



RASHTREEYA SIKSHANA SAMITHI TRUST
R.V. COLLEGE OF ENGINEERING
(Autonomous Institution Affiliated To VTU, Belagavi)
DEPARTMENT OF AEROSPACE ENGINEERING

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Department: Aerospace Engineering

Programme: B.E. (Aerospace Engineering)

The following are the new courses added in the curricula in the respective curricular revisions made in 2018, 2021 and 2022 schemes. Curricular revisions were discussed thoroughly at the respective Board of Studies meetings. The new courses added are reflected in the revised curricula with the course codes.

Sl. No.	Title of the new course added	Course code	Scheme in which the new course is added
1	Electronics & Communication Systems	18AS45	2018
2	Design Thinking lab	18AS47	2018
3	Aerospace Propulsion I	18AS52	2018
4	Introduction to Aircraft Design	18AS5A1	2018
5	Introduction to Composites	18AS5A2	2018
6	Automation in Manufacturing	18AS5A3	2018
7	Aerospace Propulsion II	18AS63	2018
8	Minor Project	18AS64	2018
9	Aerospace materials	18AS6C4	2018
10	Machine Learning	18CS6D1	2018
11	Spacecraft Systems	18AS6D4	2018
12	Fundamentals of Computer Networking	18AS6D5	2018
13	Internship	18AS74	2018
14	Optical Fibre Communication	18AS7F4	2018
15	Aircraft Maintenance, Repair & Overhaul	18AS7G4	2018
16	Advanced Avionics	18AS7G5	2018
17	Fundamentals of combustion for propulsion	21AS4A1	2021
18	Computational science in engineering	21AS4A2	2021
19	Data science for Engineers	21AS4A3	2021
20	Introduction to uncertainty analysis and experimentation	21AS4A4	2021
21	Design practice	21AS4A5	2021
22	Fundamentals of Avionics	21AS45	2021

BoS-CHAIRMAN

Professor & Head

Department of Aerospace Engineering
RV College of Engineering
Bengaluru - 560 059

Mysore Road, RV Vidyaniketan
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PRINCIPAL

RV COLLEGE OF ENGINEERING
BENGALURU - 560 059

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BoS Meeting

1 message

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Fri, Dec 13, 2019 at 12:27 PM

To: satya.iyengar@quest-global.com

Respected Sir,

Sub: Invitation to attend the Board of Studies (BoS) Meeting-reg

A meeting of the Board of Studies (BoS) in 'Aerospace Engineering' is scheduled to be held on 14/12/2019 at R V College of Engineering, Bengaluru. We are happy to invite you for the meeting.

Agenda : Modification of the syllabus of the course Electronics & Communication Systems (Theory) - Course Code 18AS45 of IV Sem BE Aerospace Engg.

The meeting is scheduled at 10.00 a.m. in Aerospace Engineering Department. We look forward to your active participation in the BoS meeting and seek valuable suggestions.

I request you to kindly attend the Meeting and make it a success. Travel arrangements will be made as per your convenience.

Looking forward to hearing from you.

Thanks & Regards
Yours Sincerely

Dr. R S Kulkarni
Professor HoD
Department of Aerospace Engineering
R.V.College of Engineering
Bengaluru – 560 059

BoS Meeting

4 messages

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Thu, Dec 12, 2019 at 3:37 PM

To: shysur54@gmail.com

Respected Sir,

Sub: Invitation to attend the Board of Studies (BoS) Meeting-reg

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Agenda : Modification of the syllabus of the course Electronics & Communication Systems (Theory) - Course Code 18AS45 of IV Sem BE Aerospace Engg.

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Thanks & Regards
Yours Sincerely

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Professor HoD
Department of Aerospace Engineering
R.V.College of Engineering
Bengaluru – 560 059

Shyam Chetty <shysur54@gmail.com>
To: AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Thu, Dec 12, 2019 at 5:47 PM

I will attend the meeting. Can you send a Mob. No. With WhatsApp so that I can send my location details. Regards
Shyam

[Quoted text hidden]

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Fri, Dec 13, 2019 at 9:31 AM

To: Shyam Chetty <shysur54@gmail.com>

Sir

Thank you for your e-mail. Kindly send the address and location details to 9880037544 (K R Prabhakara, Foreman,

ASE Dept., RVCE)
Regards,

Dr. R S Kulkarni
Professor HoD
Department of Aerospace Engineering



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Minutes of the 5th Board of Studies (BoS) Meeting of the Department of Aerospace Engineering
held on 14th December 2019, 10.00 AM at R V College of Engineering, Bangalore-560059

Agenda of the 5th BoS Meeting

1. Read and Record the Proceedings of the 4th BoS meeting
2. Review of Action Taken Report for the 4th BoS
3. Analysis and Action Taken Report of Stakeholders Feedback
4. To Review Electronics & Communications Systems (18AS45) Syllabus-4th Semester, 2018 Scheme
5. Planning of activities for Design Thinking Lab

Members Present:

1. Dr Ravindra S Kulkarni-Chairman
2. Mr Adishesha,- Expert from the Industry
3. Mr. Satya Iyengar- Expert from the Industry
4. Mr. R Supreeth- Member, Aerospace Engineering Department
5. Prof. C S Prasad-Invited Member
6. Dr K S Geetha-Invited Member, Prof & Head, Department of Electronics & Communication Engg
7. Gp Cpt Mr Deepak Bana-Faculty, Aerospace Engineering Department
8. Mr Srinivasan S-Faculty, Aerospace Engineering Department

Leave of Absence:

1. Dr. Jitendra J Jadhav VTU – Nominee
2. Dr. B N Raghunandan- Subject Expert (Academics)
3. Mr. Mughilan T R- Student Alumnus
4. Dr H N Narasimha Murthy- Member, Prof & Head, Department of Mechanical Engg
5. Dr. K Ramachandra- Invited Member
6. Dr. S.N Sridhara- Subject Expert (Academics)
7. Mr. R Shunmugam Expert from the Industry

Proceedings of the BoS Meeting:

The chairman of the Board of Studies (BoS)-Aerospace Engineering, Dr **Ravindra S Kulkarni**, formally welcomed all the members present. The primary agenda of the BoS meeting was to revamp the syllabus of Electronics & Communications Systems (18AS45) of 2018 Scheme. Additionally, inputs regarding planning and execution of Design Thinking Lab was also considered.

Agenda #	Discussions and Resolutions
5.1	Read and Record the Proceedings of the 4th BoS meeting
	The minutes of the 4th BoS meeting held on 27th May 2019 were concisely highlighted by the Chairman. All the minutes were duly approved and recommended by all the BoS members.



