## Nitte Meenakshi Institute of Technology, Bangalore Department of Aeronautical Engineering

New Courses Introduced from the department during last five years

Name of the Course	Course Code	Name of the Programme	Weather this course is a new course introduced duriing the last five years (Yes/No)	Year of introduction
WIND TUNNEL TECHNIQUES	14AEO661	B E Aeronautical Engineering	YES	2015-16
INTRODUCTION TO VIBRATION AND AEROELASTICITY	14AE54	B E Aeronautical Engineering	YES	2015-16
AIRCRAFT MATERIALS	14AEE561	B E Aeronautical Engineering	YES	2015-16
INTRODUCTION TO HELICOPTER AERODYNAMICS	14AEE564	B E Aeronautical Engineering	YES	2015-16
HYDRAULICS AND PNEUMATICS	14AEE653	B E Aeronautical Engineering	YES	2015-16
FATIGUE AND FRACTURE MECHANICS	14AEE654	B E Aeronautical Engineering	YES	2015-16
	14AEO662	B E Aeronautical Engineering	YES	2015-16
AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL	14AEO663	B E Aeronautical Engineering	YES	2015-16
AIRWORTHINESS AND CERTIFICATION	14AEO665	B E Aeronautical Engineering	YES	2015-16
ELEMENTS OF ROCKET PROPULSION	14AEE751	B E Aeronautical Engineering	YES	2015-16
INTRODUCTION TO HEAT AND MASS TRANSFER	14AEE753	B E Aeronautical Engineering	YES	2015-16
THEORY OF PLATES AND SHELLS	14AEO761	B E Aeronautical Engineering	YES	2015-16
INTRODUCTION TO AIRCRAFT AND ITS SYSTEMS	14AEO763	B E Aeronautical Engineering	YES	2015-16
HELICOPTER THEORY	14AE81	B E Aeronautical Engineering	YES	2015-16
INTERNSHIP/SELF STUDY/MINOR PROJECT	14AE833	B E Aeronautical Engineering	YES	2015-16
INTRODUCTION TO BOUNDARY LAYER THEORY INDUSTRIAL AERODYNAMICS	14AEE835	B E Aeronautical Engineering	YES	2015-16

Dr. P. K. Dash
Professor & Head,
Department of Aeronautical Engineering
Nitte Meenakshi Institute of Technology,
Bangalore - 560 064.

(An Autonomous Institution under Visvesvaraya Technology Univeersity)

## **Department of Aeronautical Engineering**

Board of Studies (AeronauticalEngineering)

Held on 20 July 2013 at 10.00h

In the office of HoD Aeronautical Engineering, NMIT

## Agenda

- 1. Approval of syllabus for III and V semester of Aeronautical Engineering.
- 2. Approval of Revision made to syllabus of IV and VI semesters of Aeronautical Engineering.
- 3. Approval of Panel of BOE with external examiners.
- 4. Any other with the permission of chairman

## **BOS PANEL FOR THE ACADEMIC YEAR 2013-14:**

## **EXTERNAL MEMBERS:**

SI No	Name	Designation
1	Dr. J. NAGABHUSHANAM	Professor (Retd).
		Department of Aeronautical
		Engineering.
		IISC, Bangalore.
2	WgCdr (Retd) M P BENJAMIN	Additional Manager,
2008		Engine Overhaul Division, HAL,
		Bangalore.

## INTERNAL MEMBERS:

SI No	Name	Designation
1	AirrCmde (Retd) R Jayakumar	Prof. and HOD (Aeronautical Engineering)
2	Mahendra M A	Lecturer (Aeronautical Engineering)
3	Santhosh N	Lecturer (Aeronautical Engineering)

All internal and external members were present for meeting.

## Minutes of Board of studies meeting held on 20/07/2013 at 10.30h

- The board of studies recommended the syllabi of III and V semesters of Aeronautical Engineering for approval by Academic council from the academic year 2013-14.
- 2. The board of studies recommended the revised syllabi of IV and VI semesters of Aeronautical engineering for approval by Academic council from the academic year 2013-14.
- 3. The BoS approved the proposed panel of Board of examiners.
- 4. The members of board of studies had discussions on the syllabi and gave valuable suggestions.
- 5. The board of studies resolved to consider these suggestions given by members for consideration during further revision of syllabus.

Air Cmde R JAYAKUMAR,

Chairman, BoS

Department of Aeronautical

Engineering

SANTHOSH N

Member secretary, BoS

then N

Department of

Aeronautical Engineering

Copy To: Principal, NMIT

Dean ( Academic), NMIT

(An Autonomous Institution under Visvesvaraya Technology Univeersity)

## **Department of Aeronautical Engineering**

Board of Studies (AeronauticalEngineering)

Held on 20 July 2013 at 10.00h

In the office of HoD Aeronautical Engineering, NMIT

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- 4. Any other with the permission of chairman

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SI No	Name	Designation
1	Dr. J. NAGABHUSHANAM	Professor (Retd).
		Department of Aeronautical
		Engineering.
		IISC, Bangalore.
2	WgCdr (Retd) M P BENJAMIN	Additional Manager,
		Engine Overhaul Division, HAL,
		Bangalore.

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1	AirrCmde (Retd) R Jayakumar	Prof. and HOD
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Air Cmde R JAYAKUMAR,

Chairman, BoS

Department of Aeronautical

Engineering

SANTHOSH N

Member secretary, BoS

Department of

Aeronautical Engineering

Copy To: Principal, NMIT

Dean ( Academic), NMIT

## NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY, BANGALORE

## CHANGES IN SCHEME AND SYLLABI EFFECTIVE FROM 2013-14

## **AERONAUTICAL ENGINEERING DEPARTMENT**

The following changes are proposed to be made to existing scheme and syllabus for the BE Programme of Aeronautical Engineering from the academic year 2013-14

## Semester 3

- 1.As the load on the Material Testing Lab has increase due to the increased intake in Mechanical Engg Dept, it is proposed to shift Lab from 3 sem to 4 semester. In its place, **Metrology and Measurements lab** is proposed in 3 semester without any change in the existing syllabus or credits. The new subject code for **Metrology and Measurements lab is 11AEL37**.
- 2. As Metrology and Measurement Lab is proposed to be introduced in 3 semester, the corresponding theory subject needs to be taught in 3 semester. Hence, **Engineering Metrology and Measurement (11AE36)** is proposed to be introduced in 3 semester without any change in the syllabus or credits.
- 3.As the existing syllabus did not have any aeronautical related subject in the third semester hence, it is proposed to include **Element of Aeronautics (11AE32)** with out any change in the existing syllabus or credits.
- 4.In order accommodate the two new subject introduced in 3 semester, the subjects **Material** Science and metallurgy and Computer aided Machine Drawing are moved to the 4 semester and the new subject codes are 11AE45 and 11AE46 respectively.
- 5. No other change is proposed in the scheme & syllabus of 3 semester.

## **Semester 4**

- 6. The existing syllabus was found to be deficient of aircraft related subjects. Hence, it is proposed to include three new subjects in the programme as core subjects and one more subject as an elective subject. To accommodate these addition subject and one more subject as an elective subject. In order to accommodate these additional subjects, some subjects were modified. The specific details are given in succeeding paragraphs.
- 7. The existing subject Theory of Machine 2 were merged as **Theory of Machine (11AE43)** with 4 credits. The details of merging are separately annexed.
- 8. The existing subject **Fluid Mechanics** (11AE44) is modified and its credits reduce from 4 to 3. The details of modification are separately annexed.
- 9. Similarly, the existing subject Material Science & Metallurgy (11AE45) is modified and its credit reduced from 4 to 3. The details of modification are separately annexed.
- 10. Similarly, the existing subject Computer Aided Machine Drawing (11AE46) is modified and its credits reduced from 4 to 3. The details of modification are separately annexed.

11. In the subject, **Applied Thermodynamics** (11AE42) the portions relating to steam turbine and Thermal power plat are removed, as they are not relevant to Aeronautical Engineering.

12. As the Metrology and Measurement Lab has been shifted to semester 3, Material Testing Lab is introduced in semester4 without any change in the syllabus or credits. The new subject code for Material Testing Lab is 11AEL47

13. No other change is proposed in the scheme & syllabus of 4 semester, With these modification, the total number of credit for semester 4 will now increase from 26 to 27

Semester 5

14. A new subject Aircraft electrical system (11AE52) with 3 credits has been proposed to be

included in semester 5 in place of Theory of machines-II

15. The credit of program elective (group A) has been proposed to be increased from three to 4. In addition, the existing subject welding technology is proposed to be removed from group A and introduced as an elective under Group-B without any change in syllabus. Similarly, the subject Introduction to composite materials is proposed to be removed from group-A and introduced

as an elective under group D without any change in syllabus.

16. No other change is proposed in the scheme and syllabus of V semester.

Semester 6

17. A new subject Aircraft instruments (11AE64) has been proposed to be included in semester

VI in place of theory of vibrations.

18. Subject Operations management is proposed to be removed from group B and introduced as a humanities subject in semester VII without any change in syllabus, but the credits reduced from 4 to 3. The subject hydraulic and pneumatic is proposed to be removed from the list of electives under group B. The subject finite element analysis is proposed to be renamed as **Finite element** 

methods (11AEE653) without any change in syllabus or credits.

19. The mini project/internship is undertaken by the students during summer vacation, the credit of the same is proposed to be removed from semester VI and is to be moved to semester VIII. With these proposals the total number of credits for semester VI will now decrease from 27

to 25.

20. No other change is proposed in the scheme and syllabus of VI semester.

Air Cmde (Retd.) R. JAYAKUMAR Professor and HOD Aeronautical Engineering NMIT, Bangalore-560 064.





## (AN AUTONOMOUS INSTITUTION, ACCREDITED BY NBA (AICTE) NEW DELHI) COURSE CONTENT, SCHEME AND EXAMINATION, FOR 2011 BATCH

## Aeronautical Engineering III- VIII SEMESTER

SEMESTER: III

SI No	Subject	Subject Name	Teaching	Teac	hing Hour	s/week	Ex	amination		Credits
SINO	Code		Dept.	L#	Т#	P <sup>#</sup>	CIE*	SEE**	Total	Credits
1	11MAT31	ENGINEERING MATHEMATICS –III	Math	3	2	-	50	50	100	4
2	11AE32	ELEMENTS OF AERONAUTICS	AE/ME	4	-	-	50	50	100	4
3	11AE33	BASIC THERMODYNAMICS	AE/ME	3	2	-	50	50	100	4
4	11AE34	MECHANICS OF MATERIALS	AE/ME	3	2	-	50	50	100	4
5	11AE35	MANUFACTURING TECHNOLOGY	AE/ME	3	1	-	50	50	100	3
6	<b>11AE36</b>	<b>ENGINEERING METROLOGY AND MEASUREMENTS</b>	AE/ME	2	-	4	50	50	100	4
7	11AEL37	METROLOGY & MEASUREMENTS LAB	AE/ME	-	-	3	50	50	100	1.5
8	11AEL38	MACHINE SHOP	AE/ME :		3	50	50	100	1.5	
						TOTAL	400	400	800	25

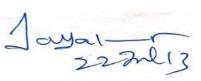
**SEMESTER: IV** 

CI NI -	Subject	C. Lind Name	Teaching Dept.	Tea	ching Hour	s/week	Examination			
SI No	Code	Subject Name		L <sup>#</sup>	Т#	P <sup>#</sup>	CIE*	SEE**	Total	Credits
1	11AE41	ENGINEERING MATHEMATICS –IV	Math	3	2	-	50	50	100	4
2	11AE42	APPLIED THERMODYNAMICS	AE/ME	3	2	-	50	50	100	4
3	11AE43	THEORY OF MACHINES	AE/ME	3	2	-	50	50	100	4
4	11AE44	FLUID MECHANICS	AE/ME	4	-	-	50	50	100	3
5	11AE45	MATERIAL SCIENCE AND METROLOGY	AE	4	-	-	50	50	100	3
6	11AE46	COMPUTER AIDED MACHINE DRAWING	AE/ME	3	-	-	50	50	100	3
	11AE47	AIRCRAFT SYSTEMS		3	-	-	50	50	100	3
7	11AEL48	MATERIAL TESTING LAB	AE/ME	-	-	3	50	50	100	1.5
8	11AEL49	FOUNDRY AND FORGING LAB	AE/ME	-	-	3	50	50	100	1.5
			•	•	•	TOTAL	400	400	800	27

\*Continuous Internal Evaluation

\*\* Semester End Examination

# L- Lecture, T- Tutorial, P- Practical



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## **SEMESTER: V**

SI	Subject	Subject Name Teaching			ning Houi	rs/week	Ex	amination		Credits
No	Code	Subject Name	Dept.	L#	T#	P <sup>#</sup>	CIE*	SEE**	Total	Credits
1	11AEH51	Management and Entrepreneurship	AE	3	-	-	50	50	100	3
2	11AE52	Aircraft Electrical System	AE	2	2	-	50	50	100	3
3	11AE53	Aircraft Structures – I	AE	3	2	-	50	50	100	4
4	11AE54	Aerodynamics – I	AE	3	2	-	50	50	100	4
5	11AE55	Aircraft Propulsion	AE	3	2	-	50	50	100	4
6	11AEE56X	Elective (Group A)	AE	4	-	-	50	50	100	4
7	11AEL57	Aerodynamics Laboratory	AE	-	-	3	50	50	100	1.5
8	11AEL58	Energy Conversion Laboratory	AE	-	-	3	50	50	100	1.5
	1		1		•	TOTAL	400	400	800	25

## **SEMESTER: VI**

SI	Subject	Cubinat Nama	Teaching	Teachi	ng Hours,	/week		Examinatio	n	Credits
No	Code	Subject Name	Dept.	L#	T#	P <sup>#</sup>	CIE*	SEE**	Total	Credits
1	11AE61	Applied Gas Dynamics	AE	3	2	-	50	50	100	4
2	11AE62	Aircraft Performance	AE	3	2	-	50	50	100	4
3	11AE63	Aerodynamics – II	AE	3	2	-	50	50	100	4
4	11AE64	Aircraft Instruments	AE	2	2	-	50	50	100	3
5	11AEE65X	Elective (Group B)	AE	3	2	-	50	50	100	4
6	11AEO66X	Open Elective (Group C)	AE	3	-		50	50	100	3
7	11AEL67	Structures Laboratory	AE	-	-	3	50	50	100	1.5
8	11AEL68	Propulsion Laboratory	AE	-		3	50	50	100	1.5
	1	,		•	•	TOTAL	450	450	900	25

