

Department of Aerospace Engineering, MIT Campus, Anna University
Chromepet, Chennai – 600 044

Syllabus Sub-Committee Minutes
BE(Aeronautical Engineering)

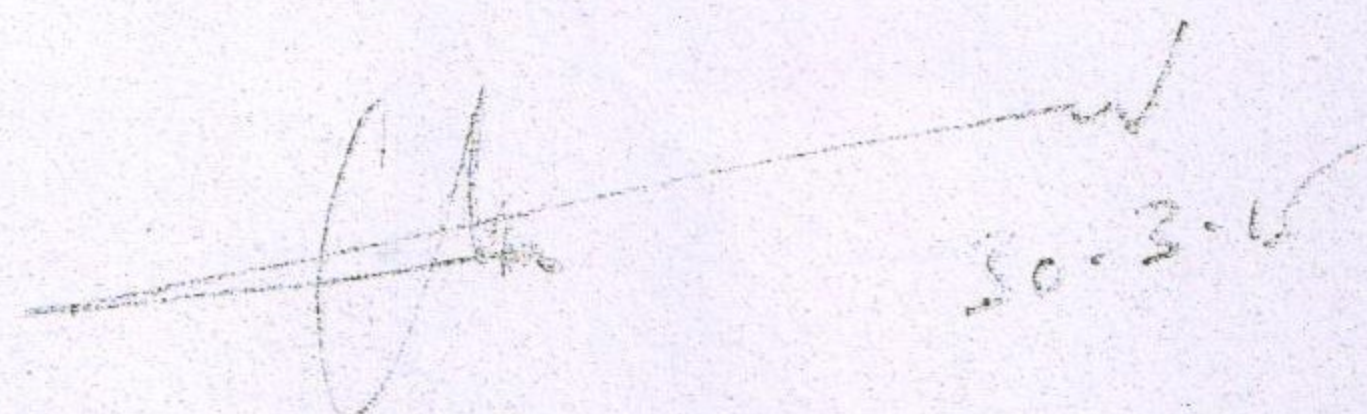
The syllabus sub- committee meeting for B.E (Aeronautical Engineering) was held on 30.03.2015 at 10 AM in Conference Hall, Department of Aerospace Engineering, M.I.T, Chrompet, Chennai – 44.

The following members were present in the meeting

1. Dr.B.T.N.Sridhar, Professor & Head, Dept. of Aerospace Engineering, MIT Campus.
2. Dr.K.M.Parammasivam, Professor, Dept. of Aerospace Engineering, MIT Campus.
3. Dr. V.Prabhakaran, Scientist G, ADE, DRDO, Bengaluru
4. Dr.K.Jayaraman, Professor (retired) and alumnus of Dept. of Aerospace Engineering, MIT Campus.
5. Dr.P.Manivannan, Professor, Dept., of Aerospace Engineering, Hindustan University.
6. Dr.S.Thanigaiarasu, Associate Professor, Dept. of Aerospace Engineering, MIT Campus.
7. Dr.V.Arumugam, Associate Professor, Dept. of Aerospace Engineering, MIT Campus.
8. Dr.C.Senthil Kumar, Assistant Professor(SG), Dept. of Aerospace Engineering, MIT Campus.
9. Ms.S.Fiona, UG final year student, Dept. of Aerospace Engineering, MIT Campus.
10. Mr.M.Nilavazhagan, UG final year student, Dept. of Aerospace Engineering, MIT Campus.

The Head of the Department welcomed all the CBCS-syllabus sub-committee members and briefed about the CBCS (Choice Based Credit System) which is going to be implemented from the Academic year 2015 at Anna University, Chennai. The tentative curriculum and syllabus for B.E (Aeronautical Engineering) framed by the faculty of the Department was presented to the committee. The subcommittee had gone through the same and the following points were discussed in the meeting.

