



Indian Institute of Technology Indore

Minutes of the 39th meeting of the Senate held on 15 January 2024 (Monday) 2.00 p.m.
at Maitreyi Seminar Hall, IIT Indore.

Following members attended the meeting:

Chairperson

1 Prof. Suhas S. Joshi Director, IIT Indore

External experts

2 Prof. Himanshu Rai Director, IIM Indore
3 Dr. Shankar V. Nakhe Director, RRCAT
4 Prof. Ajay Kumar Jain Professor, Management Development Institute, Gurgaon

Deans

5 Prof. Vipul Singh Dean, Academic Affairs
6 Prof. Sandeep Chaudhary Dean, Administration
(present online)
7 Prof. Avinash Sonawane Dean, International Relation
8 Prof. Manish Kumar Goyal Dean of Infrastructure Development
9 Prof. I. A. Palani (present online) Dean, Research and Development
10 Prof. Abhishek Srivastava Dean, Faculty Affairs
11 Prof. Devendra L. Deshmukh Dean, Educational Outreach

Head of Departments

12 Dr. Priyansh Singh Acting HoD, Civil Engineering
13 Dr. Ranveer Singh HoD, Computer Science and Engineering
14 Prof. Vivek Kanhangad HoD, Electrical Engineering
15 Prof. Shanmugam Dhinakaran HoD, Mechanical Engineering
(present online)
16 Dr. Ajay Kumar Kushwaha HoD, Metallurgical Engineering and Materials Science
(present online)
17 Prof. Amit Kumar (present online) HoD, Biosciences and Biomedical Engineering
18 Prof. Abhirup Datta HoD, Astronomy, Astrophysics and Space Engineering
19 Prof. Niraj Kumar Shukla HoD, Mathematics
20 Prof. Preeti A. Bhobe HoD, Physics
21 Prof. Ruchi Sharma HoS, Humanities and Social Sciences



Professors

22	Prof. Abhirup Datta	Astronomy, Astrophysics and Space Engineering
23	Prof. Amit Kumar (present online)	Biosciences and Biomedical Engineering
24	Prof. Avinash Sonawane (present online)	Biosciences and Biomedical Engineering
25	Prof. Kiran Bala (present online)	Biosciences and Biomedical Engineering
26	Prof. Apurba Kumar Das (present online)	Chemistry
27	Prof. Manish Kumar Goyal	Civil Engineering
28	Prof. Sandeep Chaudhary (present online)	Civil Engineering
29	Prof. Abhishek Srivastava	Computer Science and Engineering
30	Prof. Narendra S. Choudhary	Computer Science and Engineering
31	Prof. Abhinav Kranti (present online)	Electrical Engineering
32	Prof. Amod C. Umarikar (present online)	Electrical Engineering
33	Prof. Prabhat Kumar Upadhyay (present online)	Electrical Engineering
34	Prof. Santosh Kumar Vishvakarma	Electrical Engineering
35	Prof. Vipul Singh	Electrical Engineering
36	Prof. Vivek Kanhangad	Electrical Engineering
37	Prof. Ruchi Sharma	Humanities and Social Sciences
38	Prof. Antony Vijesh Villavarayan	Mathematics
39	Prof. Niraj Kumar Shukla	Mathematics
40	Prof. Sk. Safique Ahmad	Mathematics
41	Prof. Swadesh Kumar Sahoo	Mathematics
42	Prof. Bhupesh Kumar Lad	Mechanical Engineering
43	Prof. Devendra L. Deshmukh	Mechanical Engineering
44	Prof. Dhinakaran Shanmugam (present online)	Mechanical Engineering
45	Prof. I. A. Palani (present online)	Mechanical Engineering
46	Prof. Satyajit Chatterjee	Mechanical Engineering
47	Prof. Parasharam M. Shirage (present online)	Metallurgical Engineering and Materials Science
48	Prof. Rupesh Shivaji Devan	Metallurgical Engineering and Materials Science
49	Prof. Santosh Sattappa Hosmani	Metallurgical Engineering and Materials Science
50	Prof. Ankhi Roy	Physics
51	Prof. Krushna R. Mavani	Physics
52	Prof. Pankaj Ramesh Sagdeo	Physics
53	Prof. Preeti Anand Bhobe	Physics
54	Prof. Raghunath Sahoo	Physics
55	Prof. Rajesh Kumar	Physics