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Agenda #	Action Taken on 4 th BoS Meeting	
	Recommendations	Action Taken
5.2	Inclusion of 24 Credits for Honours Degree	The 2018 scheme has been revised to include 24 credits for obtaining an additional Honours degree.
	Inculcate the routine of taking Course Exit Survey for Syllabus Framing	The Department is routinely taking Course exit surveys for gathering feedback on curriculum revisions
	Offering of Design Thinking Lab	Design Thinking Lab is now offered in the 3rd or 4th semester students

Agenda #	Analysis and Action Taken Report of Stakeholders Feedback	
	Recommendations	Action Taken
5.3	Students expressed the non-availability of Laboratory setup for the course with lab due to commissioning of the lab	Students were taken to IISc for conducting the labs for completing the lab course requirements
	Improvement in Teaching-Learning Process needed	Faculty members are suggested to use new quicklearn platforms for enhancing the teaching-learning process
	Few alumni expressed the need of evolving to Industry relevant electives	In the curriculum framed for 2018 scheme global elective subjects were introduced for multidisciplinary learning
	Few of the Employers felt the students are lacking in coding and Quality Management and manufacturing domain knowledge	Students were advised to opt for More coding related NPTEL course and global elective courses and manufacturing and quality management courses are introduced in the curriculum

Agenda #	Discussions and Resolutions
5.4	Review of Electronics & Communications Systems (18AS45) Syllabus
	<p>Every member of the board unanimously agreed that the syllabus content of Electronics & Communications Systems (18AS45) has been over ambitiously framed. The board members agreed upon reframing as well as toning down the content of the course. The following key points were discussed and the same has been listed:</p> <ol style="list-style-type: none"> The course Electronics & Communications Systems (18AS45) was newly added as II year course in the 2018 scheme to provide fundamentals in Avionics stream. The course contents should be properly drafted so that continuity is being provided in all the courses related to the avionics vertical of the program. A typical aircraft with all the basic avionics architecture has to be facilitated to augment the students understanding in the field of avionics. One unit on basic communications has to be included in the course. The content on materials and manufacturing of semiconductors can be eliminated from the course and instead block diagrams of various electronic circuitry can be offered.



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	<ul style="list-style-type: none">f. Wave guides offered in unit 5 can be swapped with transmission lines in unit 3.g. Dr Shyam Chetty suggested the feasibility in swapping Electronics & Communications Systems with any course in 5th semester.h. In that case, Electronics & Communications Systems may be swapped with Aerodynamics course offered in 5th semester and the course Electronics & Communications Systems can be offered in 4th semester.
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Agenda #	Discussions and Resolutions
5.5	Comments on Design Thinking Lab
	<ul style="list-style-type: none">a. For promoting innovative thinking leading to patents, products and commercialization, the Design Thinking Lab-18AS47 Course with 2 credits has been introduced for the first time in the curriculum across all the disciplines.b. Mr Satya Iyengar advised the board to include niche topics like data analytics, machine learning, artificial intelligence, ARVR etc.c. Prof. C S Prasad requested the faculty to provide proper counselling to students while embarking on design thinking lab.d. Mr Shyam Chetty agreed with offering unmanned aerial vehicle as a part of design thinking lab to be very appropriate as it covers cross domain functionalities.e. The board members agreed that design thinking lab should focus on incubating the right technical ideas and lead towards a start-up culture

Agenda #	Discussions and Resolutions
5.6	Comment on BE Aerospace Program
	<ul style="list-style-type: none">a. The board requested to look at the possibility of extending the Aerospace Engineering program to a 5 year program.





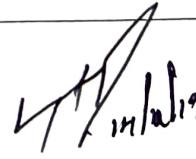
At the end, the Chairman of the Board of Studies (BoS)-Aerospace Engineering, Dr Ravindra S Kulkarni, expressed his complete satisfaction towards the participation of all the members. The Chairman also complemented every member of the BoS in adding significant value in framing the curriculum for Aerospace Engineering Program at RVCE. Lastly, the Chairman ended the meeting with a brief note on all the achievements happened in last one year.

Thanks and Regards

Professor & Head
Department of Aerospace Engineering
R V College of Engineering
Bangalore - 560 059

Dr Ravindra S Kulkarni
Chairman-BoS [Aerospace Engineering]

R.V.COLLEGE OF ENGINEERING : BENGALURU – 560 059
DEPARTMENT OF AEROSPACE ENGINEERING
LIST OF MEMBERS OF BOARD OF STUDIES (BoS) - (2019-22)
ATTENDED THE MEETING HELD ON 14-12-2019

Sl. No.	Name	Designation	Role in the Committee	Signature
1	Dr. R.S. Kulkarni	Professor & Head Department of Aerospace Engg. RVCE, Bengaluru – 560 059 Ph: 9945602861 e-mail: ravindraskulkarni@rvce.edu.in	Chairman	
2	Shri. Jitendra J. Jadhav	Director CSIR-NAL, National Aerospace Laboratories PB No. 1779, HAL Old Airport Road Kodihalli, Bengaluru – 560 017 Ph (Off): 080-25086001 e-mail: director@nal.res.in; www.nal.res.in	VTU - Nominee	Absent
3	Dr. B.N. Raghunandan	Professor Department of Aerospace Engg. IISc, Bengaluru-560 012 Ph: 9449004658; e-mail: raghubn@iisc.ac #838, 6 th Main, Mahalakshmi Layout, Near Modi Hospital, Bengaluru-86.	Subject Expert (ACADEMIC)	Absent
4	Mr. Adishesha	Director-Technology Collins Aerospace, Bengaluru Phone: 9741995670 e-mail: adishesha.sivaramasastry@collins.com	Expert from the Industry	
5	Dr. Shyam Chetty	Ex-Director (Retd.) National Aerospace Laboratories, Bengaluru 'Sharan', No.3009/1-6, II Main, BSK II Stage, Bengaluru – 560 070 (Near Umamaheshwara Temple) Ph: 9845107331 e-mail: shysur54@gmail.com	Expert from the Industry	
6	Mr. Satya Iyengar	General Manager Quest Global Engg Pvt Ltd., #5B, Ground Floor, Pritech II SEZ Bellandur, Varthur Hobli, Bengaluru -560103 Ph: 9663376460 e-mail: satya.iyengar@questglobal.com	Expert from the Industry	
7	Mr. Mughilan T.R.	Skylark Drones 1 st Floor, IKP Eden, Tavarekere Main Road, Opp. Forum Mall, Bengaluru Ph: 9740331193 Email: trmughilan@skylarkdrones.co	Student Alumnus from Mechanical Engg. (Masters from Purdue University in Aerospace Engg.) Presently working in Aerospace Industry	Absent
8	Dr. H.N. Narasimha Murthy	Professor Department of Mechanical Engg. RVCE, Bengaluru	Member	Absent
9	Mr. Supreeth R.	Asst. Professor Department of Aerospace Engg. RVCE, Bengaluru Ph: 9980844119 Email: supreeth.r87@gmail.com	Member	