\*Continuous Internal Evaluation

\*\* Semester End Examination

# L- Lecture, T- Tutorial, P- Practical

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**SEMESTER: VII** 

SI	Subject	Cubic et Name	Teaching	Teach	ing Hour	s/week	Ex	amination		Cua dita
No	Code	Subject Name	Dept.	L#	T#	P <sup>#</sup>	CIE*	SEE**	Total	Credits
1	11AE71	Control Engineering	AE	3	2	-	50	50	100	4
2	11AE72	Aircraft Structures - II	aft Structures - II AE		2	-	50	50	100	4
3	11AE73	Aircraft Stability & Control	AE	2	2	-	50	50	100	3
4	11AE74	Gas Turbine Technology	AE	4	-	-	50	50	100	4
5	11AEE75X	Electives (Group D)	AE	4	-	-	50	50	100	4
6	11AEO76X	Open Electives (Group E)	AE	3	-	-	50	50	100	3
7	11AEL77	Design, Modeling and Analysis Laboratory	AE	-	-	3	50	50	100	1.5
8	11AEL78	Simulation Laboratory	AE	-	-	3	50	50	100	1.5
9	11AEP79	Project preliminaries and Technical Seminars	AE	-	1	-	-	-	-	-
						TOTAL	400	400	800	25

**SEMESTER: VIII** 

SI	Subject	Cubicat Nama	Teaching	Teachi	ng Hours	/week		Examinatio	n	Credits
No	Code	Subject Name	Dept.	L#	T#	P <sup>#</sup>	CIE*	SEE**	Total	Credits
1	11AEH81	Operations Management	AE	3	-	-	50	50	100	3
2	11AE82	Aircraft Radar System	AE	2	2	-	50	50	100	3
3	11AEE83X	Elective (Group F)	AE	4	-	-	50	50	100	4
4	11AEP84	Project Work	AE	-	-	-	100	100	200	13
5	11AEP85	Mini Project/Internship/Self Study	AE	-	-	-	50	50	100	2
6	11AEP85	Seminars on current topics	AE	-	-	3	-	-	-	-
	•			•	•	TOTAL	200	200	400	25

\*Continuous Internal Evaluation

\*\* Semester End Examination

# L- Lecture, T- Tutorial, P- Practical

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Elective	e Group A	Credits 4			
SI.	Subject	Subject Name			
No.	Code	Subject Name			
1.	11AEE561	Theory of Elasticity			
2.	11AEE562	Internal Combustion Engines			
3.	11AEE563	Non Traditional Machining			
4.	11AEE564	Industrial Engineering & Management			
5.	11AEE565	Turbo-machinery			
6.	11AEE566	Cryogenics			

	Elective Gro	oup B Credits 4
SI.	Subject	Subject Name
No.	Code	Subject Name
1.	11AEE651	Theory of Plasticity & Metal Forming Processes
2.	11AEE652	Refrigeration & Air conditioning
3.	11AEE653	Finite Element Methods
4.	11AEE654	Energy Engineering
5.	11AEE655	Automotive Engineering
6.	11AEE656	Welding Technology

**Elective Group C (Open Elective)** 

	Cı	ed	its	3
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SI.	Subject	
No.	Code	Subject Name
1.	11AEO661	Numerical Methods
2.	11AEO662	MEMS
3.	11AEO663	Organizational Behavior
4.	11AEO664	TQM
5.	11AEO665	Essentials of Information System
6.	11AEO666	Solar energy

**Elective Group D** 

## Credits 4

SI No	-	Subject Code	Subject Name
1.		11AEE751	Smart Materials
2.		11AEE752	Tribology
3.		11AEE753	Statistical Quality Control
4.		11AEE754	Introduction to Composite Materials
5.		11AEE755	Renewable Energy resources
6		11AEE756	Flight Testing

**Elective Group E (open Elective)** 

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SI. No.	Subject Code	Subject Name
1.	11AEO761	Computer Graphics
2.	11AEO762	Nano Technology
3.	11AEO763	Management Information System
4.	11AEO764	Project Management
5.	11AEO765	Non Destructive Testing
6.	11AEO766	Computational Fluid Dynamics

Flective Group F

## Credits 4

	Elective Group	r cledits 4
SI.	Subject	Subject Name
No.	Code	Subject Hame
1.	11AEE831	Experimental Stress Analysis
2.	11AEE832	Machine Tool design
3.	11AEE833	Foundry Technology
4.	11AEE834	Bio Mass Energy System
5.	11AEE835	Computer Integrated Manufacturing
6.	11AEE836	Aircraft Communication System

(An Autonomous Institution under Visvesvaraya Technological University)

## Department of Aeronautical Engineering

Board of Studies
Date: 24 June 2014

at

Office of HoD

Department of Aeronautical Engineering NMIT



KNOWLEDGE . CHARACTER. UNITY

## COMPREHENSIVE REPORT

of Proceedings and Curriculum Revision for Academic Year 2014-15

Chairman, BoS

Air Cmde R Jayakumar

Professor & Head

Department of Aeronautical Engineering

(An Autonomous Institution under Visvesvaraya Technological University)
Accredited By NAAC, New Delhi,

## **Department of Aeronautical Engineering**

Board of studies meeting on 24 June 2014

Office of HoD Aeronautical Engineering, NMIT

## **Agenda**

- 1. Approval of syllabus for III and IV semesters of Aeronautical Engineering for students admitted in 2012.
- 2. Approval of revision made to syllabus of VII and VIII semesters Aeronautical Engineering for students of 2011-15 batch.
- 3. Approval of panel of BoE with external examiners.

## **BoS Panel for the Academic year 2014-2015**

SI No.	Name	Designation	Organization	Position
1	Air Cmde R Jayakumar	Prof. &HoD	NMIT, Bangalore	Chairman
2	Dr. J. Nagabhushananam	Professor Emeritus	IISc	Member, VTU Nominee
3	WgCdr (Retd) M P Benjamin	Additional Manager	Engine Overhaul Division HAL, Bangalore	Member
4	Mr. Mahendra M A	Assistant professor	NMIT, Bangalore	Member
5	Mr. Harish H V	Assistant professor	NMIT, Bangalore	Member
6	Mr. Santhosh N	Assistant professor	NMIT, Bangalore	Member Secretary

(An Autonomous Institution under Visvesvaraya Technological University)

Accredited By NAAC, New Delhi,

## **Department of Aeronautical Engineering**

Proceedings of The Board of Studies In Aeronautical Engineering Meeting Held on 24 June 2014 In The Department of Aeronautical Engineering

## **MEMBERS PRESENT**

SI No.	Name	Designation	Organization	Position
1	Air. Cmde R Jayakumar	Prof. &HoD	NMIT, Bangalore	Chairman
2	Dr. J. Nagabhushananam	Professor Emerotus	IISc	Member, VTU Nominee
3	WgCdr (Retd) M P Benjamin	Additional Manager	Engine Overhaul Division HAL, Bangalore	Member
4	Mr. Mahendra M A	Assistant professor	NMIT, Bangalore	Member
5	Mr. Harish H V	Assistant professor	NMIT, Bangalore	Member
6	Mr. Santhosh N	Assistant professor	NMIT, Bangalore	Member Secretary

## Minutes of board of studies meeting held on 24 June 2014 at 10:30 Am.

- The board of studies recommended the syllabi of III and IV semesters of aeronautical engineering for the batch 2012-16.
- 2. The board of studies recommended the revised syllabi of VII and VIII semesters for the academic year 2014-15.
- 3. The BoS approved the proposed panel of board of examiners.
- 4. The board of studies resolved to consider these suggestions given by members for consideration during further revision of syllabus.

Modifications made in the syllabus of III and IV semester of 2012 admitted batch

- 1. Elements of aeronautics has been shifted from fourth semester to third semester.
- 2. The fourth semester course Theory of machines-I has been modified and named as theory of machines.
- 3. Computer aided machine drawing has been shifted from third semester to fourth semester.
- 4. The course Aircraft systems has been introduced in fourth semester.

Air Cmde R Jayakumar

Chairman, BoS

Department of Aeronautical engineering

Santhosh N

Member Secretary, BoS

Department of Aeronautical engineering



## (AN AUTONOMOUS INSTITUTION, ACCREDITED BY NBA (AICTE) NEW DELHI)

# COURSE CONTENT, SCHEME OF TEACHING AND EXAMINATION, FOR 2012 BATCH

## Aeronautical Engineering III- VIII SEMESTER

SEMESTER: III

	Subject		Teaching Dept. Teaching Hours/week	Teachi	ng Hour	s/week	Ex	Examination	uc	Crodite
SINo	Code	Subject Name		-  -	#1	Ρ#	CIE*	CIE* SEE** Total	Total	Cleans
1	13MAT31	13MAT31 ENGINEERING MATHEMATICS -III	Mathematics	3	2		50	50	100	4
7	13AE32	ELEMENTS OF AERONAUTICS # 18 . 2 602	AE	4	ı	1	20	50	100	4
3	13AE33	BASIC THERMODYNAMICS AE 2,	AE/ME	3	2	1	20	50	100	4
A	13AF34	MECHANICS OF MATERIALS R E 4	AE/ME	3	2	1	50	50	100	4
·	13AF35	MANUFACTURING TECHNOLOGY POR S	AE/ME	2	2	1	50	50	100	3
	201464	ENGINEERING METROLOGY AND 512 14 202	AE/ME	2	2	1	50	20	100	3
9	L3AE30	MEASUREMENTS					5	00	100	7
7 7	13AEL37	METROLOGY AND MEASUREMENTS LAB AN IS - 2 MIZ.				2	nc i	00	100	1
	4247130	MACHINE SHOP LAB	AE/ME	t		3	20	20	100	7
8	13AEL38	MACILIAL STORE EST				TOTAL	400	400	800	25

SEMESTER: IV

						·							
Teaching Dept.       Teaching Hours/week       Examination         Mathematics       3       2       -       50       50         AE/ME       3       2       -       50       50         AE       2       2       -       50       50         RAWING       AE       2       -       50       50         AAE       3       5       -       50       50         AAE       3       5       5       50         AAE       -       3       50       50         AAE       -		Credits		4	Ф	4	3.	er e	3	3	1.5	1.5	27
Teaching Dept.         Teaching Hours/ week           Mathematics         3         2         -         50           AE/ME         3         2         -         50           AE         3         2         -         50           AE         3         2         -         50           AE         2         2         -         50           RAWING         AE         2         2         50           AAE         3         -         3         50           AAE         -         3         50		no	Total	100	100	100	100	100	100	100	100	100	900
Teaching Dept.         Teaching Hours/ week           Mathematics         3         2         -         50           AE/ME         3         2         -         50           AE         3         2         -         50           AE         3         2         -         50           AE         2         2         -         50           RAWING         AE         2         2         50           AAE         3         -         3         50           AAE         -         3         50		xaminati	SEE**	20	20	20	. 50	20	20	20	20	20	450
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SEMES I EK: IV  Subject Name  ENGINEERING MATHEMATICS –IV  APPLIED THERMODYNAMICS  THEORY OF MACHINES  FLUID MECHANICS  MATERIAL SCIENCE  COMPUTER AIDED MACHINE DRAWING  AIRCRAFT SYSTEMS  MATERIAL TESTING LAB  FOUNDRY AND FORGING LAB	Taching Don't	reacming Dept.		Mathematics	AF/ME	ΔĒ	ΔF	ΔF	AF AF	VE VE	AF.	AE	WF.
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\*\* Semester End Examination

# L- Lecture, T- Tutorial, P- Practical

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Applied Gas Dylidillics	AE	3	7
All clair remoinings	AE	3	7
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Elective (Group C)	AE/ME	3	'
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Structures Laboratory	AE		

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**Energy Conversion Laboratory** Aerodynamics Laboratory

SEMESTER: VI

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Aircraft Propulsion Elective (Group A)

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Management and Entrepreneurship

Aircraft Electrical System

Aircraft Structures — I

Subject Name

SEMESTER: V

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Code

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Examination

Teaching Hours/week

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#1- Lecture T- Tutorial, P- Practical	# L-
	** Semester End Examination
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SEMESTER: VII

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SEMESTER: VIII

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# L- Lecture, T- Tutorial, P- Practical \*\* Semester End Examination

\*Continuous Internal Evaluation

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## Department of Aeronautical Engineering

## Board of studies meeting on 07-03-2015

Office of HoD Aeronautical Engineering, NMIT

## <u>Agenda</u>

- 1. Approval of scheme and syllabus for III and IV semesters of Aeronautical Engineering for students of 2014-15 batch.
- 2. Approval of revision made to syllabus of V and VI semesters Aeronautical Engineering for students of 2013-17 batch.
- 3. Approval of panel of BoE with external examiners.