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56	Prof. Sarika Jalan	Physics
57	Prof. Subhendu Rakshit	Physics
58	Prof. Sudeshna Chattopadhyay	Physics

Other Authorities

59	Dr. Sharad Gupta (present online)	Convener, Health Center Advisor Committee
60	Dr. Anand Petare	Workshop Superintendent, Central Workshop

Special Invitees

61	Dr. Omkar Game	Convener, DUGC of Physics
62	Dr. Manavendra Mahato	DUGC member of Physics
63	Dr. Suman Majumdar	Convener, DUGC of AASE
64	Mr. Rajesh Kumar	Assistant Librarian
65	Mr. Tapeshe Parihar	Section Officer, Academic Office

Secretary

66	Mr. S. P. Hota	Registrar, IIT Indore
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Leave of absence

1	Mr. B Anil Baliga	Ex Executive Vice President VE Commercial Vehicles Ltd.
2	Prof. Abhiram G. Ranade	Professor, Department of Computer Science and Engineering, IIT Bombay
3	Prof. Suman Mukhopadhyay	Dean, Alumni and Corporate Relations
4	Prof. Srivathsan Vasudevan	Dean, Student Affairs
5	Prof. Tushar Kanti Mukherjee	HoD, Chemistry
6	Dr. Jayaprakash Murugesan	Chief Warden
7	Prof. G. S. Murthy	Biosciences and Biomedical Engineering
8	Prof. Mirza Saqib Baig	Biosciences and Biomedical Engineering
9	Prof. Prashant Kodgire	Biosciences and Biomedical Engineering
10	Prof. Anjan Chakraborty	Chemistry
11	Prof. Biswarup Pathak	Chemistry
12	Prof. Chelvam Venkatesh	Chemistry
13	Prof. Mobin Shaikh	Chemistry
14	Prof. Rajneesh Misra	Chemistry
15	Prof. Sampak Samanta	Chemistry
16	Prof. Sanjay Kumar Singh	Chemistry
17	Prof. Satya Silendra Bulusu	Chemistry
18	Prof. Suman Mukhopadhyay	Chemistry
19	Prof. Tushar Kanti Mukherjee	Chemistry
20	Prof. Neelima Devarakonda Satyam	Civil Engineering
21	Prof. Anirban Sengupta	Computer Science and Engineering
22	Prof. Aruna Tiwari	Computer Science and Engineering



23	Prof. Kapil Ahuja	Computer Science and Engineering
24	Prof. Neminath Hubballi	Computer Science and Engineering
25	Prof. Mukesh Kumar	Electrical Engineering
26	Prof. Ram Bilas Pachori	Electrical Engineering
27	Prof. Shaibal Mukherjee	Electrical Engineering
28	Prof. Srivathsan Vasudevan	Electrical Engineering
29	Prof. Trapti Jain	Electrical Engineering
30	Prof. Vimal Bhatia	Electrical Engineering
31	Prof. Nirmala Menon	Humanities and Social Sciences
32	Prof. Pritee Sharma	Humanities and Social Sciences
33	Prof. Anand Parey	Mechanical Engineering
34	Prof. Kazi Sabiruddin	Mechanical Engineering
35	Prof. Neelesh Kumar Jain	Mechanical Engineering
36	Prof. Pavan Kumar Kankar	Mechanical Engineering
37	Prof. Ritunesh Kumar	Mechanical Engineering
38	Prof. Santosh Kumar Sahu	Mechanical Engineering
39	Prof. Somaditya Sen	Physics
40	General Secretary, Student Gymkhana	Ex-officio
41	Academic Secretary, Student Gymkhana	Ex-officio
42	Dr. Alestin Mawrie	DUGC member of Physics
43	Dr. Debajyoti Sarkar	DUGC member of Physics
44	Dr. Unmesh Khati	DUGC member of AASE
45	Dr. Narendra Nath Patra	DUGC member of AASE

ITEM 39.1: Welcome and Opening remarks by the Chairman of the Senate.

The Chairman, Senate welcomed all the members and special invitees to the meeting.

He informed that this meeting is mainly for approval of syllabi of courses for 2nd and 3rd year of B.Tech. Engineering Physics. And syllabi of courses for 2nd year of B.Tech. Space Science and Engineering.

He announced that the next Senate meetings will be held on January 25, 2024 to discuss the syllabi of courses for B.Tech. 2nd, 3rd, and 4th year of B.Tech. Electrical Engineering and B.Tech. Civil Engineering as per the revised UG curriculum w.r.t. the NEP guidelines.