No.	Name	Designation	Role in the Committee	Signature
10	Dr. K. Ramachandra	Director (Retd.) Gas Turbine Research Establishment BOS, Chairman, Aeronautical & Aerospace Engg, VTU (and also Presently, Visiting Professor, Department of Aerospace Engg., RVCE)	Special Invitee	<i>Absent</i>
11	Prof. C.S. Prasad	Visiting Professor Department of Mechanical Engg. RVCE, Bengaluru	Invited Member	<i>C.S. Prasad</i>
12	Dr. K. Sreelakshmi	Professor and Head Dept. of Telecommunication Engg. RVCE, Bengaluru	Invited Member	<i>Absent</i>
13	Dr. K.S. Geetha	Professor and Head Dept. of Electronics & Communication Engg., RVCE, Bengaluru	Invited Member	<i>Geetha</i>
14	Gp. Capt. (Retd.) Deepak Bana	Visiting Professor Department of Aerospace Engg. RVCE, Bengaluru	Invited Member	<i>Deepak</i>
15	Prof. N. Ramavenkateswaran	Asst. Professor Dept. of Electronics & Communication Engg., RVCE, Bengaluru	Invited Member	<i>N. Ramavenkateswaran</i>

Sub: Invitation to attend the Board of Studies (BoS) Meeting-reg

2 messages

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>
To: Shyam Chetty <shysur54@gmail.com>

Wed, Mar 4, 2020 at 5:38 PM

Respected Sir,

Sub: Invitation to attend the Board of Studies (BoS) Meeting-reg

A meeting of the Board of Studies (BoS) in 'Aerospace Engineering' is scheduled to be held on Friday, 6th March 2020 at Department of Aerospace Engineering, R V College of Engineering, Bengaluru. We are happy to invite you for the meeting.

Agenda : Finalization of the syllabus of V and VI Sem. B.E. Aerospace Engineering of 2018 scheme.

The meeting is scheduled at 10.00 a.m. in Aerospace Engineering Department. We look forward to your active participation in the BoS meeting and seek valuable suggestions.

I request you to kindly attend the Meeting and make it a success. Travel arrangements will be made as per your convenience.

Looking forward to hearing from you.

Thanks & Regards
Yours Sincerely

Dr. R S Kulkarni
Professor HoD
Department of Aerospace Engineering
R.V.College of Engineering
Bengaluru – 560 059

Shyam Chetty <shysur54@gmail.com>
To: AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Wed, Mar 4, 2020 at 7:55 PM

I will not be able to attend the meeting as I am not in town. Regards, Shyam
[Quoted text hidden]



Sub: Invitation to attend the Board of Studies (BoS) Meeting-reg

1 message

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>
To: satya.iyengar@questglobal.com, satya.iyengar@quest-global.com

Wed, Mar 4, 2020 at 5:38 PM

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Yours Sincerely

Dr. R S Kulkarni
Professor HoD
Department of Aerospace Engineering
R.V.College of Engineering
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Minutes of the 6th Board of Studies (BoS) Meeting of the Department of Aerospace Engineering held on 09th March 2020, 10.00 AM onwards at R V College of Engineering, Bangalore-560059

Agenda of the 6th BoS Meeting

1. Read and Record the Proceedings of the 5th BoS meeting held on 14th December 2019
2. Review of the action taken report for the 5th BoS meeting
3. Review and Approval of 5th and 6th Semesters Syllabus of 2018 Scheme
4. Possibility of swapping Avionics Course (18AS74) with Aircraft Systems and Instrumentation Course (18AS54)

Members Present:

1. Dr Ravindra S Kulkarni-Chairman
2. Dr B N Raghunandan, Subject Expert (Academics)
3. Mr Shyam Chetty, Expert from the Industry
4. Mr Adishesha,- Expert from the Industry
5. Mr. Satya Iyengar- Expert from the Industry
6. Mr. R Supreeth- Member, Aerospace Engineering Department
7. Dr K Ramachandra, Invited Member, Aerospace Engineering Department
8. Prof. C S Prasad-Invited Member, Aerospace Engineering Department
9. Dr H N Narasimha Murthy- Member, Prof & Head, Department of Mechanical Engg
10. Dr K S Geetha-Invited Member, Prof & Head, Department of Electronics & Communication Engg
11. Gp Cpt Mr Deepak Bana-Faculty, Aerospace Engineering Department
12. Mr Srinivasan S-Faculty, Aerospace Engineering Department

Leave of Absence:

1. Dr. Jitendra J Jadhav VTU – Nominee
2. Dr. S.N Sridhara- Subject Expert (Academics)
3. Mr. R Shunmugam Expert from the Industry
4. Mr Mughilan T R, Student Alumnus

Proceedings of the BoS Meeting:

The chairman of the Board of Studies (BoS)-Aerospace Engineering, **Dr Ravindra S Kulkarni**, formally welcomed all the members present. The primary agenda of the BoS meeting was to review the 5th and 6th Semester syllabus of 2018 scheme and to contemplate the possibility of swapping the Avionics (18AS74) course with Aircraft Systems and Instrumentation Course (18AS54).

Agenda #	Discussions and Resolutions
6.1	Read and Record the Proceedings of the 5th BoS meeting
	The minutes of the 5 th BoS meeting held on 14 th December 2019 briefed and approved by the BoS members.



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 Website: www.rvce.edu.in

Agenda #	Action Taken on 5 th BoS Meeting	
	Recommendations	Action Taken
6.2	Swap Electronics & Communications Systems with any course in the 5 th semester	Electronics & Communications Systems has been moved to the 4 th semester
	Include unmanned aerial vehicles as a part of the Design Thinking Lab	Unmanned aerial vehicles would be the topic for DTL

Agenda #	Discussions and Resolution
6.3	Comments on Core Courses in 5th and 6th Semester Syllabus
<p>Discussions were made in detail regarding the syllabus of the entire course present in the 5th and 6th semester curriculum. To improve the quality of the courses and also to provide some value addition, the following points are summarised below:</p> <ol style="list-style-type: none"> Mr Satya Iyengar and Dr K Ramachandra advised the committee compulsorily to split the Aerospace Propulsion Course into 2 courses Viz., Aerospace Propulsion-I (18AS52) and Aerospace Propulsion-II (18AS63). All the members of the board recommended the Department to include the concepts of Airbreathing engines in Aerospace Propulsion-I and Non Airbreathing engines in Aerospace Propulsion-II. Mr Shyam Chetty noted that many course like Design of Lighter than Air Aircraft, Rotor dynamics, Helicopter Design are missing from the curriculum. Minor Project (18AS64) in the 6th semester would pave way for carrying out exhaustive and continuous projects and leading to Major Projects with special focus on paper publishing etc. Satya Iyengar persuaded to add Aerospace application experiments like Fuselage, Wing, Tail etc in Finite Element Methods (18AS55) laboratory component which helps in job prospectus. Control Engineering (18AS62) should be complimented with hands-on experiments in self-study part. Off the shelf DIY kits can be procured to perform some table top experiments that will add more value in the teaching learning process. Introducing Internship (18AS74) is a good idea for the students to carry out compulsory industry based internship that gives exposure to industry standards. 	

Agenda #	Discussions and Resolution
6.4	Selection of Elective Courses from MOOC
<p>The members of the board appreciated the concept of introducing MOOC Courses in the curriculum and also suggested in extending the same beyond 5th semester. Regarding MOOC Courses the following suggestions were put forth:</p> <ol style="list-style-type: none"> Selection of courses from MOOC should try to satisfy all the four verticals of Aerospace Engineering Involvement of Department is mandatory in identifying the courses from MOOC. While selecting the courses, the Department should take necessary care to shortlist only those courses which are not present in the existing syllabus and at the same time will add significant value addition to the student. Importance should also be given to courses on Aerospace manufacturing, Programming 	



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Language

- e. Since, a specialised elective on manufacturing is not available in the scheme; the same can be overcome by choosing an elective on Aerospace Manufacturing offered in MOOC.