## **BoS Panel for the Academic year 2015-2016**

SI No.	Name	Designation	Organization	Position
1	Dr. M V Reddy	Prof. &HoD	NMIT, Bangalore	Chairman
2	Dr. B Subba Reddy	Fellow	Honeywell	Member
3	Dr. J. Nagabhushananam	Professor Emerotus	IISc	Member, VTU Nominee
4	Mr. S. Parthan	Professor and HOD (retd)	Dept of aerospace engineering, IIT, kharagpur	Member
5	Dr.A A Pashilkar	Deputy Head,FMC Division	NAL,Bangalore	Member
6	Mr. Jayasimha	General Manager	HAL Engine division	Member
7	Dr. Vivek sanghi	Professor	NMIT, Bangalore	Member
8	Wg Cdr Mati	Associate professor	NMIT, Bangalore	Member
9	Mr. Mahendra M A	Assistant professor	NMIT, Bangalore	Member
10	Mr. Harish H V	-Assistant professor	NMIT, Bangalore	Member
11	Mr. Santhosh N	Assistant professor	NMIT, Bangalore	Member

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## **Department of Aeronautical Engineering**

PROCEEDINGS OF THE BOARD OF STUDIES IN AERONAUTICAL ENGINEERING MEETING HELD ON 07-03-2015 IN THE DEPARTMENT OF AERONAUTICAL ENGINEERING

## MEMBERS PRESENT

SI	Name	Designation	Organization	Position
No.				
1	Dr. M V Reddy	Prof. &HoD	NMIT, Bangalore	Chairman
2	Dr. B Subba Reddy	Fellow	Honeywell	Member
3	Dr. J. Nagabhushananam	Professor Emerotus	IISc,Bangalore	Member, VTU Nominee
4	Mr. S. Parthan	Professor and HOD (retd)	Dept of aerospace engineering, IIT, kharagpur	Member
5	Dr.A A Pashilkar	Deputy Head,FMC Division	NAL,Bangalore	Member
6	Mr. Jayasimha	General Manager	HAL Engine division	Member
7	Dr. Vivek sanghi	Professor	NMIT, Bangalore	Member
8	Wg Cdr Mati	Associate professor	NMIT, Bangalore	Member
9	Mr. Mahendra M A	Assistant professor	NMIT, Bangalore	Member
10	Mr. Harish H V	Assistant professor	NMIT, Bangalore	Member
11	Mr. Santhosh N	Assistant professor	NMIT, Bangalore	Member

The chairman welcomed all the members of the board. The subjects listed in the agenda were deliberated and proceedings are as follows:

- 1. The complete scheme for the batch 2014-18 and syllabus of V and VI Semesters of 2017-2021 batch has been approved and is enclosed herewith as Appendix-I.
- 2. The highlights of modifications made in scheme of batch 2014-2018 in comparison with scheme of 2013-2017 batch is as given below.

2013-17 Batch	2014 -18 Batch	Remarks
Semester- III & IV	2014 - 18 Batch	Kemarks
Basic thermodynamics & Applied thermodynamics	Engineering thermodynamics	Basic and Applied thermodynamics have been combined and named it as Engineering thermodynamics.
Manufacturing Technology	Production Technology	Manufacturing Technology Course name has been changed to Production Technology
Semester-V & VI	•	
Management and Entrepreneurship	Entrepreneurship development, management & IPR	Management and Entrepreneurship course has been revised as Entrepreneurship development, management & IPR and introduced in 7 semester
	Introduction to vibrations and aero elasticity	Introduction to vibrations and aero clasticity course has been introduced in semester-V
Turbo machinery (Program Elective)	Turbo machinery	Introduced Turbo machinery as core course for semester-V
Aircraft instruments	Aircraft system and instruments	Aircraft instruments course has been revised and named it as aircraft systems and instruments.
Aircraft Electrical system	-	The course has been removed
Applied gas dynamics	-	The course has been removed
The Elective courses in Group-A such as, Theory of elasticity, Internal combustion engines, Nontraditional machining, Industrial engineering & management and turbo machinery	The Elective courses in Group-A Aircraft materials, Total Quality management, Non destructive testing, Introduction to helicopter aerodynamics, industrial engineering management.	The group A elective courses have been changed.
-	Wind Tunnel Techniques	Wind Tunnel Techniques course has been introduced in open elective for semester-VI
-	Hydraulics and Pneumatics	Hydraulics and Pneumatics course has been introduced in program elective for semester-VI
-	Fatigue and Fracture Mechanics	Fatigue and Fracture Mechanics

		course has been introduced in
		program elective for semester-VI
		Aircraft maintenance, repair and
	Aircrast maintenance, repair and	overhaul course has been
-	overhaul	introduced in program elective
		for semester-VI
		Airworthiness and ceritification
-	Airworthiness and ceritification	course has been introduced in
	The worthing and continuation	program elective for semester-VI
		Element of rocket propulsion
-	Element of rocket propulsion	course has been introduced in
	Element of focket propulsion	program elective for semester-VI
Semester- VII & VIII		program elective for semester-vi
Semesier- vii & viii	Т	The service Central engineering
Control anning sain		The course Control engineering
Control engineering	Control engineering	has been shifted from semester
		VII to Semester-VI
Operation management	-	The course has been removed
		Introduction to heat and mass
		transfer has been shifted from
Introduction to heat and mass	Introduction to heat and mass	Semester-VIII to program
transfer	transfer	elective group-D, for semester-
	transier	VII without any modifications in
		course content.
The program elective courses in	The program elective courses in	
Group-D such as, Smart	Group-D such as, Introduction to	
materials, tribology, statistical	heat and mass transfer, flight	The program elective courses in
quality control, introduction to	testing, theory of plates and	Group-D have been replaced
composite materials, renewable	shells, experimental stress	with new courses in semester-VII
energy resources flight testing	analysis, introduction to	
	cryogenics.	
The Open Elective-E courses in	The Open elective e courses in	
Group-E such as, computer	Group-E, introduction to aircraft	
graphics,nano technology,	and its systems, introduction to	The open elective courses in
management information system,	composite materials, helicopter	Group-E have been replaced
project management, non	theory, renewable energy	with new courses in semester-VII
destructive testing and	resources and instruction to multi	
computational fluid dynamics.	disciplinary design optimization	
		The core course operation
Operations management	Flight vehicle design	management in semester-VII
Operations management	I fight vehicle design	has been replaced by Flight
		vehicle design in semester-VIII
The program elective courses in	The	0, 100000000000000000000000000000000000
Group-F such as, experimental	The program elective courses in	
stress analysis, machine tool	Group-F computational fluid	
design, flight vehicle design,	dynamics, computer integrated	The program elective courses in
biomass engineering system,	manufacturing, introduction to	Group-F have been replaced with
Olomaco e	boundary layer theory, smart	new courses in semester-VIII
COMParer	materials and industrial	
Manuration	aerodynamics	
technology		

Details of modifications made in the scheme and syllabus.

## Semester- III & IV

## 1. Basic thermodynamics & Applied thermodynamics

The Basic and Applied thermodynamics have been combined and named it as Engineering thermodynamics. The three units such as fundamentals of thermodynamics, first law of thermodynamics, second law of thermodynamics and entropy concepts are retained from basic thermodynamics. The topics such as IC Engines, air standards cycles and psychometric have been introduced in the syllabus.

## 2. Production technology

Manufacturing Technology Course name has been changed to Production Technology as suggested by BoS members without modifying the course contents.

### Semester-V & VI

## 1. Entrepreneurship development, management & IPR

Management and Entrepreneurship course has been revised as Entrepreneurship development, management & IPR and introduced in 7 semester. The topics such as intellectual property rights, patents, IPR Governance, copyrights concepts have been included in the 4th and 5 th units.

## 2. Introduction to vibrations and aero elasticity

Introduction to vibrations and aero elasticity course has been introduced in semester-V.

## 3. Turbo machinery

Turbo machinery course has been introduced as core course instead of program elective for semester-V without any modifications in the syllabus content.

## 4. Aircraft systems and instruments.

Aircraft instruments course has been revised and named it as aircraft systems and instruments. The topics such as flight control systems, aircraft fuel and hydraulic systems and aircraft communication and radar systems have been introduced in unit-1, unit-2 and unit-3 along with aircraft instruments concepts.

## 5. Group -A (Program Electives)

The Elective courses in Group-A such as, Theory of elasticity, Internal combustion engines, Nontraditional machining, Industrial engineering & management and turbo machinery have been replaced by Total Quality management, Non destructive testing, Introduction to helicopter aerodynamics, industrial engineering management.

## Semester-VII & VIII

1. Control engineering

The course Control engineering has been shifted from semester VII to Semester-VI without any modifications in the course content.

- 2. Introduction to heat and mass transfer
  - Introduction to heat and mass transfer has been shifted from Semester-VIII to program elective group-D, for semester-VII without any modifications in course content.
- 3. Program Electives Group-D

The program elective courses in Group-D such as, Smart materials, tribology, statistical quality control, introduction to composite materials, renewable energy resources flight testing have been replaced by Introduction to heat and mass transfer, flight testing, theory of plates and shells, experimental stress analysis, introduction to cryogenics.

4. Open Elective Group-E

The Open Elective-E courses in Group-E such as, computer graphics,nano technology, management information system, project management, non destructive testing and computational fluid dynamics have been replaced by introduction to aircraft and its systems, introduction to composite materials, helicopter theory, renewable energy resources and instruction to multi disciplinary design optimization for semester-VII.

- 5. Flight vehicle design
  - The core course operation management in semester-VII has been replaced by Flight vehicle design in semester-VIII.
- 6. Program Elective Group-F

The program elective courses in Group-F such as, experimental stress analysis, machine tool design, flight vehicle design, biomass engineering system, computer integrated manufacturing and foundry technology have been replaced by computational fluid

dynamics, computer integrated manufacturing, introduction to boundary layer theory, smart materials and industrial aerodynamics for semester-VIII.

Dror Shaik Ismails .. Ph.D.

Chairman Bosed

Department converte Section 264

NMI Greening lore - 560 264

Santhosh N

Member secretary, BoS

Department of

Aeronautical Engineering

## Proposed Course Curriculum for Semester III to Semester VIII [2014-2018 BATCH]

SEM	SEMESTER: III										
SIS	Subject	Subject Name	Course	Teaching Dept.	μ Ή	Teaching Hours/week	, X	<b>E</b>	Examination	и	Credits
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1	14MAT31	14MAT31   ENGINEERING MATHEMATICS - III	BS	MAT	4	1		50	90	100	4
2	14AE32	ELEMENTS OF AERONAUTICS	PC	AE	4	•	-	50	50	100	4
3	14AE33	ENGINEERING THERMODYNAMICS	PC	AE/ME	3	2	-	50	50	100	4
4	14AE34	MECHANICS OF MATERIALS	PC	AE/ME	3	2	•	50	50	100	4
5	14AE35	METROLOGY AND MEASUREMENTS	PC	AE/ME	4	•	-	50	50	100	4
9	14AE36	FLUID MECHANICS	PC	AE/ME	3	2	-	50	50	100	4
7	14AEL37	FLUID MECHANICS LAB	bL	AE/ME	•	•	2	20	50	100	1
<b>∞</b>	14AEL38	14AEL38 METROLOGY AND MEASUREMENTS LAB	PL	AE/ME	-	-	3	95	50	100	1.5
6	14AEL39	MATERIAL TESTING LAB	PL	AE/ME	1	1	3	20	50	100	1.5
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OE.S	SEMESIEK: IV									•	
S	Subject	Subject Name	Course	Teaching Dent.	L H	Teaching Hours/week	. X	田	Examination		Credits
Ž,	Code	Outplot 1 value			r#_	# <u></u> _	<b>"</b>	CIE*	SEE**	Total	
-	14MAT41	ENGINEERING MATHEMATICS - IV	BS	MAT	3	2	•	50	50	100	4
2	14AE42	THEORY OF MACHINES	PC	AE/ME	3	2	-	20	20	100	4
3	14AE43	MATERIAL SCIENCE AND METALLURGY	PC	AE/ME	3	1	•	20	50	. 100	3
4	14AE44	COMPUTER AIDED MACHINE DESIGN	PC	AE/ME	3	-	3	95	50	100	4
5	14AE45	AIRCRAFT PROPULSION	PC	AE	3	2		20	20	100	4
9	14AE46	PRODUCTION TECHNOLOGY	PC	AE/ME	4	•	,	20	50	100	4
7	14AEL47	1	PL	AE/ME	-	-	3	20	20	100	1.5
∞	14AEL48	FOUNDARY AND FORGING LAB	PL	AE/ME	1	•	3	20	20	100	1.5
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Sject Name         Course Type Dept. Dept.         Teaching Hours/week         Teaching Hours/week         CIE*           AND INSTRUMENTS         PC         AE         4         -         -         50           IRES-I         PC         AE         3         2         -         50           VIBRATION AND         PC         AE/ME         3         2         -         50           NG         AE/ME         3         2         -         50		IIOI	Total	+	3	100	201	100	201		100		00.	=	100	901	100	001
Course         Teaching         Teaching           Type         Dept.         Hours/week           PC         AE         4         -         -         50           PC         AE         3         2         -         50           PC         AE         3         2         -         50           PC         AE         3         2         -         50           PC         AE/ME         3         2         -         50           PC         AF         3         2         -         50		c.xamınat	SEF*	3 5	2	Ş	2	0.5	2		20		20		3	05	20	2000
Subject Name         Course         Teaching           AIRCRAFT SYSTEMS AND INSTRUMENTS         PC         AE         4           AIRCRAFT SYSTEMS AND INSTRUMENTS         PC         AE         4           AERODYNAMICS-I         PC         AE         3           INTRODUCTION TO VIBRATION AND         PC         AE         3           AEROBLASTICITY         PC         AE/ME         3           TURBOMACHINARY         PC         AE         3			CIE*	3 5	2	20	20	20	2		20		40			20	20	50
Subject Name         Course         Teaching         L"           AIRCRAFT SYSTEMS AND INSTRUMENTS         PC         AE         4           AIRCRAFT STRUCTURES-I         PC         AE         3           AERODYNAMICS-I         PC         AE         3           INTRODUCTION TO VIBRATION AND         PC         AE         3           AEROBLASTICITY         PC         AE/ME         3           TURBOMACHINARY         PC         AE         3	gı	eek	. P#				•				'		,				'	1 ("
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Subject Name  AIRCRAFT SYSTEMS AND INSTRUMENTS  AIRCRAFT STRUCTURES-I  AERODYNAMICS-I  INTRODUCTION TO VIBRATION AND  AEROELASTICITY  TURBOMACHINARY	Teaching	Dept.		ΥE	מע	AF	717	AF	77.	AE/ME			AF			AE	AE	AE
Subject Code  Code  14AE51  AIRCRAFT SYSTEMS AND INSTRUMENTS  14AE52  AIRCRAFT SYSTEMS AND INSTRUMENTS  14AE54  AERODYNAMICS-I  1AAE54  AEROELASTICITY  14AE55  PROGRAM EFFETIVE A	Course	Type		DG	2	PC	2	DC.	0	ЬC			PC DC			-	7.	PE   12
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Subject Name		AERODYNAMICS-II	CONTROL ENGINEERING	AIRCRAFT PERFORMANCE	THE CHAINS OF THE CHAINS OF THE CHAIN OF THE	MANAGEMENT FUNCTIONS AND	ORGANISATIONAL BEHAVIOR	PROGRAM ELECTIVE-B	14AEO66X   OPEN ELECTIVE-C		AIRCICAL PROPULSION LAB	STRUCTURESTAR		SEMINAR
Subject Code		14AE61	14AE62	14AF63		14 A E 64	111101	14AEE65X	14AE066X	11455	14AEL0/	14AEL.68	t	14AEP69
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"Marks carried to VIII sem.