ITEM 39.2: Confirmation of the minutes of the 38th meeting of Senate held on 19 December 2023.

The Senate confirmed the minutes of its 38th meeting held on 19 December 2023.



ITEM 39.3: Action Taken Report (ATR) on minutes of 38th meeting of Senate held on 19 December 2023.

The Senate noted the actions taken on the decisions of the 38th Meeting of Senate held on 19 December 2023.

ITEM 39.4: Syllabi of courses for B.Tech. 2nd and 3rd year of UG curriculum of "Engineering Physics" w.r.t. the NEP guidelines.

Head, Department of Physics presented the course structure and syllabus of courses for B.Tech. 2nd and 3rd of 'Engineering Physics'.

HoD Physics informed the Senate that some minor modifications were made in the course structure while finalizing the syllabi for the courses.

The HoD Physics update the committee that the core courses of the 2nd year of B.Tech. Engineering Physics and B.Tech. Space Science and Engineering are same.

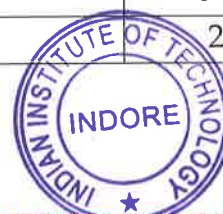
Revised course structure of B.Tech. Engineering Physics:

Semester-III		
Course code	Course Title	Contact hours (L-T-P-C)
ZZ 2XX	Course -I for Minor Program	X-X-X-3
MA 205	Complex Analysis	3-1-0-2 (4/2) (½ semester)
MA 207	Differential Equation-II	3-1-0-2 (4/2) (½ semester)
PH 203/ AA 203	Classical Mechanics	2-1-0-3
PH 205/ AA 205	Electronic Devices and Circuits - I	2-1-0-3
PH 207/ AA 207	Wave Phenomena and Optics	2-1-0-3
PH 209/ AA 209	Fundamental Concepts of Solid State Engineering	2-1-0-3
PH 251/ AA 251	Engineering Physics Lab - I	0-0-3-1.5
PH 255/ AA 255	Electronic Devices and Circuits Lab - I	0-0-3-1.5
PH 2XX	Department Elective - I	X-X-X-3
Total		22/ 25

Semester-IV		
Course code	Course Title	Contact hours (L-T-P-C)
ZZ 2XX	Course II for Minor Program	X-X-X-3
MA 204	Numerical Methods	2-0-2-3
PH 206/ AA 206	Electronic Devices and Circuits - II	2-1-0-3
PH 208/ AA 208	Electrodynamics	2-0-0-2
PH 210/ AA 210	Fundamentals of Quantum Mechanics	2-1-0-3
PH 212/ AA 212	Thermal Physics	2-1-0-3
PH 252/ AA 252	Scientific Computing Lab	0-0-2-1
PH 256/ AA 256	Electronic Devices and Circuits Lab - II	0-0-3-1.5
PH XXX	Department Elective -II	2-1-0-3
ZZ 2XX	Open Elective -I	2-1-0-3
Total		22.5/ 25.5

Semester-V		
Course code	Course Title	Contact hours (L-T-P-C)
ZZ 3XX	Course III Minor Program	X-X-X-3
PH 301	Nuclear Science and Engineering	2-1-0-3
PH 303	Quantum Mechanics	2-1-0-3
PH 305	Advanced Classical Mechanics	2-1-0 -1.5 (3/2) (1/2 semester)
PH 307	Topics in Mathematical Physics	2-1-0-1.5 (3/2) (1/2 semester)
PH 309	Simulation Methods and Analysis	2-0-2-3
PH 351	Engineering Physics Lab - II	0-0-3-1.5
PH 3XX	Department Elective -III	2-1-0-3
ZZ 3XX	Institute Open Elective -II	2-1-0-3
Total		19.5/ 22.5

Semester-VI		
Course code	Course Title	Contact hours (L-T-P-C)
ZZ 3XX	Course IV Minor Program	X-X-X-3
PH 302	Cooperative Phenomena in Solids	2-1-0-3
PH 304	Fundamentals of Statistical Mechanics	2-1-0-3
PH 306	Atomic and Molecular Spectroscopy	2-1-0-3
PH 398	UG Seminar	0-1-0-1
PH 352	Solid State Physics Lab	0-0-3-1.5
PH 356	Spectroscopy Lab	0-0-3-1.5
PH 3XX	Department Elective-IV	2-1-0-3