Sl.No	Course Code	Program	Course Code	Course Name
1	NOC20-AE14	Aerospace Engineering	18AS5A1	Introduction to Aircraft Design
2	NOC20-ME95	Aerospace Engineering	18AS5A2	Introduction to Composites
3	NOC20-ME58	Mechanical Engineering	18AS5A3	Automation in Manufacturing
4	NOC20-MA40	Mathematics	18AS5A4	Scientific Computing Using Matlab (Introduced for all disciplines)
5	noc20-cs83	Computer Science	18CS5A5	The Joy of Computing Using PYTHON (Introduced for all disciplines)

Agenda #	Discussions and Resolution
6.5	Comments on Elective-C & Elective-D Courses in 5th and 6th Semester
	<p>a. To provide a holistic approach in covering all the verticals of Aerospace Engineering several key points were put forward by the committee and are given below:</p> <p>b. Dr B N Raghunandan and Dr H N Narasimha Murthy expressed their opinion on including Heat Transfer along with Combustion elective course to bridge the gap of Propulsion curriculum. Instead of just Heat Transfer, add 1 unit on Combustion and rename the course as Combustion & Heat Transfer.</p> <p>c. Include some electives in consultation with Industry and let that elective be offered by practising engineers from the industry.</p> <p>d. Dr B N Raghunandan recommended the Department to remove elective course on Fundamentals of Astrophysics and provide some other important courses on core Aerospace Engineering.</p> <p>e. Include the current generation of Aerospace Materials (18AS6C4) for Aerospace Engineering Discipline.</p> <p>f. To keep abreast with evolving technologies, curriculum should include courses on Machine learning (18CS6D1). This courses need to be introduced as electives in 5th or 6th semesters.</p> <p>g. As most of the concepts related to Hydraulics and pneumatics are covered in Aircraft Systems course, the same may be removed and some other elective may be included.</p> <p>h. In Experimental Stress Analysis Elective Course (18AS6D2), some hands-on training in experimental investigation can be provided in the curriculum to benefit the students.</p> <p>i. To satisfy the Avionics vertical, few elective courses can be introduced- Optical Fibre Communication, Fundamentals of Computer Networking, Advanced Avionics etc.</p> <p>j. The course title of Digital Signal Processing should necessarily be changed to Signal Processing for Avionics.</p> <p>k. The contents of Digital Signal Processing (18AS6C5) are too vast for an Undergraduate</p>



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R.V. COLLEGE OF ENGINEERING
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DEPARTMENT OF AEROSPACE ENGINEERING

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program and have to be certainly toned down. Compliment the course with certain examples solved through MATLAB. Unit II can be renamed as Conversion of Time Domain to Frequency Domain through Transformation.

- l. The title of the course Fundamentals of Networking is too vague and needs to be changed to Fundamentals of Computer Networking (18AS6D5).
- m. Since Machine Learning (18CS6D6) is been framed by Computer Science Engg Department, workshops on Applications of Machine Learning in Aerospace Engineering can be organised in the Department to make the students align with the Aerospace Engineering Program.

Agenda #	Discussions and Resolution
6.6	Swapping of Avionics (18AS74) with Aircraft Systems & Instrumentation Course (18AS54):
<p>Since all the prerequisites of Avionics course are clearly accomplished by 4th Semester, the board agreed to advance the Avionics course from 7th Semester to 5th Semester as a replacement for Aircraft Systems & Instrumentation Course.</p> <ol style="list-style-type: none"> a. As the Aircraft Systems & Instrumentation Course is more of instrumentation and measurements, it was agreed to be offered as a stand-alone course in 7th semester. b. Necessary precaution has to be taken while framing the syllabus for Avionics course so that there is no overlapping of the contents. 	

At the end, the Chairman of the Board of Studies (BoS)-Aerospace Engineering, Dr Ravindra S Kulkarni, thanked the board for their active participation and critical feedback and suggestions towards the drafted syllabus. The Chairman also complemented every member of the BoS in adding significant value in framing the curriculum for Aerospace Engineering Program at RVCE.

Thanks and Regards


 Professor & Head
 Department of Aerospace Engineering
 R V College of Engineering
 Bengaluru - 560 059



Dr Ravindra S Kulkarni
Chairman-BoS [Aerospace Engineering]



RV COLLEGE OF ENGINEERING®

BENGALURU – 560 059

Department of Aerospace Engineering

Meeting #6

6th Board of Studies (BoS) Meeting

Meeting held on Monday, 9th March 2020

Agenda	Finalization of the syllabus of V and VI Sem. B.E. Aerospace Engineering of 2018 scheme.
Date	Monday, 9 th March 2020
Time	10.00am
Venue	Department of Aerospace Engg., RVCE

#	Name of the faculty	Designation	Role in the Committee	Signature
1.	Dr. R.S. Kulkarni	Professor & Head Department of Aerospace Engg. RVCE, Bengaluru – 560 059 Ph: 9945602861 e-mail: ravindraskulkarni@rvce.edu.in	Chairman	
2.	Shri. Jitendra J. Jadhav	Director CSIR-NAL, National Aerospace Laboratories PB No. 1779, HAL Old Airport Road Kodihalli, Bengaluru – 560 017 Ph (Off): 080-25086001 e-mail: director@nal.res.in; www.nal.res.in	VTU - Nominee	— AB —
3.	Dr. B.N. Raghunandan	Professor Department of Aerospace Engg. IISc, Bengaluru-560 012 Ph: 9449004658; e-mail: raghubn@iisc.ac #838, 6 th Main, Mahalakshmi Layout, Near Modi Hospital, Bengaluru-86.	Subject Expert (ACADEMIC)	— AB —
4.	Mr. Adishesha	Director-Technology Collins Aerospace, Bengaluru Phone: 9741995670 e-mail: adishesha.sivaramasastry@collins.com	Expert from the Industry	
5.	Dr. Shyam Chetty	Ex-Director (Retd.) National Aerospace Laboratories, Bengaluru 'Sharan', No.3009/1-6, II Main, BSK II Stage, Bengaluru – 560 070 (Near Umamaheshwara Temple) Ph: 9845107331 e-mail: shysur54@gmail.com	Expert from the Industry	



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Department of Aerospace Engineering