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TOTAL

SEM	SEMESTER: VII										
S S	Subject	Subject Name	Course Type	Teaching Dept.	H	Teaching Hours/week	7. <del>%</del>	田田	Examination	u	Credits
251	anon				$\Gamma_{\#}$	$_{\#}\mathrm{L}$	P#	CIE*	SEE**	Total	
-	14AE71	AIRCRAFT STRUCTURES-II	PC	AE	3	2		50	90	100	4
2	14AE72	AIRCRAFT STABILITY AND CONTROL	PC	AE	3	1		95	20	100	3
3	14AE73	ENTREPRENEURSHIP DEVELOPMENT, MANAGEMENT & IPR	HU			ı	ľ	90	90	100	3
4	14AE74	GAS TURBINE TECHNOLOGY	PC	AE	3	1	-	20	95 -	100	3
2	14AEE75X	14AEE75X   PROGRAM ELECTIVE-D	PE	AE	4	1	-	50	95	100	4
9	14AE076X	14AEO76X OPEN ELECTIVE-E	OE	AE	4	-	-	20	90	100	3
7	14AEL77	DESIGN, MODELLING AND ANALYSIS LAB	PL	AE		•	3	20	95	100	1.5
∞	14AEL78	SIMULATION LAB	PL	AE	-	-	3	20	20	100	1.5
6	14AEP79	MAJOR PROJECT-PHASE 1	PP	AE		•	3	$25^{(0)}$	-	$25^{(0)}$	-
			÷				TOTAL	400	400	008	23

@Marks carried to VIII sem

	ts						
	Credits		2	4	4	15	25
	ď	Total	100	100	100	200	400
	Examination	SEE**	50	50	50	100	200
	— 田	CIE*	50	50	50	50+50	200
		P#	3		1	15	TOTAL
	Teaching Hours/week	"L	-	-		-	Τ
	H	<sub>#</sub> T	-	4	4	-	
	Course Teaching Type Dept.						
	Course Type		PC	PE		PP	
	Subject Name		INTERNSHIP/SELF STUDY/MINOR PROJECT <sup>5</sup>	FLIGHT VEHICLE DESIGN	PROGRAM ELECTIVE -F	MAJOR PROJECT-FINAL SUMISSION & EVALUATION	
SEMESTER: VIII	Subject	Code	14AE81	14AE82	14AEE83X	14AEP84	
SEME	S	ONI	1	2	٣	4	

Marks carried from VI and VII sem to VIII sem.

7	PROGRAM ELECTIVE-A	IIVE-A	PRC	PROGRAM ELECTIVE-B	/E-B	
J. Z.	SL. SUBJECT NO. CODE	SUBJECT NAME	SL.	SUBJECT		
	1 14AEE561	AIRCRAFT MATERIALS	-	14AEE651	FINITE ELEMENT METHOD	_
	2 14AEE562	TOTAL QUALITY MANAGEMENT (TQM)	7	14AEE652	AIRCRAFT COMMUNICATION SYSTEM	_
	3 14AEE563	NON-DESTRUCTIVE TESTING	3	14AEE653	HYDRAULICS AND PNEUMATICS	
	4 14AEE564	INTRODUCTION TO HELICOPTER AERODYNAMICS	4	14AEE654	FATIGUE AND FRACTURE MECHANICS	
X .	5 14AEE565	INDUSRTIAL ENGINEERING AND MANAGEMENT	2	14AEE655	PROJECT MANAGEMENT	
0[	OPEN ELECTIVE-C		PROC	PROGRAM ELECTIVE-D	Q-5:	
		SUBJECT NAME	SL.	SUBJECT CODE	SUBJECT NAME	
	14AE0661	WIND TUNNEL TECHNIQUES	1	14AEE751	INRODUCTION TO HEAT AND MASS	
7	14AE0662	AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL	2	14AEE752	FLIGHT TESTING	
3	14AE0663	AIRWORTHINESS AND CERTIFICATION	~	14AEE753	THEORY OF PLATES AND SHELLS	
4	14AE0664	AIRCRAFT MATERIALS	4	14AEE754	EXPERIMENTAL STRESS ANALYSIS	
2	14AE0665	ELEMENTS OF ROCKET PROPULSION	5	14AEE755	INTRODUCTION TO CRYOGENICS	

SUBJECT NAME  INTRODUCTION TO AIRCRAFT AND ITS SYSTEMS INTRODUCTION TO COMPOSITE  MATERIALS HELICOPTER THEORY  RENEWABLE ENERGY RESOURCES INTRODUCTION TO MULTI DISCIPLINARY  5 14AEE835 INDI  PROGRAM ELECTIVE - F  CODE  CODE  1 4AEE831 CON  1 4AEE833 THE  RAFEBS34 SMA  INTRODUCTION TO MULTI DISCIPLINARY S 14AEE834 INDI  STATEMENT SIMPLEMENT	7. 7.		SUBJECT NAME		COMPUTATIONAL FLUID DYNAMICS		COMPUTER INTEGRATED MANUFACTURING	INTRODUCTION TO BOUNDARY LAYER	INDOKI	SMART MATERIAL S			INDUSTRIAL AERODYNAMICS
SUBJECT NAME INTRODUCTION TO AIRCRAFT AND ITS SYSTEMS INTRODUCTION TO COMPOSITE MATERIALS HELICOPTER THEORY RENEWABLE ENERGY RESOURCES INTRODUCTION TO MULTI DISCIPLINARY DESIGN OPTIMIZATION	GRAM ELECTIV		SUBJECT		14AEE831		14AEE832	14AEE833		14AEE834		11 A EE025	14AEE023
	PRO		SL.		1		2	3		4		V	)
			SUBJECT NAME	INTRODITICATION TO A 19 CD A ET AND 175	SYSTEMS	TATE OF TOTAL OF OUR MANAGEMENT	MATERIALS	HELICOPTER THEORY		KENEWABLE ENERGY RESOURCES	INTRODITICATION TO MILITA DISCIBITATION	INDAME IN THE INTERIOR IN THE PROPERTY OF THE	DESIGN OPTIMIZATION
SUBJEC CODE 14AE0761 14AE0763 14AE0764 14AE0765	OPEN ELECTIVE -E	15	NO.	•	I 14AEO761		2 14AEO762	3 14AEO763	_	4	,	1 5   14AE0765	

	_		_	_					
	. 23	25	26	26	27	25	23	25	200
PROJ/INT /SEMINAR								17	17
HUM (HU)		2				3	3		80
OPE. ELE (OE)		-				3	3		90
CORE. ELE (PE)					4	4	4	4	16
PROG. CORE (PC)			16	22	23	15	13	4	93
ENGG. CORE (EC)	13.5	13.5	9						33
BS. SC (BS)	9.5	9.5	4	4	Ţ.				27
SL. NO.	1	2	3	4	5	9	7	∞	

## DEPARTMENT OF AERONAUTICAL ENGINEERING



KNOWLEDGE \* CHARACTER \* UNITY

PROCEEDINGS OF BOS MEETING

12 MAY 2016

CHAIRMAN, BOS

Frofessor & Head, Department of Aeronautical Engineering, Nitte Maerialishi Institute of Technology, Bangaiore - 560 054. PRINCIPAL - PRINCI

YELA HANKA, BANGALORE - 94.



(An Autonomous Institution under Visvesvaraya Technological University)

Department of Aeronautical Engineering

## Board of Studies (Aeronautical Engineering)

Date: 12-05-2016

Office of HoD Aeronautical Engineering, NMIT

## Agenda

- Approval of Scheme and syllabus for VII and VIII Semesters of Aeronautical Engineering for students of 2013 – 2017 batch.
- 2. Approval of revision made to scheme of V and VI semester Aeronautical Engineering for students of 2014 2018 batch.
- 3. Approval of panel of B O E with external examiners.
- 4. Any other matter with the permission of the Chairman.

## BOS PANEL FOR THE ACADEMIC YEAR 2016-2017:

## BOARD OF STUDIES

SI No	Name	Designation	Organization	Position	
1	Dr S Venkateswaran	Professor & Head	NMIT	Chairman	
2	Dr B K Muralidhara	Professor	UVCE	Member	
3	Dr J Nagabhushanam	Professor Emeritus	IISc	Member, VTU Nominee	
4	Santhosh N	Assistant Professor	NMIT	Member Secretary	
5	Mahendra M A	Assistant Professor	NMIT	Member	
6	Harish H V	Assistant Professor	NMIT	Member	
7	Siddanlingappa P K	Asisstant Professor	NMIT	Member	

Dr S Venkateswaran,

Chairman, BoS

Department of Aeronautical

Engineering

Santhosh N

Member secretary, BoS

Department of

Aeronautical Engineering

Dr. S. Verikateswaran

Professor & Head,

ritment of Aeronautical Engineering,

i. ite ricenskshi Institute of Technology,

Bangalore - 550 064.

(An Autonomous Institution under Visvesvaraya Technological University)

Department of Aeronautical Engineering

Board of Studies (Aeronautical Engineering)

Date: 12-05-2016

Office of HoD Aeronautical Engineering, NMIT



COMPREHENSIVE REPORT

of Proceedings & Curriculum Revision

for Academic Year 2016 – 2017

Chairman, BoS
(Dr S Venkateswaran)
Professor & Head,
Department of Aeronautical Engineering

(An Autonomous Institution under Visvesvaraya Technological University)

PROCEEDINGS OF THE BOARD OF STUDIES IN AERONAUTICAL ENGINEERING MEETING HELD ON 12/05/2016 IN THE DEPARTMENT OF AERONAUTICAL ENGINEERING

## MEMBERS PRESENT

1	Dr S Venkateswaran	Professor & Head	NMIT	Chairman
2	Dr J Nagabhushanam	Professor Emeritus	IISc	Member, VTU Nominee
3	Dr B K Muralidhara	Professor	UVCE	Member
4	Mahendra M A	Assistant Professor	NMIT	Member
5	Harish H V	Assistant Professor	NMIT	Member
6	Santhosh N	Asisstant Professor	NMIT	Member Secretary

The chairman welcomed all the members of the board. The subjects listed in the agenda were deliberated and proceedings are as follows:

1 The revision of the scheme and syllabus of studies of VII and VIII Semester pertaining to 2013 to 2017 batch has been approved. The subject Aircraft Radar System in the 8th semester of 2013 - 2017 scheme has been deleted and the

J. Nagablifon Park (2/5/16)

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subject Heat and Mass transfer has been introduced in the 8<sup>th</sup> semester of 2013 – 2017 scheme. The scheme and syllabus of Heat and Mass Transfer has been approved. The approved syllabus has been enclosed herewith as Appendix – I

- 2. The Scheme of studies for all the semesters of 2014 2018 batch has been already approved in the earlier BOS meeting. In continuation, in this meeting, the syllabus for V and VI semester subjects pertaining to 2014 2018 batch has been approved. The details are given in Appendix II
- 3. The Panel of Examiners for the academic year 2016 2017 has been approved.

  The details are given in Appendix III.

4. The meeting ended with thanks to the Chair

J. Nagashulanan.

Dr S Venkateswaran, Chairman, BoS

Department of Aeronautical

Engineering

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## Appendix -I

## NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution, Affiliated to VTU, Belgaum and Accredited by NAAC, UGC)

## DEPARTMENT OF AERONAUTICAL ENGINEERING



Approved Syllabus for VII and VIII semester of B.E. Aeronautical Engineering course 2014-2018 Batch

In the BoS meeting held on 12/05/2016

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## APPENDIX - I INTRODUCTION TO HEAT AND MASS TRANSFER

Sub Code :

13AE82

Credits: 04

Hours/Week:

4+0+0

CIE Marks:50

Total Hours:

48

SEE Marks: 50

Exam Hours:

03

UNIT I

Introduction: Units, definitions, Basic modes of Heat transfer, Thermal conductivity for various types of materials, convection heat transfer co-efficient, Stefan Boltzman's law of Thermal radiation.

One Dimensional Steady State Heat Conduction: Thermal conductivity and other relevant properties, Heat diffusion equation in Cartesian coordinates, boundary and initial conditions. One dimensional, steady state heat conduction without and with heat generation through plane slabs, cylinders and spheres, Concept of thermal resistance, Electrical analogy. Heat transfer through composite slabs, cylinders and spheres, contact resistance. Critical thickness of insulation for cylinder and sphere. Steady state heat conduction through fins of uniform cross section, fin effectiveness and fin efficiency.

UNIT II

Multi-dimensional Steady State Heat Conduction: Two-dimensional steady state conduction, analytical solution, conduction shape factor, finite difference and finite volume methods Unsteady State Heat Conduction: Transient conduction in solids with negligible internal temperature gradients (lumped parameter), Biot number and Fourier number. One-dimensional transient conduction in slab and radial systems: exact and approximate solutions. Finite difference methods: explicit and implicit formulations.

08 Hours

UNIT III

Convection: Flow over a body, velocity and thermal boundary layers, drag-co-efficient and heat transfer coefficient. Flow inside a duct: hydrodynamics and thermal entry lengths; fully developed and developing flow. Use of various correlations in forced convection heat transfer, flow over a flat plate, and flow across a single cylinder and tube bundles. Free convection heat transfer from vertical surface and vertical cylinder, horizontal surface and horizontal cylinders.

08 Hours

UNIT IV

Heat Exchangers: Heat exchanger types, flow arrangements, overall heat transfer coefficient, fouling factor, LMTD for parallel flow and counter flow heat exchangers. Effectiveness-NTU method, expression for effectiveness of a parallel flows and counter flow heat exchangers. Multi-pass and cross flow heat exchangers Boiling and Condensation: Different regimes of boiling, mechanism of condensation, Nusselt's theory of film condensation on a vertical surface, use of correlations in solving film wise condensation on plane surfaces, horizontal tubes and tube banks.

08 Hours

UNIT V Radiation Heat Transfer: Definitions, concept of a black body, Kirchoff's law, Lambert's Cosine Law, Stefan-Boltzman's law, Plank's distribution law, Wein's displacement law, configuration factor. Radiation heat exchange between two parallel plates, radiation shielding, radiation heat exchange in an enclosure. Mass Transfer: Fick's law of diffusion. Mass transfer coefficient, Evaporation of water into air, Schmidt number. Sherwood number.