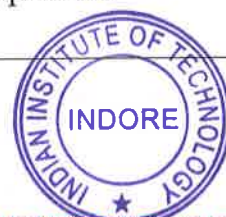


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PH 3XX	Department Elective-V	2-1-0-3
ZZ 3XX	Institute Open Elective -III	2-1-0-3
Total		22/ 25

The Senate discussed and approved the syllabus of following courses subject to the remarks as given against each course:

S. No.	Course code and title	Contact hours (L-T-P-C)	Remarks of the Senate
1	PH 203/ AA 203: Classical Mechanics	2-1-0-3	Approved.
2	PH 207/ AA 207: Wave Phenomena and Optics	2-1-0-3	Approved.
3	PH 205/ AA 205: Electronic Devices and Circuits - I	2-1-0-3	Approved.
4	PH 209/ AA 209: Fundamental Concepts of Solid State Engineering	2-1-0-3	Approved.
5	PH 251/ AA 251: Engineering Physics Lab - I	0-0-3-1.5	- List of experiments should be mentioned in bullet points. - Approved.
6	PH 255/ AA 255: Electronic Devices and Circuits Lab - I	0-0-3-1.5	Approved.
7	PH 211: Fundamentals of Vacuum Science and Technology	2-1-0-3	Approved.
8	PH 213: Detector Physics	1-1-2-3	Approved.
9	PH 210/ AA 210: Fundamentals of Quantum Mechanics	2-1-0-3	Approved.
10	PH 212/ AA 212: Thermal Physics	2-1-0-3	Approved.
11	PH 206/ AA 206: Electronic Devices and Circuits - II	2-1-0-3	- The title of module-4 should be "Signal conditioning, D-A and A-D Conversion" instead of "Data processing circuits and D-A and A-D Conversion." - Approved.
12	PH 208/ AA 208: Electrodynamics	2-0-0-2	Approved.
13	PH 256/ AA 256: Electronic Devices and Circuits Lab - II	0-0-3-1.5	Approved.
14	PH 252/ AA 252: Scientific Computing Lab	0-0-2-1	Approved.



15	PH 214: Classical Field Theory	2-1-0-3	• The module titles looks similar with the course "PH 305: Advanced Classical Mechanics". Module titles of either one course should be re-written. • Approved.
16	PH 216: Accelerator Physics	2-1-0-3	• Include one more textbook. • Approved.
17	PH 301: Nuclear Science and Engineering	2-1-0-3	• Module "Accelerators and Detectors" should be renamed. • Approved.
18	PH 303: Quantum Mechanics	2-1-0-3	Approved.
19	PH 305: Advanced Classical Mechanics	2-1-0-1.5 (1/2 sem.)	• The module titles looks similar with the course "PH 214: Classical Field Theory". Module titles of either one course should be re-written. • Approved.
20	PH 307: Topics in Mathematical Physics	2-1-0-1.5 (1/2 sem.)	Approved.
21	PH 309: Simulation Methods and Analysis	2-0-2-3	• Remove last module of the syllabus. • Approved.
22	PH 351: Engineering Physics Lab - II	0-0-3-1.5	Approved.
23	PH 311: Physics of Semiconductor Devices	3-0-0-3	• Book of "D. A. Neamen" should be listed as textbook. • Approved.
24	PH 313: Quantum Transport Theory and Simulations	2-1-0-3	Approved.
25	PH 315: Advanced Quantum Mechanics	2-1-0-3	Approved.
26	PH 317: Data Analysis in High Energy Physics	2-1-0-3	Approved.
27	PH 302: Cooperative Phenomena in Solids	2-1-0-3	Approved.