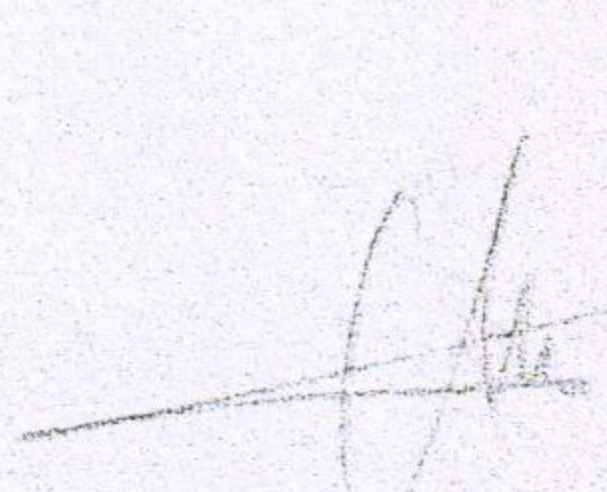
1. **Solid Mechanics/III semester-** Suggestions were made to replace few topics in Unit-V to Unit-IV
2. **Solid Mechanics/III semester-** suggestions were made to rename Unit V Analysis of stress and strain as Transformation of stress and strain.


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3. **Principles of Flight/III semester**-Suggestions were made to change the title and interchange the units as follows
 - Unit-II** Aircraft configuration and its controls
 - Unit-III** Basics of Aerodynamics
 - Unit-IV** Basics of Propulsion
 - Unit-V** Basics of Aircraft structures and its materials.
4. The subject titled **Machine design** in IV semester may be replaced as Kinematics and Dynamics of Machines.
5. **Aircraft Structures-I/ IV semester**- Suggestions were made to change the Unit-V as Methods of Joints by replacing Aircraft Materials
6. The committee members suggested revising the syllabus for **Propulsion-I** and **Propulsion-II** completely.
7. Suggestions were made to replace Numerical Heat Transfer in VII semester as Heat Transfer
8. Suggestions were made to include the following subjects as professional electives.
 1. Numerical Heat Transfer
 2. Aerospace Materials
 3. Helicopter Aerodynamics.
9. The title of the laboratory course "Flying Tryng" in 8th semester was renamed as "Experiments in Flight Laboratory".
10. It was suggested to arrange the list of professional courses and electives in the grouping of subjects as per the semester wise.

As per the recommendations and suggestions of the CBCS-Syllabus sub-committee, the required modifications were incorporated in the curriculum and syllabus and was revised.

The summary of curriculum and distribution of various courses for BE(Aeronautical Engineering) programme as recommended by subcommittee is as below:

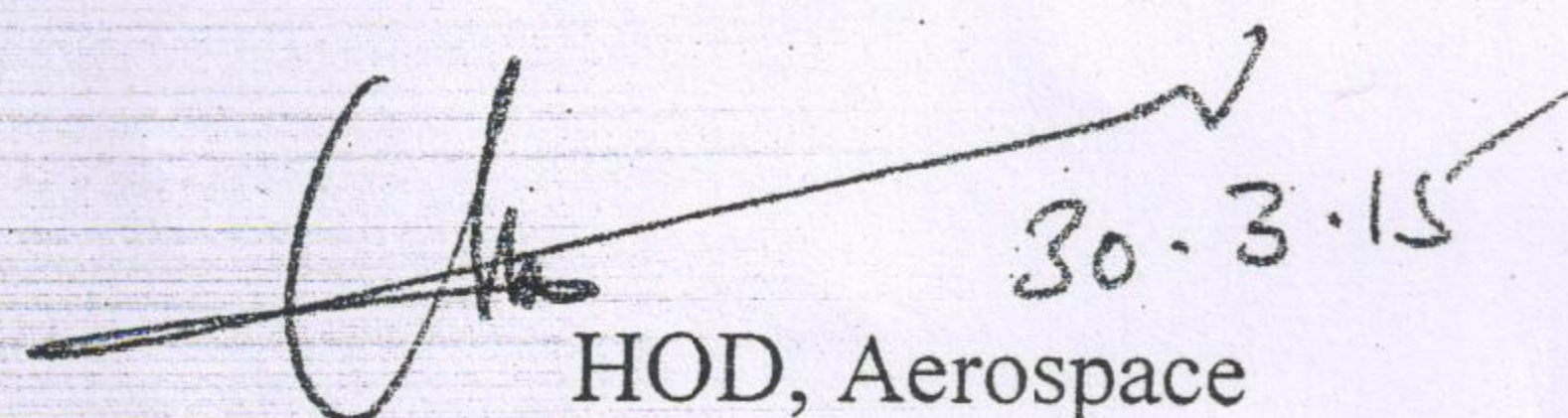
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S.No	Subject Area	Credits per Semester								Credits Total
		I	II	III	IV	V	VI	VII	VIII	
1	Humanities & Social Sciences	4	4	-	-	-	3	-	-	11
2	Basic Sciences	12	7	4	4	-	-	-	-	27
3	Engineering Sciences	6	13	16	-	-	-	-	-	35
4	Professional Core	-	-	3	19	16	10	12	-	60
5	Professional Elective	-	-	-	-	6	6	3	3	18
6	Open Elective	-	-	-	-	-	-	3	3	6
7	Employment Enhancement Courses	-	-	2	-	-	4	4	12	22
	Total	22	24	23	23	22	23	22	18	177
8	Non-Credit/Mandatory									