08 Hours

Text Books:

- 1. Heat & Mass Transfer, by Tirumaleshwar, Pearson-2006
- 2. Heat Transfer, by P.K. Nag. Tata Mc Graw Hill 2002

Reference Books:

- 1. Heat Transfer, a Practical Approach, Yunus A- Cengel Tata Mc Graw Hill
- 2. Principles of Heat Transfer by Kreith Thomas Learning 2001
- 3. Fundamentals of Heat and Mass Transfer by Frenk P. Incropera and David P. Dewitt, John

## Appendix - II

## NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY (An Autonomous Institution, Affiliated to VTU, Belgaum and Accredited by NAAC, UGC)

## DEPARTMENT OF AERONAUTICAL ENGINEERING



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Approved Syllabus for V and VI Semester of B.E. Aeronautical Engineering Course 2014-2018 Batch In the BOS Meeting held on 12/05/2016

J. Nagushulman
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Part 12/5/14

Part 12/5/14

Part 12/5/16

Part 12/5/16

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YELAHANKA, BANGALORE

Proposed Scheme for Higher Semester (III to VIII semester)-2014 SCHEME

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o N	Code	Subject Na

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R		Subject Name		ENGINEERING MATHEMATICS - III	FI FMENTS OF AEDONALITIES		ENGINEERING THERMODYNAMICS	MECHANICS OF MATERIALS	MICCIDINICS OF IVIAL ENIALS	METROLOGY AND MEASUREMENTS	FLUID MECHANICS	FLUID MECHANICS LAB		METRULUGY AND MEASUREMENTS LAB	MATERIAL TECTING LAD	IVIAL CRIAL TESTING LAB
	Subject	Code		14AE31	14AF32		14AE33	14AF34	- 1115	14AE35	14AE36	14AEL37	1445130	14AEL38	14AF139	7
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	1	14AE41	ENGINEERING MATHEMATICS - III	BS	MAT	4	-	ļ,	20	20	100	-
	2	14AE42	THEORY OF MACHINES	PC		~	1		202	2 2	100	7 0
	3	14AE43	MATERIAL SCIENCE & METALLURGY	PC		4			50	25	100	0 <
	4	14AE44	COMPUTER AIDED MACHINE DRAWING	PC		4			25	8 5	100	7
	5	14AE45	AIRCRAFT PROPULSION	PC		4			25	8 5	100	<b>1</b>
	9	14AE46	PRODUCTION TECHNOLOGY	PC		4			2005	25	100	1
	7	14AEL47	MACHINE SHOP LAB	)d			,	3	50	50	100	1 2
	8	14AEL48	FOUNDRY & FORGING LAB	PC		,		3	50	50	100	1.5
								TOTAL	400	400	800	26

SEM	SEMESTER: V											
IS N	Subject	Subject Name	Course	Teaching		Teaching		Ш	Examination	u	and the same	
041	ano a		13.00	Dept.	Ĭ	Hours/week					Credits	
-	144F51	A ID CDA ET CVCTFV CO A COMPANY			L	Ţ	<u>.</u>	CIE*	SEE**	Total		
	14455	AIRCHAFT STSTEMS AND INSTRUMENTS	PC	AE	4			50	50	100		
1,	144552	AIRCRAFT STRUCTURES-I	PC	AE	3	2	,	20	20	100		- Open
	14AE33	AERODYNAMICS-I	DC	ΔE	۲,	,		000	00	001	+	
,	144564	INTRODUCTION TO VIBRATION AND	200	47.46	0	7		20	20	100	4	
	14AE34	AEROELASTICITY	2	AE/ME	n	7	,	50	50	100	-	
5	14AE55	TURBOMACHINARY	70	1		,			3		r	
9	14AFESKY		P.C.	AE	3	7	,	50	50	100	4	
,	14451 53	-	PE	AE	3	-	,	50	20	100		
	14AELS/	ENERGY CONVERSION LAB	PL	AE			"	205	200	100	+ -	
8	14AEL58	AERODYNAMICS LAB	DI	7			0	200	00	1001	1.5	
			LL	AE			2	50	50	100	1.5	
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						T	TOTAL	400	400	800	27	

SEN	SEMESTER: VI											
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-	14AE61	AERODYNAMICS-II	PC	AF	c	0				10191		_
2	14AF62	CONTROL ENGRIEDING	0 6			7	1	20	20	100	4	
1	20011	CONTINOE ENGINEERING	PC	AE/ME	m	7	,	50	50	100	7	_
2	14AE63	AIRCRAFT PERFORMANCE	PC	AE	4			20	50	. 001		_
4	14 4 5 6 4	MANAGEMENT FUNCTIONS AND	HU	AE/ME					00	100	4	_
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5	14AEE65X	14AEE65X   PROGRAM ELECTIVE-B	PE	AF	4			20	0.5	001	-	_
9	14AE066X	14AEO66X OPEN ELECTIVE-C	OE	AF				00	20	100	4 6	
7	14AEL67	AIRCRAFT PROPULSION LAB	PL	AE/ME	) '	,	c	50	50	100	2 -	
∞	14AEL68	STRUCTURES LAB	PL	AE			0 0	50	50	100	C:1	_
6	14AEP69	SEMINAR	PP	AE	,	3		2500	2	25(0	J. J.	_
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<sup>ta</sup>Marks carried to VIII sem.

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	PROGRAM ELECTIVE-B	E E					
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	. *	SUBJECT NAME,	MATERIALS	ALITY MANAGEMENT (TQM)	RUCTIVE TESTING	TION TO HELICOPTER  MICS	L ENGINEERING AND ENT
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	IVE-A	SUBJECT NAME,	AIRCRAFT MATERIALS	TOTAL QUALITY MANAGEMENT (TQM)	NON-DESTRUCTIVE TESTING	INTRODUCTION TO HELICOPTER AERODYNAMICS	INDUSRTIAL ENGINEERING AND MANAGEMENT
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	GRAM ELECTIVE-A	J	14AEE561 AIRCRAFT MATERIALS	14AEE562 TOTAL QUALITY MANAGEMENT (TQM)	14AEE563 NON-DESTRUCTIVE TESTING	14AEE564 INTRODUCTION TO HELICOPTER AERODYNAMICS	14AEE565 INDUSRTIAL ENGINEERING AND .
	PROGRAM ELECTIVE-A						

OPE	OPEN ELECTIVE-C		PRO	PROGRAM ELECTIVE-D	E-D
		SUBJECT NAME	SL. NO.	SUBJECT CODE	SUBJECT NAME
-	14AEO661	WIND TUNNEL TECHNIQUES	-	14AEE751	INRODUCTION TO HEAT AND MASS TRANSFER
<u>C1</u>	14AEO662	AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL	2	14AEE752	FLIGHT TESTING
c	14AEO663	AIRWORTHINESS AND CERTIFICATION	3	14AEE753	THEORY OF PLATES AND SHELLS
4	14AEO664	AIRCRAFT MATERIALS	4	14AEE754	EXPERIMENTAL STRESS ANALYSIS
S	14AEO665	ELEMENTS OF ROCKET PROPULSION	5	14AEE755	INTRODUCTION TO CRYOGENICS

	VE -F		SUBJECT NAME		COMPUTATIONAL FLUID DYNAMICS	COMPLITER INTEGRATER SESSION	STEER INTEGRALED MANUFACTURING	INTRODUCTION TO BOTE TO	THEORY	SMADT MATERITY	SMAKI MALEKIALS	INDUSTRIAL AFRODYNAMICS	
	PROGRAM ELECTIVE -F	SL. SUBJECT	NO. CODE	1.4 4 17 18 2 1	14/15/201	144 55000	- 14/VEE832		14AEE833	14AEE834		14AEE835	
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ENGG. CORE (EC)	13.5	13.5	9						33	
BS. SC (BS)	9.5	9.5	4	4					27	
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An Autonomous Institution,
Approved by UGC/AICTE/Govt. of Karnataka
Accredited by NBA (Tier-1), NAAC ('A' Grade)

Affiliated to Visvesvaraya Technological University,
Belagavi.

and

## DEPARTMENT OF AERONAUTICAL ENGINEERING

PROCEEDINGS of BoS MEETING
05 June 2017

CHAIRMAN, BoS

Professor & Head,
Department of Aeronautical Engineering,
Nitte Meenakshi Institute of Technology,
Bangalore - 560 064.

PRINCIPAL

Nitte Meenakshi Institute of Technology Govindapura, Yelahanka, BANGALORE-560 064.

Principal

DEAN(ACADEMICS)

A unit of Nitte Education Trust(R), Mangalore,
An Autonomous Institution
Approved by UGC/AICTE/Govt. of Karnataka; accredited by NBA (Tier-1)
and NAAC ('A' Grade) UGC,

Affiliated to Visvesvaraya Technological University, Belagavi P.B.No.6429, Govindapura, Gollahalli, Yelahanka,

- Bengaluru-560 064. Karnataka. India.

Phone: 080-22167800

www.nmit.ac.in

## DEPARTMENT OF AERONAUTICAL ENGINEERING

## **Board of Studies**

Date: 05-06-2017

at

Office of HoD

Aeronautical Engineering NMIT



## **COMPREHENSIVE REPORT**

of Proceedings & Curriculum Revision

for Academic Year 2017-18

Chairman, BoS
Dr. S Venkateswaran
Professor & Head,
Department of Aeronautical Engineering

J. Nagashushanan Sallish AD 5/6/70/7

(An Autonomous Institution under Visvesvaraya Technological University) Accredited By NAAC, New Delhi

## Department of Aeronautical Engineering

Board of studies (Aeronautical Engineering)

Date: 05-06-2017

Office of HoD Aeronautical Engineering, NMIT

## Agenda

- 1. Approval of scheme and syllabus for VII and VIII semesters of Aeronautical Engineering for students of 2014-2018 batch.
- 2. Approval of panel of B.O.E. with external examiners.
- 3. Any other matter with the permission of the chairman.

## **BOS PANEL FOR THE ACADEMIC YEAR 2017-2018:** BOARD OF STUDIES

		DUAKD OF	SIUDIES	
ŞI No.	Name	Designation	Organization	Position
1	Dr S Venkateswaran	Professor & Head	NMIT	Chairman
2	Dr J Nagabhushanam	Professor Emeritus	IISc	Member, VTU Nominee
3	Dr. A. ArokkiaSwamy	Professor & Head	DSCE	Expert Member
4	Dr. S.K. Maharana	Professor & Head	AIT	Expert Member
5	Mr. Sathisha Anantha	Program Manager	Capgemini	Industry Representative
6	M.A.Mahendra	Asst. Prof.	NMIT	Member
7	H.V Harish.	Asso. Prof.	NMIT	Member
8	P.K.Siddalingappa	Asst. Prof.	NMIT	Member
9	L.Vinod	Asst. Prof.	NMIT	Member
10	H.V. Srikanth	Asst. Prof.	NMIT	Member secretary

Dr. S Venkateswaran Chairman, BoS Department of Aeronautical Engineering

J Nagash drand Cathrill

H.V. Srikanth Member secretary, BoS

Department of Aeronautical

Engineering

85/6/2017 PA

(An Autonomous Institution under Visvesvaraya Technological University)
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## Department of Aeronautical Engineering

PROCEEDINGS OF THE BOARD OF STUDIES IN AERONAUTICAL ENGINEERING
MEETING HELD ON 05-06-2017 IN THE DEPARTMENT OF AERONAUTICAL
ENGINEERING -

## MEMBERS PRESENT

Sl No.	Name	Designation	Organization	Position
1	Dr S Venkateswaran	Professor & Head	NMIT	Chairman
2	Dr J Nagabhushanam	Professor Emeritus	IISc	Member, VTU Nominee
3	Dr. A. Arokkia Swamy	Professor & Head	DSCE	Expert Member
4	Dr. S.K. Maharana	Professor & Head	AIT	Expert Member
5	Mr. SathishaAnantha	Program Manager	Capgemini	Industry Representative
6	M.A.Mahendra	Asst. Prof.	NMIT	Member
7	H.V Harish.	Asso. Prof.	NMIT	Member
8	P.K.Siddalingappa	Asst. Prof.	NMIT	Member
9	L.Vinod	Asst. Prof.	NMIT	Member
10	H.V. Srikanth	Asst. Prof.	NMIT	Member secretary

The chairman welcomed all the members of the board. The subjects listed in the agenda were deliberated and proceedings are as follows:

 The revision of the scheme and syllabus of studies of VII and VIII Semester pertaining to 2014 to 2018 batch has been approved, as detailed below:

SI No	SEM VII	Status
1.	Aircraft Structure-II	Syllabus Modified
2.	Aircraft Stability & Control	Syllabus Modified
3.	Entrepreneurship development & IPR	No Changes
4.	Gas Turbine Technology	No Changes
5.	Program Elective-D	
	(i) Introduction to Heat & Mass Transfer	Syllabus Modified

	(ii) Flight testing	No Changes
	(iii)Theory of Plates & Shell	No Changes
	(iv) Experimental Stress Analysis	No Changes
	(v) Introduction to Cryogenics	No Change
6.	Open Elective-E	
	(i) Introduction to aircraft and its systems	New Subject Introduced
	(ii)Introduction to Composite Materials	No Changes
	(iii) Helicopter Theory	No Changes
	(iv) Renewable energy resources	No Changes
	(v) Introduction to multi-disciplinary design optimization	No Changes
7.	Design Modelling and Analysis Lab	No Changes
8.	Simulation Lab	Syllabus Modified
9.	Major Project Phase-I	No Changes .

Sl No	SEM VIII	Status
1.	Flight Vehicle Design	No Change
2.	Program Elective-F	
	(i) Computer Integrated Manufacturing	No Changes
	(ii) Introduction to Computational fluid dynamics	New Subject Introduced
	(iii)Introduction to Boundary Layer Theory	No Changes
	(iv) Industrial Aerodynamics	No Changes
	(v)Smart Materials	No Changes
3.	Internship/Self-Study/ minor Project	No Changes
4.	Major Project-Final Submission and Evaluation	No Changes

The detail of the changes is indicated below:

## > AIRCRAFT STRUCTURES II

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3

In unit 1 some topics was removed and replaced by unit 5.

Unit 2 was split into unit 2 and unit 3 to maintain uniformity in each unit of the course.