6.	Mr. Satya Iyengar	General Manager Quest Global Engg Pvt Ltd., #5B, Ground Floor, Pritech II SEZ Bellandur, Varthur Hobli, Bengaluru - 560103 Ph: 9663376460 e-mail: satya.iyengar@questglobal.com	Expert from the Industry	- AB -
7.	Mr. Mughilan T.R.	Skylark Drones 1 st Floor, IKP Eden, Tavarekere Main Road, Opp. Forum Mall, Bengaluru Ph: 9740331193 Email: trmughilan@skylarkdrones.co	Student Alumnus from Mechanical Engg. (Masters from Purdue University in Aerospace Engg.) Presently working in Aerospace Industry	- AB -
8.	Dr. H.N. Narasimha Murthy	Professor Department of Mechanical Engg. RVCE, Bengaluru	Member	Unaravach
9.	Mr. Supreeth R.	Asst. Professor Department of Aerospace Engg. RVCE, Bengaluru Ph: 9980844119 Email: supreeth.r87@gmail.com	Member	
10.	Dr. K. Ramachandra	Director (Retd.) Gas Turbine Research Establishment BOS, Chairman, Aeronautical & Aerospace Engg, VTU (and also Presently, Visiting Professor, Department of Aerospace Engg., RVCE)	Special Invitee	
11.	Prof. C.S. Prasad	Visiting Professor Department of Mechanical Engg. RVCE, Bengaluru	Invited Member	
12.	Dr. K. Sreelakshmi	Professor and Head Dept. of Telecommunication Engg. RVCE, Bengaluru	Invited Member	- AB -
13.	Dr. K.S. Geetha	Professor and Head Dept. of Electronics & Communication Engg., RVCE, Bengaluru	Invited Member	
14.	Gp. Capt. (Retd.) Deepak Bana	Visiting Professor Department of Aerospace Engg. RVCE, Bengaluru	Invited Member	
15.	Prof. N. Ramavenkateswaran	Asst. Professor Dept. of Electronics & Communication Engg., RVCE, Bengaluru	Invited Member	



Invitation to Participate in the 7th Board of Studies in Aerospace Engineering, R V College of Engg, Bangalore

14 messages

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Wed, Aug 11, 2021 at 4:07 PM

To: director@nal.res.in, raghubn@iisc.ac.in, Shyam Chetty <shysur54@gmail.com>, adishesha.sivaramasastry@collins.com, Mughilan T R <trmughilan@skylarkdrones.com>, "Prasad C.S." <prasadcs@rvce.edu.in>, "Ramachandra K." <ramachandrak@rvce.edu.in>, satya.iyengar@quest-global.com, Benjamin Rohit <benjaminr@rvce.edu.in>, Bhaskar K <bhaskark@rvce.edu.in>, DEEPAK BANA <deepakbana@rvce.edu.in>, "Geetha K.S." <geethaks@rvce.edu.in>, Mukesh M <mukeshm@rvce.edu.in>, narasimhamurthy@rvce.edu.in, Pranesh Kumar S R <praneshkumarsr@rvce.edu.in>, Promio Charles F <promiocharlesf@rvce.edu.in>, srinivasans@rvce.edu.in, Supreeth R <supreethr@rvce.edu.in>

Good Morning Sir/Madam,

Trust this mail finds you well.

With pleasure, I hereby inform you that the Department of Aerospace Engg, RVCE is hosting the 7th Board of Studies (BoS) in Aerospace Engineering Program on 18th August, Wednesday from 10.00 AM onwards. The agenda for the meeting is as follows:

- 1) Review and approval of the 7th and 8th Semester curriculum for the 2018 scheme
- 2) Suggestions/Recommendations for implementing NEP 2020 in the forthcoming 2021 Aerospace Engineering Curriculum
- 3) Ratification of 5 extra credits earned by three passed out students (Name: Soundar Rao G (1RV16AS409), Kiran M (1RV16AS405), Pradyumna M S (1RV15AS038), to be considered as Audit Courses

In view of the above, I request you to kindly participate in the BoS meeting and render valuable suggestions to strengthen our curriculum. The link for the BoS meeting is provided below:

<https://rvce.webex.com/rvce/j.php?MTID=m617bef3432e83fc9d7635446a2e2c0af>

Wednesday, Aug 18, 2021 10:00 am | 2 hours | (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

Meeting number: 158 134 9923

Password: y3SwtGtjY23

Join by video system

Dial 1581349923@rvce.webex.com

You can also dial 210.4.202.4 and enter your meeting number.

Join by phone

Use VoIP only



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Minutes of the 7th Board of Studies (BoS) Meeting of the Department of Aerospace Engineering held on 18th August 2021, 10.00 AM onwards

Mode of Conduction: ONLINE-CISCO Webex

Meeting Link: <https://rvce.webex.com/rvce/j.php?MTID=m6aad3d7a66cb463e92fe2976974e056f>

Meeting number: 158 134 9923

Meeting password: y3SwtGtjY23

Agenda of the 7th BoS Meeting

1. Read and Record the Proceedings of the 6th BoS meeting held on 06th March 2021
2. Read and record the Action taken Report on 6th BoS Meeting
3. Analysis and Action Taken Report of Stakeholders Feedback for the Academic Years 2020-2021 and 2021-2022
4. Review and approval of the 7th and 8th Semester curriculum for the 2018 scheme
5. Suggestions/Recommendations for implementing NEP 2020 in the forthcoming 2021 Aerospace Engineering Curriculum
6. Ratification of credits earned by three passed out students (Name: Soundar Rao G (1RV16AS409), Kiran M (1RV16AS405), Pradyumna M S (1RV15AS038), to be considered for the award of their degrees.

Members Present:

1. Dr Ravindra S Kulkarni-Chairman
2. Dr B N Raghunandan, Subject Expert (Academics)
3. Mr Shyam Chetty, Expert from the Industry
4. Mr Adishesha,- Expert from the Industry
5. Gp Cpt Mr Deepak Bana-Faculty, Aerospace Engineering Department
6. Mr Srinivasan S-Faculty, Aerospace Engineering Department
7. Mr. R Supreeth- Member, Aerospace Engineering Department
8. Mr Benjamin Rohit, Faculty, Aerospace Engineering Department
9. Mr Bhaskar K, Faculty, Aerospace Engineering Department
10. Mr Pranesh Kumar R, Faculty, Aerospace Engineering Department

Leave of Absence:

1. Dr. Jitendra J Jadhav VTU – Nominee
2. Mr. Satya Iyengar- Expert from the Industry
3. Dr. S.N Sridhara- Subject Expert (Academics)
4. Mr Mughilan T R, Student Alumnus
5. Dr K Ramachandra, Invited Member, Aerospace Engineering Department
6. Prof. C S Prasad-Invited Member, Aerospace Engineering Department
7. Dr H N Narasimha Murthy- Member, Prof & Head, Department of Mechanical Engg

Proceedings of the BoS Meeting:

The chairman of the Board of Studies (BoS)-Aerospace Engineering, **Dr Ravindra S Kulkarni**, extended a warm welcome to all the Board of studies and the invited members. As a prelude, the Chairman discussed briefly regarding the current pandemic situation and its consequential effects on the education



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system. He stressed the importance of technology in the challenging times that has been instrumental in successfully transcending the teaching-learning processes. Additionally, the efforts taken by the faculty members in successfully adapting to the online education system were highlighted and duly appreciated by the chairman. Later, the chairman manifested the major objectives of the 7th BoS and with respect to the agenda, the following points have been discussed and recorded.