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S.No.	Group Name	Total Credits for Group (177)	Percentage %	Percentage % Range as per AICTE Norms
1	Humanities and Social Sciences (HS)	11	6	5-10
2	Basic Sciences (BS)	27	15	15-20
3	Engineering Sciences (ES)	35	20	15-20
4	Professional Core (PC)	60	34	30-40
5	Professional Electives (PE)	18	10	10-15
6	Open Electives (OE)	6	3	5-10
7	Employability Enhancement Courses (EEC)	22	12	10-15

The meeting came to an end with the Head of Department thanking all the subcommittee members.


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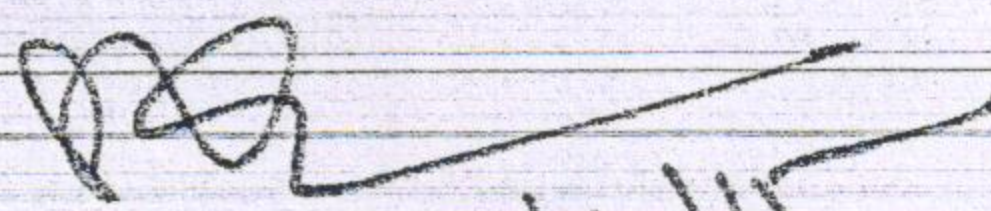
Copy to:

All Syllabus subcommittee members

Director (Academic courses), Anna University, Chennai

Chairman, Faculty of Mechanical Engineering, Anna University

Professor & Head
DEPT. OF AEROSPACE ENGG.
M.I.T. CAMPUS, CHROMEPET,
CHENNAI - 600 044.

Forwarded

27/4/15

L. KARUNAMOORTHY, Ph.D.
Chairman
Faculty of Mechanical Engineering
Anna University, Chennai-600 025.

Department of Aerospace Engineering, MIT Campus, Anna University
Chromepet, Chennai – 600 044

Syllabus Sub-Committee Minutes

ME(Aeronautical Engineering) & ME (Aerospace Technology)

The syllabus sub- committee meeting for M.E (Aeronautical Engineering) and M.E (Aerospace Technology) were held on 31.03.2015 at 2 PM at Conference Hall, Department of Aerospace Engineering, M.I.T, Chrompet, Chennai – 44.

The following members were present;

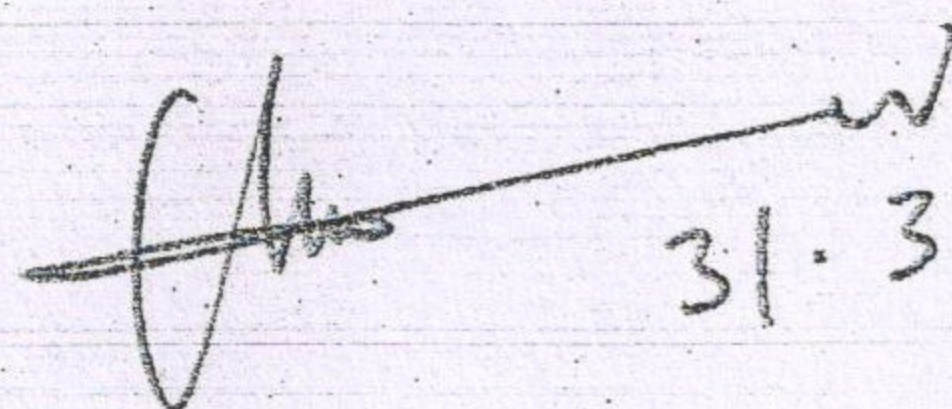
1. Dr.B.T.N.Sridhar, Prof & Head, Aerospace Engg, M.I.T
2. Dr.K.M.Parammasivam, Professor, Aerospace Engg, M.I.T
3. Dr.S.Thanigaiarasu, Assoc Prof, Aerospace Engg, M.I.T
4. Dr.V.Arumugam, Assoc Prof, Aerospace Engg, M.I.T
5. Dr.K.Senthilkumar, Assoc Prof, Aerospace Engg, M.I.T
6. Mr.D.Saji, Scientist, NAL, Bangalore
7. Dr.V.Raghavan , Assoc Prof, Mechanical Engg, I.I.T Madras
8. Dr.Dharmahinder Singh Chand, Prof & Head, Aero Engg, TEC.
9. Dr.R.Dhanaraj, Alumnus of the programme
10. Dr.A.Joseph Stanley, Alumnus of the programme
11. Ms. Christal Jency, Student Representative
12. Ms. Dhivya Harshvarthini, Student Representative