## > AIRCRAFT STABILITY AND CONTROL

Ratio of units dealing with static stability and dynamics stability was changed to 60:40 from 50:50 to enable better understanding of the subject by the students.

## > INTRODUCTION TO HEAT AND MASS TRANSFER

In unit 4 the topic boiling condensation was replaced by mass transfer from unit 5.

## > INTRODUCTION TO AIRCRAFT AND ITS SYSTEM

New subject was introduced as open elective covering basics of aircraft and its system.

## > SIMULATION LAB

In part A experiment No. 3 & 4 (simulation of simple servo mechanism and feedback system in 't' & 's' domain) was replaced by simulation of landing run.

In part B experiment No.1 (simulation of analog computation) was replaced by simulation of range of aircraft and experiment No. 4 (simulate runway) was replaced by point take off from runway.

## > INTRODUCTION COMPUTATIONAL FLUID DYNAMICS

New subject was introduced as program elective in 8<sup>th</sup> semester.

The approved syllabus has been enclosed herewith as Appendix – I

 Scheme of studies for the semesters III to VI and VII and VIII, of 2014 – 2018 batch, as approved in the BoS meetings dated 12/05/16 and 05/06/17 respectively is enclosed in Appendix – II.

- 3. The Panel of Examiners for the academic year 2017 2018 has been approved. The details are given in Appendix III.
- 4. The meeting ended with thanks to the Chair.

Srikanth H V Member secretary,BoS Aeronautical Engineering, NMIT Dr. S Venkateswaran Chairman,BoS Aeronautical Engineering,NMIT

SI No.	Name	Signature
1	Dr J Nagabhushanam Member, VTU Nominee	J-Nagerbhudione.
2	Dr. A. ArokkiaSwamy Expert Member	AA V 5/6/2017
3	Dr. S.K. Maharana Expert Member	X
4	Mr.Sathisha Anantha Industry Representative	Sathish
5	M.A.Mahendra Member	Trol. 5   6   17
6	H.V Harish. Member	(ha) 5/6/17
7	P.K.Siddalingappa Member	8 1d 1/6/12
8	L.Vinod Member	Mound still I

## Appendix -II

## NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution, Affiliated to VTU, Belgaum and Accredited by NAAC, UGC)

## DEPARTMENT OF AERONAUTICAL ENGINEERING



Approved Syllabus for III to VIII semester of B.E. Aeronautical **Engineering course 2014-2018 Batch** 

In the BoS meeting held on 05/06/2017

J. Nagabhurhamen Bablish

# Proposed Course Curriculum for Semester III to Semester VIII [2014-2018 BATCH]

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	Subject Name		14MAT31   ENGINEERING MATHEMATICS - III	ELEMENTS OF AERONAUTICS	ENGINEERING THERMODYNAMICS	MECHANICS OF MATERIALS	METROLOGY AND MEASUREMENTS	FLUID MECHANICS	14AEL37   FLUID MECHANICS LAB	14AEL38   METROLOGY AND MEASUREMENTS LAB	14AEL39 MATERIAL TESTING LAB	
	Subject	CORIC	14MAT31	14AE32	14AE33	14AE34	14/1335	14AE36	14AEL37	14AEL38	14AEL39	
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	Subject Name		AIRCRAFT SYSTEMS AND INSTRUMENTS	AIRCRAFT STRUCTURES-I	AERODY'NAMICS-I	THE CHILD THE CHILD IN COUNTY	INTRODUCTION TO VIBRATION AND	AEROELASTICITY	TURBOMACHINARY	14AEES6X   PROGRAM ELECTIVE-A	ENERGY CONVERSION LAB	AERODYNAMICS LAB
SEMILES LEIV.	Subject Code		14AE51	14AE52	14AE53		144554	1.570	14AE55	14AEES6X	14AEL57	14AEL58
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Teaching Dept.	8	AE	AE/ME	AE	AE/ME		AE	AE	AE/ME	ΛE	AE
Course Type		PC	PC	PC	HU		PE	OE	PL	PL	ЬЬ
Subject Name		AERODYNAMICS-11	CONTROL ENGINEERING	AIRCRAFT PERFORMENCE	MANAGEMENT FUNCTIONS AND	ORGANISATIONAL BEHAVIOR	14AEE65X   PROGRAM ELECTIVE-B	14AEO66X OPEN ELECTIVE-C	AIRCRAFT PROPULSION LAB	STRUCTURES LAB	SEMINAR
Subject	200	14AE61	14AE62	14AE63	114 564	11/11/11	14AEE65X	14AEO66X	14AEL67	14AEL68	14AEP69
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"Marks carried to VIII sem.

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-	14AFP84	MAJOR PROJECT-FINAL SUMISSION &	J.			,	15	00+00	100	200	15
٢		EVALUATION									
						٢	TOTAI	200	200	400	25

Marks carried from VI and VII sem to VIII sem.

Internship of 4-6 weeks in an approved Industry/R&D organization/Reputed academic Institution during summer semester after IV or VI semester.

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SL.	SL. NO.	SUBJECT CODE	SUBJECT NAME	SL. NO.	SUBJE COD
1		14AEE561	AIRCRAFT MATERIALS	_	14AEE65
7	7	14AEE562	TOTAL QUALITY MANAGEMENT (TQM)	2	14AEE65
(-1	3	14AEE563	NON-DESTRUCTIVE TESTING	3	14AEE65
	_	144 5564	INTRODUCTION TO HELICOPTER	7	144556
_	•	14AEE304	AERODYNAMICS	1	14AEE02
L	u	144 0000	INDUSRTIAL ENGINEERING AND	,	14451
_	0	14AEE303	MANAGEMENT	0	14AEE03

## PROGRAM ELECTIVE-B

ST.	SUBJECT	
NO.	CODE	
-	14AEE651	FINITE ELEMENT METHOD
2	14AEE652	AIRCRAFT COMMUNICATION SYSTEM
3	14AEE653	HYDRAULICS AND PNEUMATICS
4	14AEE654	FATIGUE AND FRACTURE MECHANICS
5	14AEE655	PROJECT MANAGEMENT

## OPEN ELECTIVE-C

SL. NO.	-	2	3	4	5
SUBJECT NAME	WIND TUNNEL TECHNIQUES	AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL	AIRWORTHINESS AND CERTIFICATION	AIRCRAFT MATERIALS	ELEMENTS OF ROCKET PROPULSION
	14AE0661	14AE0662	14AE0663	14AE0664	14AE0665
	1	2	3	4	5

## PROGRAM ELECTIVE-D

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	SL. NO.	SUBJECT CODE	SUBJECT NAME
	1	14AEE751	INRODUCTION TO HEAT AND MASS TRANSFER
	2	14AEE752	FLIGHT TESTING
	3	14AEE753	THEORY OF PLATES AND SHELLS
	4	14AEE754	EXPERIMENTAL STRESS ANALYSIS
_	5	14AFF755	INTRODUCTION TO CRAOGENICS

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OPEN ELECTIVE -E

PROGRAM ELECTIVE -F

SUBJECT NAME	COMPUTATIONAL FLUID DYNAMICS	COMPUTER INTEGRATED MANUFACTURING	INTRODUCTION TO BOUNDARY LAYER THEORY	SMART MATERIALS	INDUSTRIAL AERODYNAMICS
SUBJECT CODE	1 14AEE831	14AEE832	14AEE833	14AEE834	14AEE835
SL. NO.	-	2	3	4	5
SUBJECT NAME	INTRODUCTION TO AIRCRAFT AND ITS SYSTEMS	INTRODUCTION TO COMPOSITE MATERIALS	HELICOPTER THEORY	RENEWABLE ENERGY RESOURCES	INTRODUCTION TO MULTI DISCIPLINARY DESIGN OPTIMIZATION
SUBJECT CODE	14AE0761	14AE0762	3 14AE0763	14AE0764	14AE0765
SL. NO.	-	2	3	4	5

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OPE. ELE (OE)	(1)					33	3		90	
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PROG. CORE			16	22	23	51	13	4	93	
ENGG. CORE	13.5	13.5	9	,					33	
BS. SC (BS)	9.6	9.5	4	4	-				27	-
SL. NO.	-	, ,	1 "	O A	- 4		0 1	×	0	





(An Autonomous Institution under Visvesvaraya Technological University)

## **Department of Aeronautical Engineering**

**Proceedings of Board of Studies Meeting** 

Date: 30 June 2018

at

Office of HoD

Department of Aeronautical Engineering, NMIT

Chairman, BoS

Professor & Head,
Department of Aeronautical Engineering,
Nite Meenakshi Institute of Tochnology,
Bangaloro - 560 864.

PRINCIPAL
NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY
P.B. 6429, GOVINDAPURA, GOLLAHALLI
YELAHANKA, BENGALUAU - 550 064.

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## Department of Aeronautical Engineering

Board of Studies
Date: 30 June 2018

at

Office of HoD

Department of Aeronautical Engineering NMIT



KNOWLEDGE . CHARACTER. UNITY

## COMPREHENSIVE REPORT

of Proceedings and Curriculum Revision

for Academic Year 2018-19

Chairman, BoS Dr P. K. Dash

Professor & Head
Department of Aeronautical Engineering

(An Autonomous Institution under Visvesvaraya Technological University)
Accredited By NAAC, New Delhi,

## **Department of Aeronautical Engineering**

## Board of studies meeting on 30-06-2018

Office of HoD Aeronautical Engineering, NMIT

## **Agenda**

- 1. Approval of scheme and syllabus for III and IV semesters of Aeronautical Engineering for students of 2017-2021 batch.
- 2. Approval of revision made to syllabus of V and VI semesters Aeronautical Engineering for students of 2016-2020 batch.
- 3. Approval of panel of BoE with external examiners.

## **BoS Panel for the Academic year 2018-2019**

Sl No.	Name	Designation	Organization	Position
1	Dr P. K. Dash	Prof. &HoD	NMIT, Bangalore	Chairman
2	Dr. S Gopalakrishnan	Professor	IISc, Bangalore	Member, VTU Nominee
3	Dr. S.K. Maharana	Prof. & HoD	AIT, Bangalore	Expert Member
4	Mr. Srinivasan Ramprasad	Staff Engineer	Honeywell Technology Solutions	Industry Representative
5	Mr. Harshith Somaiah BT	Analyst	Acumen Aviation Bangalore	Alumni
6	Mr. H V Srikanth	Asst.Prof.	NMIT, Bangalore	Member Secretary
7	Dr. S Venkateswaran	Professor	NMIT, Bangalore	Member
8	Dr. Kishore Brahma	Professor	NMIT, Bangalore	Member
9	Mr. N Vinayaka	Asso. Prof.	NMIT, Bangalore	Member
10	Mr. M A Mahendra	Asst.Prof.	NMIT, Bangalore	Member
11	Mr. L Vinod	Asst.Prof.	NMIT, Bangalore	Member
12	Mr. P K Siddalingappa	Asst.Prof.	NMIT, Bangalore	Member
13	Ms. Sonali Gupta	Asst.Prof.	NMIT, Bangalore	Member

بحسيا

Dr P. K. Dash Chairman, BoS Department of Aeronautical Engineering H.V. Srikanth
Member secretary, BoS
Department of Aeronautical
Engineering

(An Autonomous Institution under Visvesvaraya Technological University)
Accredited By NAAC, New Delhi,

## **Department of Aeronautical Engineering**

PROCEEDINGS OF THE BOARD OF STUDIES IN AERONAUTICAL ENGINEERING MEETING HELD ON 30-06-2018 IN THE DEPARTMENT OF AERONAUTICAL ENGINEERING

## MEMBERS PRESENT

SI No.	Name	Designation	Organization	Position
1	Dr. P. K. Dash	Prof. &HoD	NMIT, Bangalore	Chairman
2	Dr. S Gopalakrishnan	Professor	IISc, Bangalore	Member, VTU Nominee
3	Dr. S.K. Maharana	Prof. &HoD	AIT,Bangalore	Expert Member
4	Mr.SrinivasanRamprasad	Staff Engineer	Honeywell Technology Solutions	Industry Representative
5	Mr.HarshithSomaiah BT	Analyst	Acumen Aviation Bangalore	Alumni
6	Mr. H V Srikanth	Asst.Prof.	NMIT,Bangalore	Member Secretary
7	Dr. S Venkateswaran	Professor	NMIT,Bangalore	Member
8	Dr. Kishore Brahma	Professor	NMIT,Bangalore	Member
9	Mr. N Vinayaka	Asso. Prof.	NMIT,Bangalore	Member
10	Mr. M A Mahendra	Asst.Prof.	NMIT,Bangalore	Member
11	Mr. L Vinod	Asst.Prof.	NMIT,Bangalore	Member
12	Mr. P K Siddalingappa	Asst.Prof.	NMIT,Bangalore	Member
13	Ms.Sonali Gupta	Asst.Prof.	NMIT,Bangalore	Member

The chairman welcomed all the members of the board. The subjects listed in the agenda were deliberated and proceedings are as follows:

1. The complete scheme for the batch 2017-2021 and syllabus of III and IV Semesters of 2017-2021 batch has been approved and is enclosed herewith as Appendix-I. The highlights of modifications made in scheme of batch 2017-2021 in comparison with scheme of 2016-2020 batch is as given below.

## Highlights of modifications made for the curriculum for the batch 2017-2021 in comparison with curriculum of batch 2016-2020.

