introduction To Methods of Applied Mathematics 3. Matrix Analysis with Its Applications
Honors Programme	4. Artificial Intelligence Search Methods for Problem Solving 5. Big Data Computing 6. Deep Learning for Computer Vision

Item 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)**
https://drive.google.com/file/d/16Sb65VtQOLmrS8C_ZHByMFljUkdXp7tF/view?usp=drive_link

Item 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)***.
https://drive.google.com/file/d/1-lBdxKxg8yUFphveUDLUxOgHfsrnDQKT/view?usp=drive_link

Item 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***

List of NPTEL Courses for B. Tech. III Sem.	
Under Self- Learning	1. Computer Graphics 2. Computational Number Theory and Algebra 3. Computational Commutative Algebra

Item 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)** https://drive.google.com/file/d/14qIKurkXJ7vkNYsF_SCWandJ07DgjuA9/view?usp=drive_link
Item 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. https://drive.google.com/file/d/1Cllk4xxebTCps8H7hunBUhWjpr_-1xXf/view?usp=drive_link
Item 17	To review PO attainment of 2018-2022 batch, CO-PO mapping matrix with attainments and gap analysis (NA)
Item 18	To prepare and recommend the syllabi of Mandatory Audit Course: Universal Human Values & Professional Ethics (UHVPE). (at institute level) https://drive.google.com/file/d/1WpLFg11p9hNaStT27Xh6u6imWa4GaQmB/view?usp=drive_link
Item 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}** https://drive.google.com/file/d/12_AHar-qbvVF1ths0TKASfhGVKlUWOUV/view?usp=drive_link
Item 20	To review the Course Outcomes (COs) feedback of various courses, its analysis, and ATR (for July –Dec. 2022 semester) https://drive.google.com/file/d/1myTlmBvBL222rcwC707C7Z5lAJY7hPop/view?usp=drive_link
Item 21	To discuss and recommend the scheme structure & syllabi of PG Programme (M.E./M.Tech./MCA/MBA) along with their Course Outcomes (COs) (NA)
Item 22	To recommend the scheme structure and Syllabus of Ph.D. Course Work (specific to Doctoral Research Scholars, if any) https://drive.google.com/file/d/1VSxiG1OnzlUkv-7MMlDAK97emA6sU9jB/view?usp=drive_link
Item 23	Any other matter