



# SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY**

(DEEMED TO BE UNIVERSITY)

Accredited with "A" Grade by NAAC

Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119.



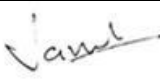




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**SCHOOL OF MECHANICAL ENGINEERING  
DEPARTMENT OF AERONAUTICAL ENGINEERING  
BOARD OF STUDIES MEETING HELD ON 27.06.2020**

**Members present:**

<b>External Members</b>	<b>Signature</b>	<b>Internal Members</b>	<b>Signature</b>
Dr. Paramasivam Professor, Madras Institute, of Technology, Chennai		Dr.S. Prakash, Dean/Faculty of Mechanical	
Er. James Michael Amulu, Senior Product Development Leader, SAP, Bangalore		Dr.P. Boomadevi, Head/Aeronautical Engineering	
		Dr.A. Anderson, Professor, Aeronautical Engineering	
		Dr. S. Manigandan, Assistant Professor, Aeronautical Engineering	
		Mr. G. Madhan Kumar, Assistant Professor, Aeronautical Engineering	



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## Minutes of the Board of Studies meeting

Board of Studies meeting for the Department of Aeronautical Engineering was held on 27th June 2020 through virtual mode (zoom) with the following agenda:

1. Revision of Course "SAEA1502 Aerospace Propulsion"
2. Revision of Course "SAEA1504 Finite Element methods for Aircraft Structures"

### Welcome Address

Dr.S.Prakash, Dean, school of Mechanical Engineering chaired the meeting and welcomed all the members to the BOS meeting. He also introduced the Academic staff members Sathyabama Institute of science and Technology. At the outset, he informed the members about the academic activities and newly introduced courses in this curriculum. Having confirmed the quorum of the meeting, the agenda of the meeting was taken up for discussion. The following points were discussed during the meeting:

### Agenda item # 1

#### Modifications proposed for 2020 batch Bachelors of Engineering– Aeronautical Engineering students in SAEA1502 Aerospace Propulsion.

Head of the department informed that the department teams have been working on the modification of curriculum and in this direction the following changes were made on SAEA1502 Aerospace Propulsion.

(a)**Removal of the following topics in Unit V:** Operating principle – Subcritical, critical and supercritical operation – Combustion in ramjet engine – Ramjet performance – Sample ramjet design calculations – Introduction to scramjet– Preliminary concepts in supersonic combustion – Integral ram- rocket- Numerical problems.

(b)**Inclusion of the following topics in Unit V:** Recent Micro Spacecraft Developments; Micro propulsion Options; Primary Set of Micro propulsion Requirements; Chemical



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Propulsion Options; Review of Electric Propulsion Technologies for Micro and Nano-satellites; Emerging Technologies: MEMS and MEMS- Hybrid Propulsion System.

**Resolutions:** The External members considered the revision made and discussed regarding the revision. Dr. P. Boomadevi pointed out that the removal of topics was necessary. These topics are covered in the course Aircraft Propulsion.

## **Agenda item # 2**

### **Modifications proposed for 2020 batch Bachelors of Engineering– Aeronautical Engineering students in SAEA1504 Finite Element methods for Aircraft Structures.**

Head of the department informed that the department teams have been working on the modification of curriculum and in this direction the following changes were made SAEA1504 Finite Element methods for Aircraft Structures.

(a)**Removal of the following topics in Unit – V:** Vibrational problems – equations of motion based on weak form –longitudinal vibration of bars – transverse vibration of beams Mesh Generation-Errors in the finite element method – various measures of errors- accuracy of the solution- Eigen value Problems - h & p elements- Applications of FEM software to solve simple problems, types of solver – a brief.

(b)**Inclusion of the following topics in Unit – V:** Applications of FEM software to solve simple problems, types of solver, Applications based on general two dimensional boundary value Problem-Ideal fluid flows around an irregular object, Two dimensional steady state heat flow, Torsion of prismatic bars

**Resolutions:** The External members considered the revision made and discussed regarding the revision. Dr. P. Boomadevi pointed out that the removal of topics was necessary. These topics are covered in the course Vibrations and Aeroelasticity.