Rotal 2016 and	Semester-III	
Batch 2016-2020	Batch 2017-2021	Remarks
Elements of Aeronautics	Introduction to Aircraft	Name and syllabus content
	Engineering & Design	has been modified.
Engineering Thermodynamics	Aero Engineering	Name of the course has been
	Thermodynamics	changed
Mechanics of Materials	Solid mechanics	Name of the course has been
Metrology and Measurements	Maria I IN	changed
	Metrology and Measurements	Shifted from program core subject to program elective
No Program elective-A	Program elective-A	Program elective-A has
	Computer Integrated	been introduced in semester-
	Aircraft Drawing	III
	Introduction to Space	
	Technology	7
	Mechanical	
	Measurements &	
	Metrology	
	Airport planning &	
	Maintenance	
	Environmental Science	
	and Technology	
*	<ul> <li>Non-Conventional</li> </ul>	
	Energy Resources	
	Semester-IV .	
Material Science and Metallurgy		Subject has been removed
		from program core
Production Technology	Aircraft Materials &	Name and syllabus content
	Manufacturing	has been modified.
Machine Shop Lab	Manufacturing process Lab	Combined both the labs with
Foundary and Forging Lab		modifications in syllabus
	Program elective –B	Program elective-B has
	Airworthiness &	been introduced in semester-
	Certification	IV
	Turbo machinery &	
	Dynamics	
No program elective -B	Computer Integrated	81
No program elective -B	Manufacturing	
	Experimental Stress     Analysis	vi
	Analysis	
	Wind Tunnel     Tasknings	
* .	Techniques	
,	Design of Machine  Flowerts	*
	Elements	,

3

	Semester-V	
Program elective-A	Program elective-C  • Fuels and Combustion • Control Engineering • Non Destructive Testing • Industrial Aerodynamics • Industrial Engineering & Management • Aircraft Maintenance & Practice	<ul> <li>Control engineering has been shifted from 6<sup>th</sup>semester program core to 5<sup>th</sup> semester program elective.</li> <li>Fuels and Combustion. Industrial Aerodynamics and Aircraft Maintenance &amp; Practice have been introduced as program elective.</li> </ul>
	Semester-VI	
Gas turbine technology	Space Flight & Space Dynamics	Introduced Space Flight & Space Dynamics in place of Gas turbine technology
Control engineering	Advanced propulsion	Introduced Advanced propulsion in place of control engineering
	Computer Aided Aircraft Engineering Drawing & Analysis	Name of the lab has been modified and introduced in 6 <sup>th</sup> semester instead of 7 <sup>th</sup> semester.
Program elective-B  • Finite Element Method  • Aircraft Communication System  • Hydraulics And Pneumatics  • Fatigue And Fracture Mechanics  • Project Management	Program elective-D  Optimization Techniques  Rockets & Missiles Finite Element Method Hypersonic Vehicle Design Theory of Combustion Aero Engine Design	New electives have been introduced as program elective-D in 6 <sup>th</sup> semester
Open elective-C  Wind Tunnel Techniques  Aircraft Maintenance, Repair and Overhaul  Airworthiness And Certification  Aircraft Materials  Elements of Rocket Propulsion	Open elective-I	Mechanics of Flight, Basics of Aerodynamics, Introduction to Aerospace propulsion, Rockets and Missiles have been newly introduced as Open elective-I

2. The revision of syllabus of V and VI semesters Aeronautical Engineering for students of 2016-2020 batch has been revised and approved, as detailed below.

SI No	SEM V	Status
1.	Aircraft Systems and Instruments	No Changes
2.	Aircraft Structures-I	Syllabus Modified
3.	Aerodynamics-I	No Changes
4.	Introduction to Vibration and Aeroelasticity	No Changes
5.	Turbomachinary	No Changes
6. 7.	Program Elective-A  i. Aircraft Materials  ii. Total Quality Management  iii. Non-Destructive Testing  iv. Introduction to Helicopter Aerodynamics  v. Industrial Engineering and Management  Energy Conversion Lab  Aerodynamics Lab	No Changes No Changes Syllabus Modified No Changes No Changes No Changes No Changes
Sl No	SEM VI	Status
1.	Aerodynamics-II	No Changes
2.	Control Engineering	No Changes
3.	Aircraft Performance	No Changes
4.	Management Functions and Organisational Behavior	No Changes
5.	Program Elective-B	· ·
	i. Finite Element Method	No Changes
	ii. Aircraft Communication System	No Changes
	iii. Hydraulics-and-pneumatics	No Changes
	iv. Fatigue And Fracture Mechanics	Syllabus Modified
	v. Project Management	No Changes
6.	Open Elective-C	
	i. Wind Tunnel Techniques	Syllabus Modified
	ii. Aircraft Maintenance, Repair and Overhaul	No Changes
	iii. Airworthiness and Certification	No Changes
	iv. Aircraft Materials	No Changes
*	v. Elements of Rocket Propulsion	Syllabus Modified
7.	Aircraft Propulsion Lab	No Changes
8.	Structures Lab	No Changes
	Identification of Project (Phase-I)	No Changes

The approved scheme and syllabus of the batch 2016-2020 is enclosed herewith as Appendix-II.

- 3. The Panel of Examiners for the academic year 2018 2019 has been approved. The details are given in Appendix III.
- 4. The meeting ended with thanks to the Chair.

30/6/18

Dr P. K. Dash Chairman, BoS Department of Aeronautical Engineering H.V. Srikanth Member secretary, BoS Department of Aeronautical Engineering

SI No.	Name	Position	Signature
1	Dr. S Gopalakrishnan	Member, VTU Nominee	5 Gufulish
2	Dr. S.K. Maharana	Expert Member	4
3	Mr. Srinivasan Ramprasad	Industry Representative	Surgesser
4	Mr. Harshith Somaiah BT	Alumni	44 30 Jun 18
5	Dr. S Venkateswaran	Member	ll .
6	Dr. Kishore Brahma	Member	Mehm
7	Mr. N Vinayaka	Member	Vingle of
8	Mr. M A Mahendra	Member	Trol
9	Mr. L Vinod	Member	Knoch
10	Mr. P K Siddalingappa	Member	<b>8</b>
11	Ms. Sonali Gupta	Member	Smali

## Appendix-I

## NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution under Visvesvaraya Technological University)

Accredited By NAAC, New Delhi,

## Department of Aeronautical Engineering



KNOWLEDGE . CHARACTER. UNITY

Board of Studies
Date: 30 June 2018
at
Office of HoD
Department of Aeronautical Engineering, NMIT

The scheme and syllabus of III and IV Semesters of Aeronautical Engineering for students of 2017-2021





(AN AUTONOMOUS INSTITUTION, ACCREDITED BY NBA (AICTE) NEW DELHI)
COURSE CONTENT, SCHEME OF TEACHING AND EXAMINATION, FOR 2017-2021 BATCH
Department of Aeronautical Engineering

Semester: III

SI         Subject Code         Subject Mane         Course Code         Teaching Dept. L*         Hours/week Dept. L*         Examination Examination           1         17MAT31         Engineering Mathematics –III         BS         MAT         3         2         -         50         50           2         17AE32         Introduction to Aircraft Engineering & Design         PC         AE         4         -         -         50         50           3         17AE33         Aero Engineering Thermodynamics         PC         AE         4         -         -         50         50           4         17AE34         Solid Mechanics         PC         AE         4         -         -         50         50           5         17AE35         Fluid mechanics Lab         PC         AE         4         -         -         50         50           6         17AEE36X         Program Elective-A         PC         AE         4         -         -         50         50           6         17AEE36X         Program Elective-A         PC         AE         4         -         -         50         50           7         17AEL38         Fluid Mechanics Lab         PC		Credits	Total	100 4	100 3	100 4	100 4	100 4	100 3	100 2	100 2	
Subject         Subject Code         Course         Teaching         Teaching         Teaching           Tode         Code         Type         Dept.         Hours/week         L*         T*         p*         CIE*           17MAT31         Engineering Mathematics –III         BS         MAT         3         2         -         50           17AE32         Introduction to Aircraft Engineering & Design         PC         AE         4         -         -         50           17AE33         Aero Engineering Thermodynamics         PC         AE         4         -         -         50           17AE34         Solid Mechanics         PC         AE         4         -         -         50           17AE35         Fluid mechanics         PC         AE         4         -         -         50           17AE36X         Program Elective-A         PC         AE         4         -         -         50           17AE36         Program Elective-A         PC         AE         4         -         -         50           17AE137         Solid Mechanics Lab         PC         AE         1         -         2         50           17AE138		ımination	-	-	50	50	50	50	50	50	50	
Subject         Subject Code         Course         Teaching         Teaching           Code         Type         Dept.         Hours/week           17MAT31         Engineering Mathematics –III         BS         MAT         3         2           17AE32         Introduction to Aircraft Engineering & Design         PC         AE         4         -           17AE33         Aero Engineering Thermodynamics         PC         AE         3         2           17AE34         Solid Mechanics         PC         AE         4         -           17AE35         Fluid mechanics         PC         AE         4         -           17AE36         Program Elective-A         PE         AE         4         -           17AE137         Solid Mechanics Lab         PL         AE         1         -           17AEL38         Fluid Mechanics Lab         PL         AE         1         -		Exa	CIE*	50	50	50	50	50	50	50	50	
Subject         Subject Name         Course         Teaching           Code         Type         Dept.           17MAT31         Engineering Mathematics –III         BS         MAT           17AE32         Introduction to Aircraft Engineering & Design         PC         AE           17AE33         Aero Engineering Thermodynamics         PC         AE           17AE34         Solid Mechanics         PC         AE           17AE35         Fluid mechanics         PC         AE           17AE36         Program Elective-A         PE         AE           17AE137         Solid Mechanics Lab         PL         AE           17AEL38         Fluid Mechanics Lab         PL         AE		eek	P#	,	'	'	,		,	7	2	
Subject         Subject Name         Course         Teaching           Code         Type         Dept.           17MAT31         Engineering Mathematics –III         BS         MAT           17AE32         Introduction to Aircraft Engineering & Design         PC         AE           17AE33         Aero Engineering Thermodynamics         PC         AE           17AE34         Solid Mechanics         PC         AE           17AE35         Fluid mechanics         PC         AE           17AE36         Program Elective-A         PE         AE           17AE137         Solid Mechanics Lab         PL         AE           17AEL38         Fluid Mechanics Lab         PL         AE		eachir urs/we	T	2		2	'	•	,		-	-
Subject         Subject Name         Course           Code         Type           17MAT31         Engineering Mathematics – III         BS           17AE32         Introduction to Aircraft Engineering & Design         PC           17AE33         Aero Engineering Thermodynamics         PC           17AE34         Solid Mechanics         PC           17AE35         Fluid mechanics         PC           17AE36         Program Elective-A         PE           17AE137         Solid Mechanics Lab         PL           17AEL38         Fluid Mechanics Lab         PL		유	#   	3	4	3	4	4	4	-	-	
Subject Code  17MAT31 Engineering Mathematics –III 17AE32 Introduction to Aircraft Engineering & Design 17AE34 Solid Mechanics 17AE35 Fluid mechanics 17AE36 Program Elective-A 17AE137 Solid Mechanics Lab 17AEL38 Fluid Mechanics Lab		Teaching Dept.		MAT	AE	AE	AE	AE	AE	AE	AE	
Subject Code    17MAT31   Engineering Mathematics – III     17AE32   Introduction to Aircraft Engineering     17AE34   Solid Mechanics     17AE35   Fluid mechanics     17AE36   Program Elective-A     17AE137   Solid Mechanics Lab     17AEL38   Fluid Mechanics Lab     17AEL38		Course Type		BS	PC	PC	PC	PC	PE	PL	PL	
Subject Code 17MAT31 17AE32 17AE33 17AE34 17AE35 17AE417 17AE137	Schicater: III	Subject Name		Engineering Mathematics –III	Introduction to Aircraft Engineering & Design	Aero Engineering Thermodynamics	Solid Mechanics	Fluid mechanics	Program Elective-A	Solid Mechanics Lab	Fluid Mechanics Lab	
No 1 2 2 1 8 2 2 1 8 8 2 2 1 8		Subject	Code		17AE32	17AE33		17AE35	17AEE36X			
		S	04.	-	2	3	7	5	9	7	8	

Semester: IV

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Credits		4	4	4	n	4	m	2	7	26
	Total	100	100	100	100	100	100	100	100	800
Examination	SEE**	50	50	50	50	50	50	50	50	400
Exa	CIE*	50	50	50	50	50	50	50	50	400
ng eek	P#	,	1	,	•	1		2	2	Total
Teaching Hours/week		2	1	2	•	-	-	-	-	
		3	4	3	4	4	4	_		
Teaching	Dept.	MAT	AE	AE	AE	AE	AE	AE	AE	
Course Type		BS	PC	PC	PC	PC	ЬE	h.	PL	100
Subject Name		Engineering Mathematics -IV	Aerodynamics-I	Aircraft Structures-I	Theory of Machines	Aircraft Materials & Manufacturing	17AEE46X   Program Elective-B	Mechanical Measurements & Metrology lab	Manufacturing Process Lab	
Subject	COUL	17MAT41	17AE42	17AE43	17AE44	17AE45	17AEE46X	17AE47	17AEL48	
S		-	2	C	4	5	9	7	<b>«</b>	
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\*Continuous Internal Evaluation

\*\* Semester End Examination

# L- Lecture, T- Tutorial, P- Practical

lits										
Credits		4	4	4	4	4	3	2	2	25
uc	Total	100	100	100	100	100	100	100	100	800
Examination	SEE**	50	50	50	50	50	50	50	50	400
	CIE*	50	50	50	50	50	50	50	50	400
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	Subject Name		Aircraft Performance	Aerodynamics-II	Aircraft Structures-II		Management Functions & Organizational Benavior	17AEE56X Program Elective- C	Propulsion Lab	Aerodynamics Lab
Semester: V	Subject	2000	17AE51	17AE52	17AE53	17AE54	17AEH55	17AEE56X	17AEL57	17AEL58
	7	_								

	Semester: VI	r: VI			-					
	Subject		Course	Teaching Dent.	Teaching Hours/week	ng eek	Ε	Examination	п	Credits
S S		Subject Ivalite	246		L# T#	P#	CIE*	SEE**		
-	174561	Airora A Stability & Control	PC	AE	- 4	1	50	50	100	4
-	1/AE01	Ancian Stability & Comes.	PC	AE	3 2	ı	50	50	001	4
7	17AE62	Advanced Propulsion	PC	AE	- 4	1	50	50	100	3
2	1/AE63	Alferalt Systems & Instruments	bC	AE	- 4	1	50	50	001	4
4	17AE64	Space Flight & Space Dynamics	PE	AE	- 4	1	50	50	100	3
5	17AEE65X	Program Elective-D	PF	AE	- 4	1	50	50	100	4
9	17AE066X	Open Elective - I	DI Id	AF					9	,
1	17AEL67	Computer Aided Aircraft Engineering Drawing &	_	1	-	2	20	20	001	7
,		Analysis	h	AE	_	2	50	50	100	7
8	17AEL68	Structures Lab	dd			4			1	
6	17AEP69	Identification of Project (Phase-1)				Total	450	450	006	24