Agenda #	Discussions and Resolutions
7.1	Read and Record the Proceedings of the 6th BoS meeting
	The minutes of the 6 th BoS meeting held on 06 th March 2021 briefed and approved by the BoS members.

Agenda #	Action Taken on 6 th BoS Meeting	
	Suggestions	Action Taken
7.2	Integrate Airbreathing engines in Aerospace Propulsion-I and Non Airbreathing engines in Aerospace Propulsion-II.	Topics incorporated into the respective courses
	Add 1 unit on Combustion and rename Heat Transfer to Combustion & Heat Transfer	Course renamed and units on Combustion added.
	Remove Fundamentals of Astrophysics and replace with core Aerospace Engineering courses	Fundamentals of Astrophysics removed
	Remove Hydraulics and Pneumatics	Hydraulics and Pneumatics removed
	Rename Fundamentals of Networking to Fundamentals of Computer Networking (18AS6D5).	Course title updated
	Organize workshops on Applications of Machine Learning in Aerospace Engineering.	Planning for organising a workshop on Machine Learning is underway
	Move Avionics course from 7th Semester to 5th Semester, replacing Aircraft Systems & Instrumentation.	Avionics course moved to 5th Semester

Agenda #	Analysis and Action Taken Report of Stakeholders Feedback for Academic Year 2020-2021	
	Recommendations	Action Taken
7.3	Not enough faculty members in the department, making it difficult for students to get the help and guidance they needed for their studies and research	The department hired additional faculty members to reduce the student-to-faculty ratio, ensuring that students could receive more personalized attention and support
	Many of the lab equipment pieces were either not installed or not functioning properly during our time, which hindered our hands-on learning experience	A comprehensive audit of the lab facilities was conducted, and necessary equipment was installed and repaired. The department allocated funds for regular maintenance and upgrades, ensuring that all lab equipment was operational and up-to-date
	The lack of projectors in classrooms made it difficult to follow along with presentations and lectures, impacting the overall learning experience	Projectors and other multimedia equipment were installed in all classrooms. The department also ensured that technical support was available to address any issues promptly, enhancing the effectiveness of lectures and presentations



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Analysis and Action Taken Report of Stakeholders Feedback for Academic Year 2021-2022		
	Students were more concerned about the Placement	AIRBUS and BOEING expressed their interest to hire Aerospace Students
	Some alumni have suggested to introduce practical based elective subject	Pure Practical based elective is difficult to introduced so we have added few more experiments and EL activity
	Suggested to introduce Skill based industry training to meet the industry requirements and ready for on-board job	Skill based training was introduced in 2021 syllabus

Agenda #	Discussions and Resolutions
7.4	Comments on Core Courses in 7th and 8th Semester Syllabus
	<p>With the start of the meeting, the chairman presented the scheme and syllabus of the 7th and 8th semester with details on both the core as well as elective courses. The contents, scope and coverage for each course were discussed in detail and the suggestions/recommendations are recorded below:</p> <ol style="list-style-type: none"> a. As per My Shyam Chetty, the EQUATIONS OF MOTION in unit 1 of AIRCRAFT STABILITY AND CONTROL, rendered a different connotation and recommended to move it to the third unit for better compliance and continuity. Dr B N Raghunandan agreed to this and requested to move the EQUATIONS OF MOTION from UNIT 1 to UNIT 3 or UNIT 5. To get better understanding of AIRCRAFT STABILITY AND CONTROL, the board suggested including lecture hours from Mr Shyam Chetty as a value addition. One session on overview in the beginning of the course and two to three sessions on the conclusion of the course would definitely provide better perspective on the course. b. Regarding VIBRATION ENGINEERING, in order to maintain the flow of contents in a more logical manner, Dr B N Raghunandan recommended the course coordinator to move FOURIER SERIES AND NUMERICAL SOLUTION to UNIT 2 and shift SPRING MASS DAMPER SYSTEMS to UNIT 1. c. In AIRCRAFT SYSTEMS & INSTRUMENTATION, Mr Shyam Chetty strongly recommended to intertwine the theory with GUEST LECTURE or EXPERT LECTURE to cover few aspects on SENSOR, APPLICATIONS to get an overview of the course. This will in turn enhance the level of understanding of all the systems of an aircraft. d. Dr B N Raghunandan underlined the need for the AEROSPACE students to be aware of the UNMANNED AERIAL VEHICLE SYSTEMS which has been missed out and has high relevance to the Aerospace curriculum. Replying, the chairman agreed to include the UNMANNED AERIAL VEHICLE SYSTEMS in the forthcoming curriculum as a Global Elective course. e. The board suggested replacing OPERATION RESEARCH Course with the SPACECRAFT SYSTEMS (18AS6D4) which is of critical importance to the AEROSPACE students and urged to include it in the upcoming 2020 syllabus. f. With respect to the OPTICAL FIBRE COMMUNICATIONS, the board felt the course to be super ambitious for aerospace students especially in undergraduate level. Mr Shyam Chetty highlighted the course to be a NICHE concept and still underway in aircrafts and spacecrafts. g. Since THEORY OF AEROELASTICITY is a complicated course, GUEST LECTURES by DR A R UPADHYAYA might be organised to get an overview of the course. This will be very much helpful in easy understanding of the concepts like introduction, importance etc. h. Mr Shyam Chetty proposed the idea of renaming HELICOPTER DYNAMICS as ROTORCRAFT DYNAMICS WITH MULTIROTOR or just ROTORCRAFT



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- DYNAMICS.** The course can be widely acknowledging helicopters and rotor crafts applied for UAVs too.
- i. The title of **AIRCRAFT MAINTENANCE, OVERHAUL & REPAIR** needs to be rephrased as **AIRCRAFT MAINTENANCE, REPAIR & OVERHAUL**. To augment the knowledge on the course, a technical talk can be arranged to deliver the perspective of AMRO from an expert point of view.
 - j. The course **Advanced Avionics** can be introduced as an elective of higher learning for students preferring to delve into Avionics Domain.

Agenda #	Discussions and Resolution
7.5	Suggestions on the Global Elective courses
<p>Dr B R Raghunandan highlighted the flexibility of selecting interdisciplinary courses by students and just not limit for few global elective courses.</p> <ol style="list-style-type: none"> a. A student of any domain should have a fair chance of choosing any course of their choice and interest irrespective of the domain. b. The courses should not be just limited to global elective only. c. The possibility of choosing interdisciplinary courses should be offered across all the semester to improve multidisciplinary education. d. Promoting interdisciplinary education would be highly recommended for supporting higher learning. e. The chairman applauded the suggestion provided by Dr B N Raghunandan and pointed out to positively represent during the academic council meeting. 	