Dr.B.T.N.Sridhar, Prof & Head, Department of Aerospace Engineering welcomed all the members and briefed them about the efforts being taken by Anna University to implement Choice Based Credit System (CBCS) from the academic year 2015 onwards.

The revised M.E(Aeronautical Engineering) and M.E (Aerospace Technology) Curriculum and Syllabi as per CBCS guide lines were presented by head of the department to the members

The following recommendations were made;

1. Committee decided to have common curriculum for first semester for both ME(Aeronautical Engineering) & ME(Aerospace Technology) except one course. In the first semester, Theory of Elasticity is offered to ME(Aeronautical Engineering) and Computational Heat Transfer is offered to ME(Aerospace Technology).


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2. As per the CBCS curriculum under Regulations 2015, M.E (Aerospace Technology) program will continue with only Launch Vehicle Technology stream as per the new eligibility criteria for admission to this program(self-supporting).
3. It was decided to merge Aerodynamics and Propulsion related laboratory experiments to be offered as Aerodynamics- Propulsion Laboratory course.
4. New Elective courses were added, the list is given below;

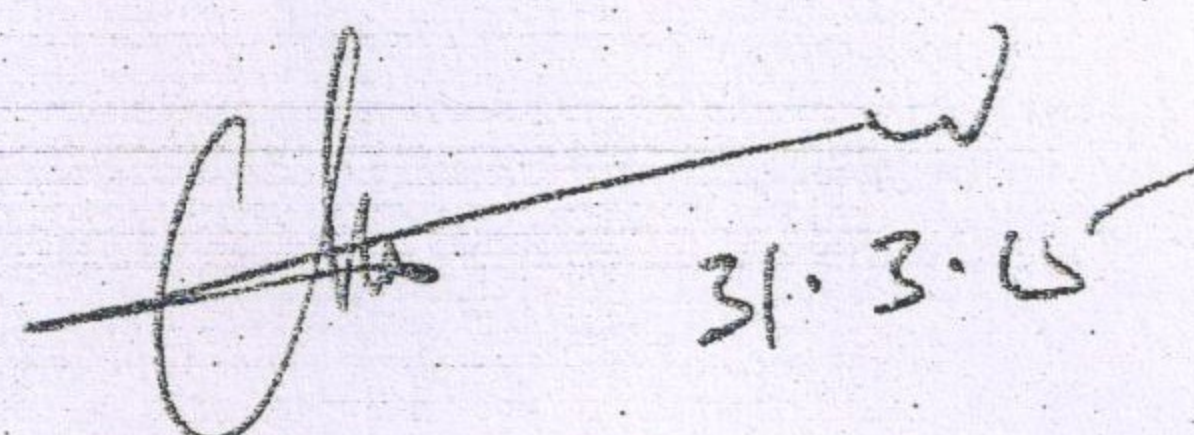
For M.E (Aeronautical Engineering)

- Missile Aerodynamics
- Transonic Aerodynamics
- Advanced computational fluid dynamics and heat transfer
- Non Destructive Testing and Evaluation
- Wind Turbine Engineering
- Design of Turbo-machines

For M.E (Aerspace Technology)

- Space Propulsion systems
- Orbital Mechanics and space flight
- Spacecraft attitude dynamics and control
- Combustion in jet and Rocket Engines
- High enthalpy gas dynamics
- Propellant Technology
- Cryogenic Technology

5. The syllabi of the above courses were reviewed and the required changes in the syllabi of the courses Wind Turbine Engineering and Missile Aerodynamics were incorporated.
6. Flight Dynamics was renamed as Airplane Performance, Stability & Control with necessary modifications in the syllabus.
7. Additional reference books suggested by the members were added to the courses like Space Propulsion systems, Missile Aerodynamics and High Enthalpy Gas Dynamics.
8. It was decided to shift one Professional Elective called 'Spacecraft Attitude Dynamics and Control' from the programme M.E (Aeronautical Engineering) to M.E (Aerospace Technology) in the proposed curriculum as the committee felt that the course was more relevant to ME(Aerospace Technology) than to ME(Aeronautical Engineering).