This initiative is appreciated by BoS members and after a discussion about the contents of the syllabus; the course revision was approved for inclusion in the Curriculum.



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BoS members accepted the changes and approved the syllabus.

The revised syllabus of the course is enclosed in Annexure-1.

## **Vote of Thanks**

Dr.P. Boomadevi thanked the expert members for accepting the invitation for attending the BoS meeting. She thanked them for their valuable suggestions on the agenda items presented. She also thanked Dr.S. Prakash, Dean and Dr.A. Anderson, Professor for their contribution towards the conduct of this BoS meeting.

Dean/CHAIR



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## Agenda item # 1

### Modifications proposed for SAEA1502 Aerospace Propulsion.

S.No.	Existing Syllabus R2020	Corrected Syllabus
1	UNIT-V RAMJET PROPULSION 9 Hrs. Operating principle - Subcritical, critical and supercritical operation - Combustion in ramjet engine - Ramjet performance - Sample ramjet design calculations - Introduction to scramjet- Preliminary concepts in supersonic combustion - Integral ram- rocket- Numerical problems.	UNIT-V MICRO PROPULSION 9 Hrs. Recent Micro Spacecraft Developments; Micro propulsion Options; Primary Set of Micro propulsion Requirements; Chemical Propulsion Options; Review of Electric Propulsion Technologies for Micro and Nano- satellites; Emerging Technologies: MEMS and MEMS-Hybrid Propulsion System.

## Agenda item # 2

### Modifications proposed for SAEA1504 Finite Element methods for Aircraft Structures.

S.No.	Existing Syllabus R2020	Corrected Syllabus
1	UNIT - V APPLICATION FINITE ELEMENT METHODS 9 Hrs. Vibrational problems - equations of motion based on weak form - longitudinal vibration of bars - transverse vibration of beams Mesh Generation-Errors in the finite element method - various measures of errors- accuracy of the solution- Eigen value Problems - h & p elements- Applications of FEM software to solve simple problems, types of solver - a brief.	UNIT - V APPLICATION FINITE ELEMENT METHODS 9 Hrs. Applications of FEM software to solve simple problems, types of solver, Applications based on general two dimensional boundary value Problem-Ideal fluid flows around an irregular object, Two dimensional steady state heat flow, Torsion of prismatic bars



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**SCHOOL OF MECHANICAL ENGINEERING  
DEPARTMENT OF AERONAUTICAL ENGINEERING  
BOARD OF STUDIES MEETING HELD ON 21.12.2020**

**Members present:**

<b>External Members</b>	<b>Signature</b>	<b>Internal Members</b>	<b>Signature</b>
Dr. Paramasivam Professor, Madras Institute, of Technology, Chennai		Dr.S. Prakash, Dean/Faculty of Mechanical	
Er. James Michael Amulu, Senior Product Development Leader, SAP, Bangalore		Dr.P. Boomadevi, Head/Aeronautical Engineering	
Madras Flying Club, Chennai.		Dr.A. Anderson, Professor, Aeronautical Engineering	
		Dr. S. Manigandan, Assistant Professor, Aeronautical Engineering	
		Mr. G. Madhan Kumar, Assistant Professor, Aeronautical Engineering	



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## Minutes of the Board of Studies meeting

Board of Studies meeting for the Department of Aeronautical Engineering was held on 21<sup>st</sup> December 2020 through virtual mode (zoom) with the following agenda:

1. Revision of Course "SAEA1701 Aircraft Composite Materials and Structures"
2. Revision of Course "SAEA1702 Unmanned Aerial Vehicle Design"