Agenda #	Discussions and Resolution
7.6	Comments on Implementing National Education Policy-2020 in Aerospace Curriculum
<p>As a Prelude, the chairman briefly outlined the crux of NEP-2020. In order to cater to the national education policy- 2020, the possibilities of including liberal arts, skill development were discussed and recorded as below:</p> <ol style="list-style-type: none"> a. The panel members appreciated the efforts by the government in implementing skill based education rather than rote learning. b. Dr B N Raghunandan valued the objectives of NEP and recognised its potential in achieving interdisciplinary learning. The curriculum should enable scope for interdisciplinary courses that will aid in achieving multidisciplinary learning and outcomes. c. To provide a holistic technical development and understanding, the technical projects should be consecutively continued by final year students until all the objectives are completed. d. Strong industry-academia partnership should be promoted that can facilitate real time skill development through projects, internships etc. e. According to Mr Shyam Chetty, INDUSTRY SPONSORED LABS would be a great value addition for improving the technical skill set for the students. f. For better clarity on implementing NEP-2020, suggestions and good practices employed in NATIONAL INSTITUTE OF DESIGN can be followed for aerospace engineering program. g. Mr Adishesha of Collins Aerospace highly recommended the board to include MODEL BASED DESIGN, DIGITAL TECHNOLOGIES, MODELLING AND SIMULATIONS AND SYSTEM ENGINEERING in the upcoming curriculum to cater to the futuristic requirements and challenges. Mr Adishesha overwhelmingly accepted to help the Department in framing the syllabus for the said courses along with possibility of certifications for catering 	



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the credit requirements.

Agenda #	Discussions and Resolution
7.7	Regarding Course End Survey for Each Courses
<p>To improve any course, the board unanimously suggested taking feedback regarding the course after every semester. The course end survey will definitely render the right quantum of feedback that truly helps in tailoring the course for the future generations. Besides, the feedback will also act as a precursor to enhance the quality of the course and has to be made a standard practice in the Department. The feedback may be anonymously given by the students and should primarily consist of critical points like comprehension of the topics, difficulty level of the topics, overall coverage, and any other requirements.</p>	

Agenda #	Discussions and Resolution
7.8	Ratification of credits for the passed out students
<p>In regards to the ratification of the credit, the following recommendations were made by the board members:</p> <ul style="list-style-type: none"> a) Work on the possibility of allowing the students to choose which courses to be credited/audited in case of any shortfall or higher credits earned. b) The board members agreed to consider the DESIGN OF MACHINE ELEMENTS COURSE as an AUDIT course for Mr Kiran M (USN: 1RV16AS405) and Mr Soundar Raj G (USN: 1RV16AS409). c) Likewise, the board permitted Mr Pradyumna M S (USN: 1RV15AS038) to CREDIT CONSTITUTION OF INDIA AND AIRCRAFT STABILITY & CONTROL COURSES for the equivalence of credit. 	

At the end, the Chairman of the Board of Studies (BoS)-Aerospace Engineering, Dr Ravindra S Kulkarni, summarised all the discussions and concluded the meeting by outlining the students achievement for the year 2020-2021. The chairman thanked the board for their active participation and critical feedback and suggestions towards the drafted syllabus. The Chairman also complemented every member of the BoS in adding significant value in developing competent curriculum for Aerospace Engineering Program at RVCE.

Thanks and Regards

Professor & Head
 Department of Aerospace Engineering
 RV College of Engineering
 Bengaluru - 560 059



Dr Ravindra S Kulkarni
 Chairman-BoS [Aerospace Engineering]

Invitation to Participate in the 8th OFFLINE Board of Studies in Aerospace Engineering, R V College of Engg, Bangalore

2 messages

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Fri, Apr 1, 2022 at 4:12 PM

To: adishesha.sivaramasastry@collins.com, Satya Iyengar <satya.iyengar@quest-global.com>, Raghunandan B N <raghubn@iisc.ac.in>, Shyam Chetty <shysur54@gmail.com>, director@nal.res.in, Mughilan T R <trmughilan@skylarkdrones.com>

Good Morning Sir,

Trust this mail finds you well.

I would like to inform you that the Department of Aerospace Engineering is planning to conduct the 8th Board of Studies (BoS)-Aerospace Engg meeting on 8th April 2022 at 10.00 AM in the Aerospace Engg Department. The topics of discussion are:

- 1) Framing of new Scheme and Syllabus for 2021-Scheme
- 2) Implementation of NEP in the forthcoming curriculum
- 3) Discussion of the syllabus for III and IV semesters for the new 2021 scheme.

In view of the above, I request you to kindly participate in the BoS meeting and render your valuable suggestions in framing a competitive curriculum. The meeting would be held in OFFLINE mode in the Aerospace Engg Department.

Looking forward to hearing from you.

Thanks & Regards

Dr. Ravindra S. Kulkarni

Professor & Head,

Department of Aerospace Engineering,

R.V.College of Engineering,

RVV Post, Bangalore - 560 059.

Mobile: 9945602861

Sivaramasastry, Adishesha C Export License Required - US Collins

Tue, Apr 5, 2022 at 2:47 PM

<Adishesha.Sivaramasastry@collins.com>

To: AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>, Satya Iyengar <satya.iyengar@quest-global.com>, Raghunandan B N <raghubn@iisc.ac.in>, Shyam Chetty <shysur54@gmail.com>, "director@nal.res.in" <director@nal.res.in>, Mughilan T R <trmughilan@skylarkdrones.com>

Dear Sir,

I am planning to attend the meeting in-person.

Best Regards

Adishesha Sivaramasastry

Director-Technology|Technical Fellow-Systems

COLLINS AEROSPACE,

Netra Tech Park, EPIP, Whitefield, Bangalore, Karnataka 560066, India

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[Quoted text hidden]



**Minutes of the 8th Board of Studies (BoS) Meeting of the Department of Aerospace Engineering
held on 08th April 2022, 10.00 AM onwards at R V College of Engineering, Bangalore-560059**

Venue of the meeting: Aerospace Engg CAD LAB 1

Agenda of the 8th BoS Meeting

- 1. Review and approval of 2021 Scheme for Aerospace Engineering***
- 2. Review and approval of III and IV semester curriculum for 2021 Scheme***
- 3. Suggestions/Recommendations for implementing NEP 2020 in the 2021 Aerospace Engineering Curriculum***

Members Present:

1. Dr Ravindra S Kulkarni-Chairman
2. Dr B N Raghunandan, Subject Expert (Academics)
3. Mr Adishesha,- Expert from the Industry
4. Mr. Satya Iyengar- Expert from the Industry
5. Gp Cpt Mr Deepak Bana-Faculty, Aerospace Engineering Department
6. Dr Promio Charles F, Faculty, Aerospace Engineering Department
7. Mr Srinivasan S-Faculty, Aerospace Engineering Department
8. Mr. R Supreeth- Member, Aerospace Engineering Department
9. Mr Benjamin Rohit, Faculty, Aerospace Engineering Department
10. Mr Bhaskar K, Faculty, Aerospace Engineering Department

Leave of Absence:

1. Dr. Jitendra J Jadhav VTU – Nominee
2. Mr Shyam Chetty, Expert from the Industry
3. Mr Mughilan T R, Student Alumnus
4. Dr H N Narasimha Murthy- Invited Member, Professor, Department of Mechanical Engg