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9. The following courses were identified as common courses, they are listed below;

SI No	Course Name	Aeronautical Engineering	Aerospace Technology
1	Advanced Mathematical Methods	FOUNDATION COURSE	
2	Aerospace Propulsion	FOUNDATION COURSE	
3	Aerospace Structures	FOUNDATION COURSE	
4	Flight Vehicle Aerodynamics	FOUNDATION COURSE	
5	Rocketry and space mechanics	PC	PC
6	Computational Heat Transfer	PE	PC
7	Hypersonic Aerodynamics	PE	PC
8	CFD for Aerospace Applications	PC	PE
9	Composite materials and structures	PC	PE
10	Combustion in jet and Rocket Engines	PROFESSIONAL ELECTIVE(PE)	
11	High Speed Jet Flows	PROFESSIONAL ELECTIVE(PE)	
12	Aerospace Structures laboratory	PROFESSIONAL CORE(PC)	
13	Aerodynamics- Propulsion Laboratory	PROFESSIONAL CORE(PC)	

10. As per the above recommendations of the committee, the curriculum and syllabi for M.E (Aeronautical Engineering) and M.E (Aerospace Technology) have been revised.

11. The summary of curriculum and distribution of various courses for ME(Aeronautical Engineering) programme as recommended by subcommittee is as below:

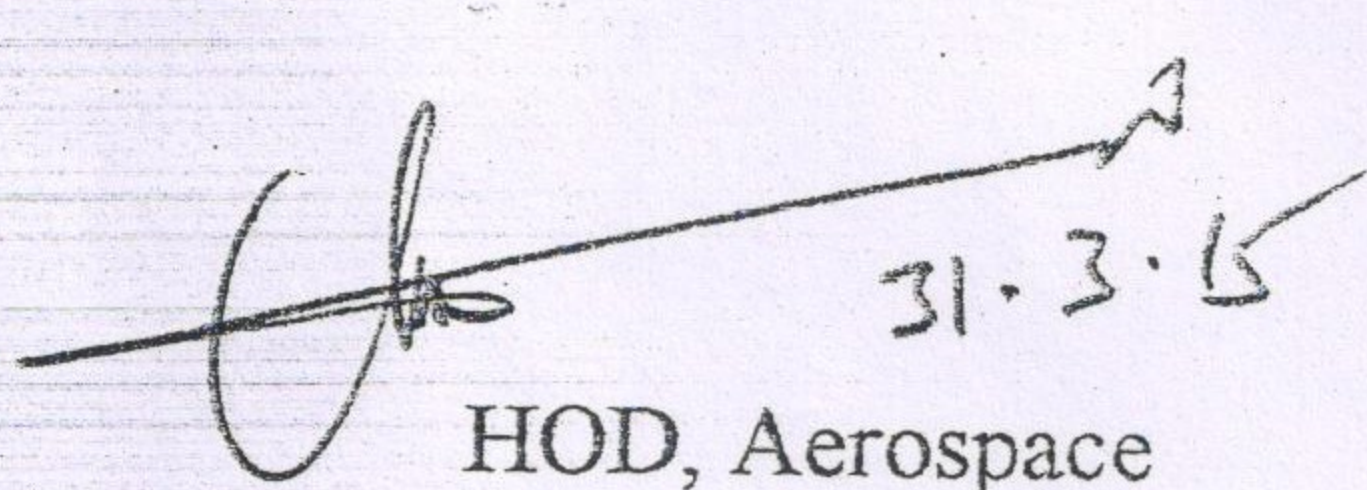
S.No	Subject Area	Credits per Semester				Credits Total
		I	II	III	IV	
1	Foundation Course	16	0	0	0	16
2	Professional Course	8	20	0	0	28
3	Professional elective	0	3	9	0	12
4	Employment Enhancement Course	0	0	8	12	20
	Total	24	23	17	12	76

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12. The summary of curriculum and distribution of various courses for ME(Aerospace Technology) programme as recommended by subcommittee is as below:

S.No	Subject Area	Credits per Semester				Credits Total
		I	II	III	IV	
1	Foundation Course	16	0	0	0	16
2	Professional Course	8	17	0	0	25
3	Professional Elective	0	3	9	0	12
4	Employment Enhancement Course	0	0	8	12	20
	Total	24	20	17	12	73

The meeting came to an end with the Head of Department thanking all the subcommittee members.