### Welcome Address

Dr.S.Prakash, Dean, school of Mechanical Engineering chaired the meeting and welcomed all the members to the BOS meeting. He also introduced the Academic staff members Sathyabama Institute of science and Technology. At the outset, he informed the members about the academic activities and newly introduced courses in this curriculum. Having confirmed the quorum of the meeting, the agenda of the meeting was taken up for discussion. The following points were discussed during the meeting:

### Agenda item # 1

#### **Modifications proposed for 2020 batch Bachelors of Engineering– Aeronautical Engineering students in SAEA1701 Aircraft Composite Materials and Structures.**

Head of the department informed that the department teams have been working on the modification of curriculum and in this direction the following changes were made on SAEA1701 Aircraft Composite Materials and Structures.

- (a)**Removal of the following topics in Unit V:** Structural applications of Composite Materials- Aerospace, Automobiles, Marine, Electrical, civil, Chemical etc. Manufacturing Processes.
- (b)**Inclusion of the following topics in Unit V:** Manufacture of fibers, importance of repair and different types of repair techniques in composites – autoclave and non-autoclave methods.





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**Resolutions:** The External members considered the revision made and discussed regarding the revision. Dr. P. Boomadevi pointed out that the removal of topics was necessary. These topics are covered in the course Composite materials lab.

## Agenda item # 2

### **Modifications proposed for 2020 batch Bachelors of Engineering– Aeronautical Engineering students in SAEA1702 Unmanned Aerial Vehicle Design.**

Head of the department informed that the department teams have been working on the modification of curriculum and in this direction the following changes were made SAEA1702 Unmanned Aerial Vehicle Design.

- (a)**Removal of the following topics in Unit – V:** Waypoints navigation-ground control software-Recent trends in UAV-Case Studies
- (b)**Inclusion of the following topics in Unit – V:** Principles of digital aerial photography- Sensors for aerial photography - Photo-interpretation, objective analysis and image quality - Image Recognition - Image Classification – Image Fusion – Colour Image Processing - Video Motion Analysis.

**Resolutions:** The External members considered the revision made and discussed regarding the revision. Dr. P. Boomadevi pointed out that the removal of topics was necessary. These topics are covered in the course Airport Engineering.

This initiative is appreciated by BoS members and after a discussion about the contents of the syllabus; the course revision was approved for inclusion in the Curriculum. BoS members accepted the changes and approved the syllabus.

The revised syllabus of the course is enclosed in Annexure-1.





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## Vote of Thanks

Dr.P. Boomadevi thanked the expert members for accepting the invitation for attending the BoS meeting. She thanked them for their valuable suggestions on the agenda items presented. She also thanked Dr.S. Prakash, Dean/Chair and Dr.A. Anderson, Professor for their contribution towards the conduct of this BoS meeting.

Dean/CHAIR

## Agenda item # 1

**Modifications proposed for SAEA1701 Aircraft Composite Materials and Structures.**

S.No.	Existing Syllabus R2020	Corrected Syllabus
1	UNIT-V fabrication process and repair methods 9 Hrs. Various open and closed mould processes Structural applications of Composite Materials-Aerospace, Automobiles, Marine, Electrical, civil, Chemical etc. Manufacturing Processes.	UNIT-V fabrication process and repair methods 9 Hrs. Various open and closed mould processes manufacture of fibers, importance of repair and different types of repair techniques in composites - autoclave and non-autoclave methods.

## Agenda item # 2

**Modifications proposed for SAEA1504 Finite Element methods for Aircraft Structures.**

S.No.	Existing Syllabus R2020	Corrected Syllabus
1	UNIT - V Application finite element methods 9 Hrs. Waypoints navigation-ground control software-Recent trends in UAV-Case Studies	UNIT - V Application finite element methods 9 Hrs. Principles of digital aerial photography-Sensors for aerial photography - Photo-interpretation, objective analysis and image quality - Image Recognition - Image Classification - Image Fusion - Colour Image Processing - Video Motion Analysis.