# L- Lecture, T- Tutorial. P- Practical

\*Continuous Internal Evaluation

\*\* Semester End Examination

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	Examination	CIE* SEE** Total	50 50 100	50 50 100	20 50 100	,	50 50 100	50 50 100	50 50 100	50	50 50 100	50 50 100	50^	500 1000
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	Teaching Hours/week	$\Gamma_{\#} \mid \Gamma_{\#}$	3 2	4 -	-		4 -	4 -	- +	-	- 1	1		
	Teaching	Dept.	AE	AE	AE		AE '	AE '	AE '	AE	AE	AE -	AE	
	Course	Type	PC	PC	PC		HU	PE	PE	PL	PL	IN/SS//MP	PP	
VII	CLinet Money	Subject Ivalue	Vibration & Aeroelasticity	CFD in Aerospace Engineering	Introduction to composite materials &	structures	Entrepreneurship development & IPR	Program Elective- E	Open Electives- II	Aircraft Systems Laboratory	Simulation Laboratory	Internship/Self-study/Minor project	Project Evaluation (Phase-II)	,
Semester: VII	Subject	Code	17AE71	17AE72	17AE73		17AEH74	17AEE75X	17AE076X	17AEL77	17AEL78	17AE1/S/P79	10 17AFP710	2111111
	SI	No No	_	2	,	2	4	5	9	7	00	6	10	2

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Semester: VIII	r: VIII			:		-				
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Subject Name	Subject Name	Type	Dept.	. <sub>#</sub> 7	#L	$\mathbf{b}^{\#}$	CIE*	SEE**	Total	Cleans
							0.5	02	100	1
17AF81 Aircraft Design & Analysis	Aircraft Design & Analysis	PC	AE	4		L	20	20	100	+
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174 FF87 Program Flective-F	Program Flective-F	PE	AE	4		1	20	00	001	
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	Floject Work				T	TAT	200	200	700	22
						DIAL	700	7007	2001	11

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\*Continuous Internal Evaluation

# L- Lecture, T- Tutorial, P- Practical, S-Self Study \*\* Semester End Examination

Introduction to Space Technology Mechanical Measurements & Metrology Airport planning & Management Environmental Science and Technology Non-Conventional Energy Resources Semester-6  Program Elective-D	Turbo-machinery Computer Integrated Manufacturing Experimental Stress Analysis Wind Tunnel Techniques Design of Machine Elements
gy 5. 17AEE464 5. 17AEE465 6. 17AEE466 Semester-6 Program Elective-D	sperimental Stress Analysis ind Tunnel Techniques sign of Machine Elements
Program Elective-D	
ct Name No.	Subject Name
1. 17AEE651 2. 17AEE652	Optimization Techniques Rockets & Missiles
17AEE653	Finite Element Method
ement 5. 17AEE655	Hypersonic Vehicle Design Theory of Combustion
17AEE656	Aero Engine Design

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Semester 7

Program Elective -E

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		Subject Name	17AEE661 Introduction to Heat and Mass transfer	17AEE662   Fatigue and Fracture	17AEE663 Theory of Plates and shells	17AEE664   Launch Vehicle dynamics	17AEE665   Advance Aero Dynamics	17AEE666 Reliability Engineering
	Subject	Code	17AEE661	17AEE662	17AEE663	17AEE664	17AEE665	17AEE666
-	21.	No.	1 27	2.	3.	4.	5.	.9

Semester 8

					T			
뇬		Subject Name	Design of Gas Turbine	Missile Technology	High Temperature Materials	Avionics & Instrumentations	Introduction to Smart & Nano Technology	Heliconter Aerodynamics
Program Elective- F	Subject	Code	17AEE821	17AEE822	17AEE823	17AEE824	17AEE825	17AEE826
Progra	SI.	No.	1.	2.	3.	4.	5.	9

Semester 6

Open elective-I

Subject Code

Si.

Subject Name

17AEO661 | Mechanics of Flight

Open elective-II

Semester 7

it's and Guidance, Navigation and Control Vehicles Subject Name Aerial Cryogenic Propulsion Flight Testing Ceramic Technology Applications Unmanned 17AE0762 17AE0763 Subject Code 17AEO761 17AE0764 17AE0765 SI. No. 4. 7

17AEO664 | Introduction to Aerospace propulsion

Rockets and Missiles

17AE0665

17AE0663 Basics of Aerodynamics

17AEO662 Aircraft Materials

## APPENDIX-II



# NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION, ACCREDITED BY NBA (AICTE) NEW DELHI)

COURSE CONTENT, SCHEME OF TEACHING AND EXAMINATION, FOR 2016-2020 BATCH

# Aeronautical Engineering

III- VIII SEMESTER

SEMESTER: III				: E	۲	Section.					
Subject	OLine		Course	Course leaching Type Dept.	H.	Hours/week	. 44	Ш	Examination	U	Credits
Code	Subject Indille				Li	1	P.	CIE*	SEE**	Total	
III 90ITAMATITAM OLGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGGG	III SOUTANGUITAN OLGGGGGGGGGGG	1	BS	MAT	4	-	,	50	20	100	7
14MAT31 ENGINEERING MATHEMATICS - III	ENGINEERING MAI HEMAI ICS - III	1	200	ΥE	P	,		30	50	100	m
14AE32 ELEMENTS OF AERONAUTICS	ELEMENTS OF AERONAUTICS		2 2	AE AE		-		205	30	100	-1
14AE33 ENGINEERING THERMODYNAMICS	ENGINEERING THERMODYNAMICS	- 1	7.	AE		- -		3	05	100	4
$^{\dagger}$	MECHANICS OF MATERIAI S		PC	AE	4	_		20	20	100	*
	MECHANICS OF MALENARY		PC	AE	4			20	- 20	100	2
14AE35 METROLOGY AND IMEASUREMENTS	METROLOGY AND MEASUREMENTS		DQ.	AF	4	-		50	20	001	ক
14AE36   FLUID MECHANICS			2 =	AE AE			0	20	20	001	_
14AEL37   FLUID MECHANICS LAB	FLUID MECHANICS LAB		r.	AE			1 (*	30	20	100	1.5
14AEL38   METROLOGY AND MEASUREMENTS LAB	METROLOGY AND MEASUREMENTS LAB		T.F.	AE	'		, ,	30	30	100	1.5
14AEI 39 MATERIAL TESTING LAB	MATERIAL TESTING LAB		PL	AE	'		2	3	2		
							TOTAL	450	450	006	70
						20					

SEMESTER: IV

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Credits		4	3	4	4	4	4	1.5	1.5	26	
n	Total	90-	100	001	100	001	100	100	100	800	
Examination	SEE**	50	50	90	50	90	90	. 05	20	400	
E	CIE*	82	20	20	82	20	20	95	20	400	
<del>-</del>	. "d		,		4	-		3	3	TOTAL	
Teaching Hours/week	T# ]	-	_	_	,	_			-		
T Hc	F #7	4	4	4	2	4	4	,			
Teaching Dept.		MAT	AE	AE	AE	AE	AE	AE	AE		
Course		BS	PC	PC	PC	PC	PC C	PL	P.L		
Subject Name		14MAT41   ENGINEERING MATHEMATICS - IV	THEORY OF MACHINES	MATERIAL SCIENCE AND METALLURGY	COMPUTER AIDED MACHINE DRAWING	AIRCRAFT PROPULSION	PRODUCTION TECHNOLOGY	14AEL47   MACHINE SHOP LAB	14AEL48 FOUNDARY AND FORGING LAB		
Subject	2000	14MAT41	14AE42	14AE43	14AE44	14AE45	14AE46	14AEL47	14AEL48		
IS N	2		2	3	4	5	9	7	8		

s		,	_							4
Credits		_1	4	4	4	4	4	1.5	1.5	2.7
п	Total	100	100	100	100	100	100	100	100	800
Examination	SEE**	50	20	90	20	95	50	20	50	400
Ē	CIE*	20	90	20	20	20	20	20	20	400
ķ	P#	-			•		1	3	3	TOTAL
Teaching Hours/week	L#,		1	1	1	1	• -		ı	•
T H	μ,Τ	4	4	4	4	4	4	•	-	
Teaching Dept.		AE	AE	AE	AE	AE	AE	AE	AE	
Course		PC	PC	PC ]	PC .	PC	PE	PL .	PL	
Subject Name		AIRCRAFT SYSTEMS AND INSTRUMENTS	AIRCRAFT STRUCTURES-I	AERODYNAMICS-I	INTRODUCTION TO VIBRATION AND ARROBLASTICITY	TURBOMACHINARY	PROGRAM ELECTIVE-A	ENERGY CONVERSION LAB	AERODYNAMICS LAB	
Subject	Code	14AE51	14AE52	14AE53	14AE54	14AE55	14AEE56X	14AEL57	14AEL58	
								Г		

SEMESTER: VI

Credits		4	4	-	7 %	4	3	1.5	1.5		25		Gradite	2	4	le	3	3	4	3	1.5	1.5	2	,	25
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ition	* Total	100	100	100	100	100	100	100	100	<u>'</u>	008		tion	* Total	100	100	100	100	100	100	100	100	100	<u>'</u>	800
Examination	SEE**	50	50	305	20	50	20	20	50	'	400		Examination	SEE**	50	50	50	90	20	90	50	50	20	1	400
	CIE*	50	50	50	50	50	50	50	50		400		Ш	CIE*	50	50	. 05	50	50	50	50	20	20	>0>	400
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Teaching Dept.		AE	AE	AE	• AE	AE	AE	AE	AE	AE			Teaching Dept.		AE	AE		AE	AE	AE	AE	AE	AE	AE	
Course		PC	PC	PC	HU	PE .	OE	PL	PL	PP.			Course		PC	PC	ΩH	PC	PE	OE	PL	PL	PP	PP	
Subject Name	TOWN TO THE TOTAL OF THE TOTAL	AERODYNAMICS-II	CONTROL ENGINEERING	AIRCRAFT PERFORMENCE	MANAGEMENT FUNCTIONS AND ORGANISATIONAL BEHAVIOR	PROGRAM ELECTIVE-B	OPEN ELECTIVE-C	AIRCRAFT PROPULSION LAB	STRUCTURES LAB	IDENTIFICATION OF PROJECT (PHASE-1)		VIII sem.	Subject Name		AIRCRAFT STRUCTURES-II	AIRCRAFT STABILITY AND CONTROL	ENTREPRENEURSHIP DEVELOPMENT, MANAGEMENT & IPR	GAS TURBINE TECHNOLOGY	PROGRAM ELECTIVE-D	OPEN ELECTIVE-E	DESIGN, MODELLING AND ANALYSIS LAB	SIMULATION LAB	INTERNSHIP/MINIPROJET	PROJECT PRELIMANARIES (PHASE-II)	
Subject Code	144501	14AE61	14AE62	14AE63	14AE64	14AEE65X	14AE066X	14AEL67	14AEL68	14AEP69 ·		<sup>®</sup> Marks carried to VIII sem. SEMESTER: VII	Subject	Code	14AE71	14AE72	14AE73	14AE74	14AEE75X	14AE076X	14AEL77	14AEL78	14AEP791	14AEP792	
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S	Subject		Course	Course Teaching Type Dept.	T H	Teaching Hours/week	<u>-</u>	Ex	Examination	и	Cradite
%	Code	Subject Name			*\	#_	b#	CIE*	SEE*	Total	CICALIS
_	14AE81	FLIGHT VEHICLE DESIGN	PC		4	1	-	50	50	100	4
2	14AE82	PROGRAM ELECTIVE -F	. be		4	ı	,	50	50	001	4
5	14AEP83	MAJOR PROJECT-FINAL SUMISSION & EVALUATION			1	,	26	26 50+50^	100	200	15
We .						-	TOTAL	200	200	400	23

'Marks carried from VI and VII sem to VIII sem.

Internship of 4-6 weeks in an approved Industry/R&D organization/Reputed academic Institution during summer semester after IV or VI semester.

TVE-B			FINITE ELEMENT METHOD	AIRCRAFT COMMUNICATION SYSTEM	HYDRAIII ICS AND PNEUMATICS		FATIGUE AND FRACTURE MECHANICS		DE OTECT MANAGEMENT	FROJECT MANAGEMENT	1
PROGRAM ELECTIVE-B	-	CODE	14AEE651	14AFF652	144 66653	14AEEOOO	14AFF654		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5   14AEE055	
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· ·	r-d	SUBJECT NAME	S INTERPRETATION	AIRCKAFI MAIEMALS	TOTAL QUALITY MANAGEMENT	NON-DESTRUCTIVE TESTING	MATERIAL TO HELICOPTER	IN INCOCATION TO THE PROPERTY OF THE PROPERTY	AEKUDI INAIMICS	INDUSTRIAL ENGINEERING AND	MANAGEMENT
NAME OF THE	PROGRAM ELECTIVE-A	SUBJECT	CODE	14AEE561	14AEE562	2754411	I4AEE303	14AEE564			14AEE565
(	PKOC	SL.	NO.	-	2	,	5	4	-		Ś

Z	OPEN ELECTIVE-C		PROC	PROGRAM ELECTIVE-D	E-D
		SUBJECT NAME	SL. NO.	SUBJECT CODE	SUBJECT NAME
	14AEO661	WIND TUNNEL TECHNIQUES	-	14AEE751	INRODUCTION TO HEAT AND MASS TRANSFER
	14AEO662	AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL	2	14AEE752	FLIGHT TESTING
	14AEO663	AIRWORTHINESS AND CERTIFICATION	3	14AEE753	THEORY OF PLATES AND SHELLS
	14AEO664	AIRCRAFT MATERIALS	4	14AEE754	EXPERIMENTAL STRESS ANALYSIS
	14AE0665	ELEMENTS OF ROCKET PROPULSION	5	14AEE755	INTRODUCTION TO CRYOGENICS
	OPEN ELECTIVE •E		PROC	PROGRAM ELECTIVE -F	Е-F
	SUBJECT	SUBJECT NAME	SL.	SUBJECT CODE	SUBJECT NAME
	14AE0761	INTRODUCTION TO AIRCRAFT AND ITS SYSTEMS	1	14AEE821	COMPUTATIONAL FLUID DYNAMICS
	14AE0762	INTRODUCTION TO COMPOSITE	2	14AEE822	COMPUTER INTEGRATED MANUFACTURING