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Copy to:

All Syllabus subcommittee members

Director (Academic courses), Anna University, Chennai

Chairman, Faculty of Mechanical Engineering, Anna University

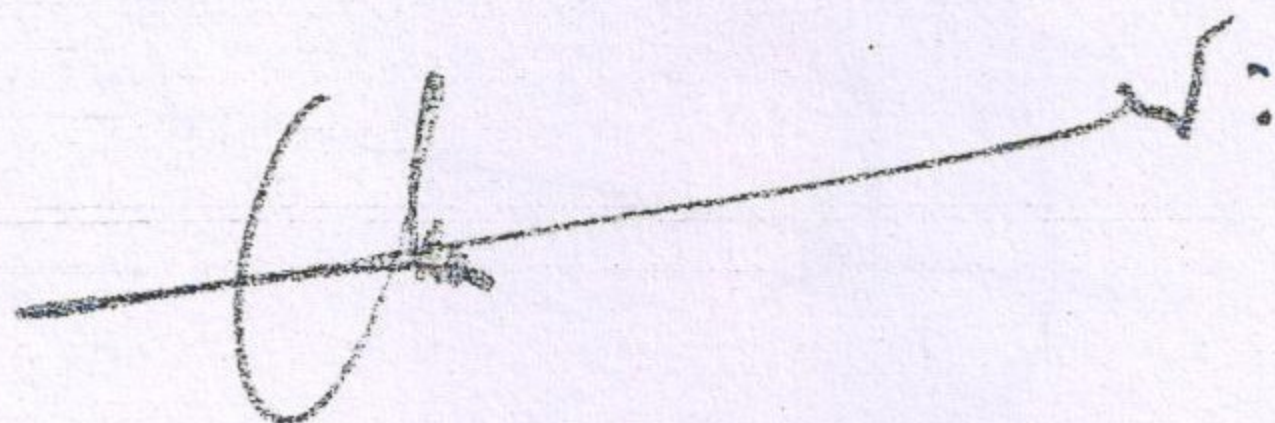
Department of Aerospace Engineering, MIT Campus, Anna University
Chromepet, Chennai – 600 044

Syllabus Sub-Committee Minutes
ME(Avionics)

The syllabus sub- committee meeting for M.E (Avionics) was held on 31.03.2015 at 9 AM at Conference Hall, Department of Aerospace Engineering, M.I.T, Chrompet, Chennai – 44.

The following syllabus subcommittee members were present;

- 1) Dr.Vaidhehi
Chairman, Faculty of Information and Communication Engg
Anna University
- 2) Dr.B.T.N Sridhar, HOD
Department of Aerospace Engineering
MIT,Chennai.
- 3) Dr.K.Senthil Kumar
Coordinator
Department of Aerospace Engineering
MIT,Chennai.
- 4) T.R.Jayashree, Ph,D Scholar, IIT Madras
Alumnus of PG program
Department of Electrical Engineering
IIT Madras
- 5) Mr.Jackson
Assistant Professor
Department of Aeronautical Engineering
Rajalakshmi Engineering College, Chennai
- 6) Mr. A.P.Parthiban
2nd year M.E Avionics
Student Representative
MIT Chennai