28	PH 304: Fundamentals of Statistical Mechanics	2-1-0-3	Approved.
29	PH 306: Atomic and Molecular Spectroscopy	2-1-0-3	• Include introduction of spectroscopy in the syllabus. • Write some content in the last module, "Fundamentals of electronic spectroscopy". • Approved.
30	PH 352: Solid State Physics Lab	0-0-3-1.5	Approved.
31	PH 356: Spectroscopy Lab	0-0-3-1.5	Approved.
32	PH 402: Principles and Applications of Optical Spectroscopy	2-1-0-3	• Cross-listing between 3 level and 6 level courses not allowed. • Syllabus approved to be offered as 4 level course.
33	PH 312: Solar Photovoltaics: Fundamentals, Technologies, and Applications	2-1-0-3	• Remove the word "Revision" from module-1. • Approved.
34	PH 314: Introduction to Quantum Field Theory	2-1-0-3	• Include some more bullet points in the syllabus. • Approved.
35	PH 316: Group Theory in Particle Physics	2-1-0-3	• Remove the words "Brief" and "Application" from syllabus. • Approved.
36	PH 318: Introduction to String Theory	2-1-0-3	Approved.
37	PH 320: Physics of the Early Universe and Dark Matter	2-1-0-3	Approved.
38	PH 308/ 408: Experimental and Theoretical Aspects of Heavy Ion Collisions	2-1-0-3	• Cross-list the course with 3 level and 4 level. • Approved.
39	PH 322: Introduction to Quantum Information and Computation	2-0-2-3	Approved.

In addition to the above remarks the Senate suggested the following common remarks:

1. Keep a maximum of five books as suggested books i.e. two books as Textbooks and three books as Reference Books.
2. More elective courses should be offered.



3. Cross-listing between 3 level and 6 level courses not allowed.

ITEM 39.5: Syllabi of courses for B.Tech. 2nd year of UG curriculum of "Space Science and Engineering" w.r.t. the NEP guidelines.

Head, Department of Astronomy, Astrophysics and Space Engineering presented the course structure and syllabus of courses for B.Tech. 2nd year of 'Space Science and Engineering'.

The core courses of 2nd year are common with B.Tech. Engineering Physics and were already discussed and approved by the Senate. Therefore, HoD-AASE presented **only departmental elective courses** of 2nd year.

In view of the similarity with B.Tech. Engineering Physics, the revision in the course structure will also be applicable for B.Tech. Space Science and Engineering.

Revised course structure of B.Tech. Space Science and Engineering:

Semester-III		
Course code	Course Title	Contact hours (L-T-P-C)
ZZ 2XX	Course -I for Minor Program	X-X-X-3
MA 205	Complex Analysis	3-1-0-2 (4/2) (½ semester)
MA 207	Differential Equation -II	3-1-0-2 (4/2) (½ semester)
AA 203/ PH 203	Classical Mechanics	2-1-0-3
AA 205/ PH 205	Electronic Devices and Circuits - I	2-1-0-3
AA 207/ PH 207	Wave Phenomena and Optics	2-1-0-3
AA 209/ PH 209	Fundamental Concepts of Solid State Engineering	2-1-0-3
AA 251/ PH 251	Engineering Physics Lab - I	0-0-3-1.5
AA 255/ PH 255	Electronic Devices and Circuits Lab - I	0-0-3-1.5
AA 2XX	Department Elective - I	X-X-X-3
Total		22/ 25

Semester-IV		
Course code	Course Title	Contact hours (L-T-P-C)
ZZ 2XX	Course II for Minor Program	X-X-X-3
MA 204	Numerical Methods	2-0-2-3
AA 206/ PH 206	Electronic Devices and Circuits - II	2-1-0-3
AA 208/ PH 208	Electrodynamics	2-0-0-2
AA 211/ PH 211	Fundamentals of Quantum Mechanics	2-1-0-3

AA 212/ PH 212	Thermal Physics	2-1-0-3
AA 252/ PH 252	Scientific Computing Lab	0-0-2-1
AA 256/ PH 256	Electronic Devices and Circuits Lab - II	0-0-3-1.5
AA 2XX	Department Elective -II	2-1-0-3
ZZ 2XX	Open Elective -I	2-1-0-3
Total		22.5/ 25.5

The Senate discussed and approved the following elective courses with remarks as given below:

S. No.	Course code and title	Contact hours (L-T-P-C)	Remarks of the Senate
1	AA 211: The Blue Planet: Introduction to Earth System Sciences	2-0-2-3	• Include practical and mathematical terms in the syllabus to make the course attractive. • Approved.
2	AA 214: Stellar and Planetary Science	2-1-0-3	• Include model analytical techniques in the course. • Approved.
3	AA 216: Flight mechanics and classical control	2-1-0-3	Approved.

In addition to the above remarks the Senate suggested the following common remarks:

1. Keep maximum five books as suggested books i.e. two books as Textbooks and three books as Reference Books.

ITEM 39.6: Any other item with the permission of the Chair.

Nil



(Professor Suhas S. Joshi)
Director and Chairperson, Senate




(Mr. S. P. Hota)

Registrar and Secretary, Senate