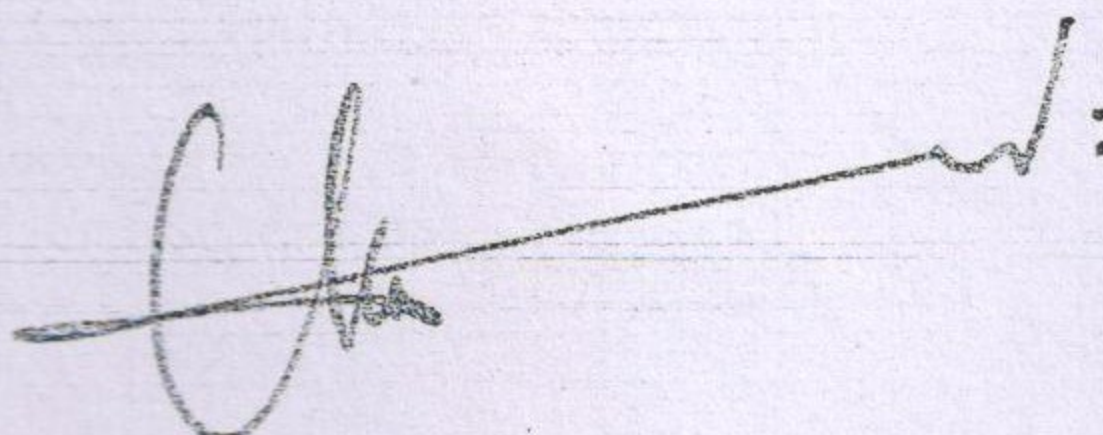


Dr.B.T.N Sridhar, Head of the Department of Aerospace Engineering formally welcomed all the committee members for the meeting. He informed the members about the efforts being made by the university to introduce choice based credit system (CBCS) for all the programmes from the academic year 2015 under Regulations 2015.

He also presented the curriculum and syllabus of M.E Avionics programme in CBCS format to the committee members.

The following recommendations were made by the committee:

- 1) Ms.T.R.Jayashree suggested that mathematics syllabus be changed reflecting the requirements of Avionics programme.
- 2) Ms. Jayashree also suggested to introduce a new subject Machine Vision in new curriculum. However other subcommittee members felt that the syllabus in the existing subject of the curriculum, Image Processing already covers a large portion of the subject Machine vision and hence it need not be introduced as a new subject.
- 3) Mr.Parthiban and Mr.Jackson also suggested that Mathematic syllabus be modified reflecting the requirements of M.E. Avionics programme.
- 4) Dr. Vaidhehi suggested that Electro optic system be renamed as Electro Optic Systems for Avionics Engineers and System Modeling and Simulation be renamed as System Modeling and Simulation for Avionics Engineers.
- 5) Dr.Vaidhehi also suggested that Real Time Embedded System syllabus must be updated as per current scenario of the frontiers of latest advancements in avionics.
- 6) Dr.K.Senthil Kumar informed the members that new experiments related to navigation and flight control systems were designed and added to both Avionics Integration Laboratory and Automatic Flight Control Laboratory.
- 7) The committee members discussed various suggestion given by the syllabus subcommittee member Mr.Bhaskar, Scientist, RCI DRDO, Hyderabad who could not be present for the meeting. The following suggestions were made in the meeting
 - i) The member suggested that the inclusion of cooled and uncooled detectors and Joules Thompson expansion method in the Unit III of Electro Optic System. Ms.T.R.Jayashree suggests that topics are already incorporated with the existing syllabus.



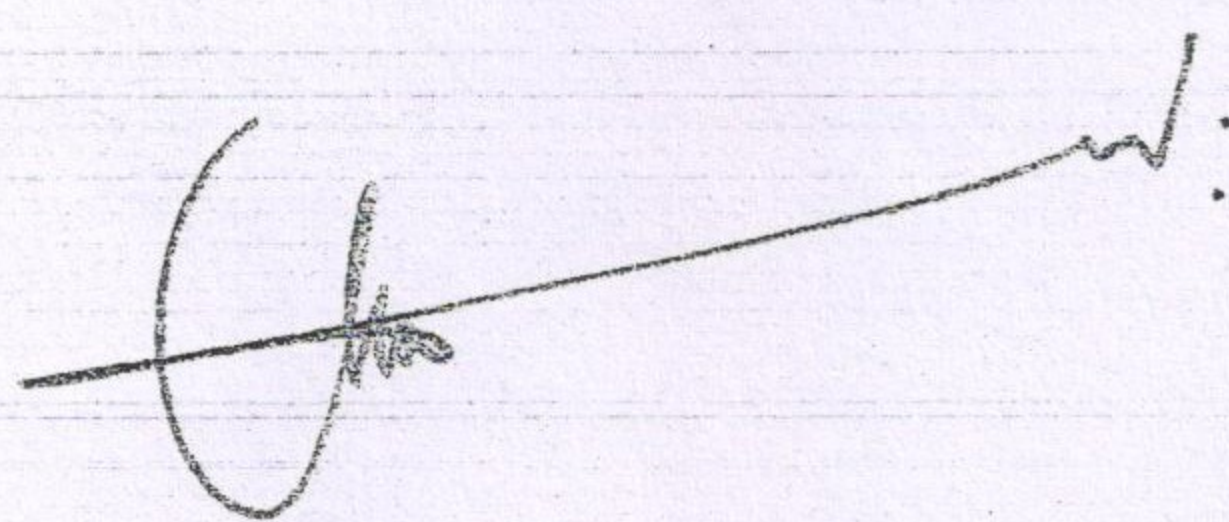
ii) The reviewer also suggested that Inclusion of DO178 B and DSP and FPGA based software validation and certification process in Unit V of Digital Avionics, Dr.K.Senthil Kumar and Mr.Parthian told, the existing syllabus already have the suggested topic.

iii) The reviewer also suggested to include Gravitational and relativistic time dilation effects and clock time corrections for GPS satellite in Unit V of Navigation systems. Ms.T.R.Jayashree and Mr.Jackson explains that already covered in the Introduction of GPS part in Unit V.

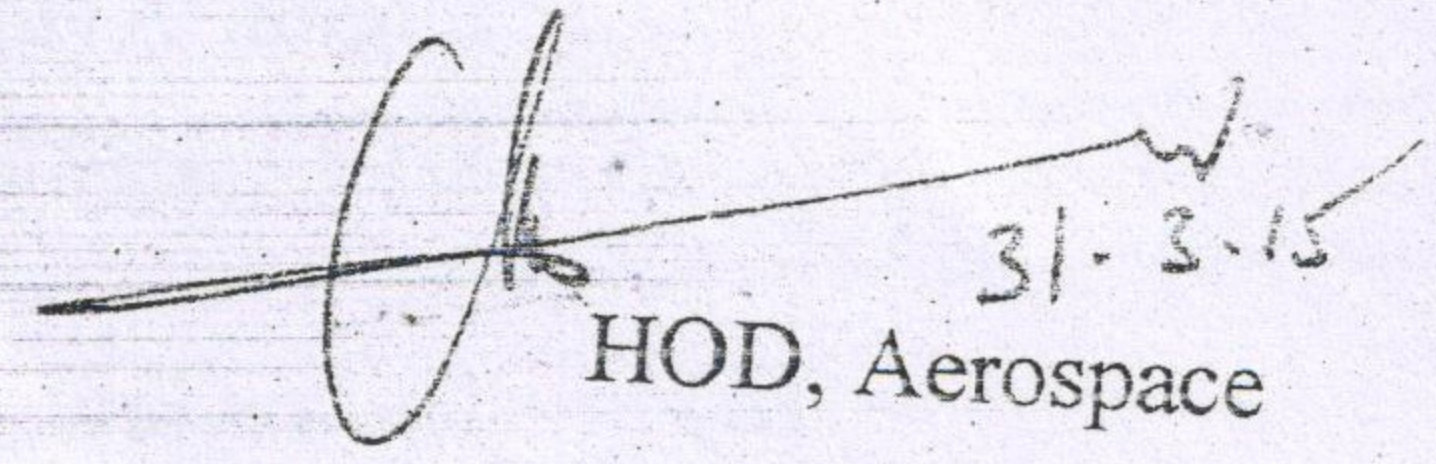
8. The subcommittee members went through the entire curriculum and appreciated the department staff for designing good curriculum under CBCS for ME (Avionics) programme. As per the recommendations of the committee, the curriculum & syllabus for M.E Avionics has been revised

9. The summary of curriculum and distribution of various courses for ME(Aerospace Technology) programme as recommended by subcommittee is as below:

S.No	Subject Area	Credits per Semester				Credits Total
		I	II	III	IV	
1	Foundation Course	13	3	0	0	16
2	Professional Course	5	11	6	0	22
3	Professional Elective	0	6	3	0	9
4	Employment Enhancement Course	3	0	6	12	21
	Total	21	20	15	12	68



The meeting came to an end with the Head of Department thanking all the subcommittee members.


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All Syllabus subcommittee members

Director (Academic courses), Anna University, Chennai

Chairman, Faculty of Information and communication

Engineering, Anna University

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Dr. V. VAIDEHI
Chairman
Faculty of Information &
Communication Engineering
Anna University, Chennai-600 025.