Meeting #8

8th Board of Studies (BoS) Meeting

Agenda	<ol style="list-style-type: none"> 1. <i>Read and Record the Proceedings of the 7th BoS meeting held on 18th August 2021</i> 2. <i>Review of Action Taken Report on 7th BoS</i> 3. <i>Review and approval of 2021 Scheme for Aerospace Engineering</i> 4. <i>Review and approval of III and IV semester curriculum for 2021 Scheme</i> 5. <i>Suggestions/Recommendations for implementing NEP 2020 in the 2021 Aerospace Engineering Curriculum</i>
Date	Friday, 8th April 2022
Time	10.00 AM
Venue	CAD LAB 1, Department of Aerospace Engg., RVCE

Proceedings of the 8th BoS Meeting:

The BoS meeting formally began at 10.00 AM in the CAD lab 1. **Dr Ravindra S Kulkarni**, chairman of the Board of Studies (BoS)-Aerospace Engineering, invited all the members of BoS and faculty to the 8th Board of Studies meeting. Since, implementation of NEP has been the need of the hour, the chairman stressed about the key highlights of NEP-2020 and its implementation in the Aerospace Engineering curriculum. The key features of NEP 2020 i.e., experiential learning, more lab classes and practical approach to teaching were proposed by the chairman. With a brief preamble on NEP-2020, the following points with regards to the agenda were discussed and recorded.

Agenda #	Discussions and Resolutions
8.1	Read and Record the Proceedings of the 7th BoS meeting
	The minutes of the 7 th BoS meeting held on 18th August 2021 briefed and approved by the BoS members.

Agenda #	Action Taken on 7 th BoS Meeting	
	Suggestions	Action Taken
8.2	In the course Aircraft Stability and Control, move equations of motion from Unit 1 to Unit 3 and move Fourier Series And Numerical solution to Unit 2 and spring mass damper systems to Unit 1.	Changes implemented in the course Aircraft Stability and Control.
	Replace Operations Research course with Systems Engineering	Systems Engineering course introduced in the 2018 syllabus as a replacement to Operations Research course.
	The course Helicopter Dynamics shall be renamed as Rotorcraft Dynamics	Course renamed as per BoS recommendations
	Rephrase Aircraft Maintenance, Overhaul & Repair to Aircraft Maintenance, Repair & Overhaul	Course title updated accordingly
	Ratification of Credits for Passed Out Students (Agenda #28) Allow students to choose courses to be credited/audited	Mr. Kiran M and Mr. Soundar Raj G: DESIGN OF MACHINE ELEMENTS course approved as an audit course.



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		Mr. Pradyumna M S: Credit for Constitution of India And Aircraft Stability & Control courses approved.
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Agenda #	Discussions and Resolutions
8.3	Requirement of a detailed course and program end surveys for framing the upcoming syllabus
<p>With the start of the meeting, the chairman presented the 2021 Aerospace Engineering scheme followed by the syllabus for 3rd and 4th semester. The details of all the common courses, core courses and elective courses were meticulously proposed. The contents, scope and coverage for each course were discussed in detail and the suggestions/recommendations are recorded below:</p> <ol style="list-style-type: none"> a. In order to make a competitive syllabus, Mr Satya Iyengar suggested taking thorough feedback regarding the course from all the stakeholders. The feedback should necessarily comprise of the scope of the course, depth of coverage, course content, scope for enrichment and knowledge enhancement and many more. Besides, the faculty should also take a feedback on self-assessment which would enable the betterment of the faculty in terms of student engagement, quality of teaching, knowledge transfer etc. Based on the feedback from students, the newer course may be prepared. b. Dr Raghunandan, recommended the department to frame the syllabus for Thermodynamics, Fluid Mechanics and Structural mechanics to be aligned with Aerospace Applications and not similar to the one proposed by Mechanical Engineering Department. This is to maintain the orientation of the course towards Aerospace applications only. c. Since, one of the courses in 3rd semester is for 2 credits; the board proposed Introduction to Aerospace Engg-21AS33 course as it requires only the basics of all the verticals. d. For 3rd semester scheme, the same format consisting of Introduction to Aerospace Engg, Thermodynamics, Mechanics of Fluids and Structural mechanics can be retained as it is. e. For those courses which couldn't be offered in the curriculum, guest lectures and workshops can be organised by the Department. f. Bridge course in mathematics can be planned in case of any concepts not included in the basic mathematics courses. g. In 4th semester, the course Electronics and Communications should be renamed as Fundamentals of Avionics (21AS45). 	

Agenda #	Discussions and Resolution
8.4	Inclusion of Experiential Learning components in the curriculum
<p>With an emphasis for providing practical based learning in engineering, the experiential learning components were planned and proposed as provided below:</p> <ol style="list-style-type: none"> a. All the board members unanimously appreciated the paradigm change brought in the education systems. b. To render practice based learning, various modalities were suggested by the board members and faculty. c. As a need of the hour, students are required to learn MATLAB and PYTHON which are basic criteria for machine learning, AR/VR etc in Aerospace Engineering domain. d. Dr Adishesha recommended the inclusion of MATLAB and PYTHON algorithms as minor components of various courses that enable the students to get hands-on training on these 	



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softwares.

- e. Besides, **MATLAB** and **PYTHON** can be used by the students to solve some design based problems in reference books to get a hands-on experience in these softwares.
- f. To evaluate the experiential learning part of the course, the rubrics and assessment criteria's should be clearly defined to avoid confusions amongst the students.

Agenda #	Discussions and Resolution
8.5	Recommendations on Elective courses
The following recommendations/suggestions were proposed for elective courses: <ol style="list-style-type: none">a. Dr B N Raghunandan ideated the need of choosing appropriate course form NPTEL to cater to the present and future needs of the Aerospace Engineering domain.b. Students should be given the autonomy for choosing any elective offered by the department.c. Niche courses like data science, reliability, operations research, lean manufacturing, 6-Sigma etc can be offered as electives which will enable the students to be aligned with the current technologies.d. In case of non-feasibility of including the said elective courses, guest lectures may be arranged for students to stay abreast with technologies.	

Agenda #	Discussions and Resolution
8.6	Regarding the software courses in the curriculum
Dr B R Raghunandan highlighted the need for training students on CAD and simulation softwares and proposed the following. <ol style="list-style-type: none">a. Aerospace Engineering students lack the fundamentals of CAD and simulation softwares.b. The feasibility of adding Skill development courses on CAD software CATIA/AUTODESK/SOLIDWORKS etc and Simulation softwares like NASTRAN/PATRAN, ANSYS etc can be studied by the Departments.c. According to Dr B N Raghunandan, imparting training on CATIA and ANSYS would enable students in skill development and ultimately aid in placements in core companies.d. Rendering proper experiential learning in PYTHON and MATLAB will provide more scope and opportunities for students towards job guarantee and placements.	

At the end, the Chairman of the Board of Studies (BoS)-Aerospace Engineering, Dr Ravindra S Kulkarni, summed up all the discussions and concluded the meeting by outlining the students' achievement for the year 2021-2022. The chairman thanked the board for their active participation and critical feedback and suggestions towards the scheme and syllabus drafting.

Thanks and Regards

Professor & Head
Department of Aerospace Engineering
RV College of Engineering
Bangalore - 560 059



Dr Ravindra S Kulkarni
Chairman-BoS [Aerospace Engineering]





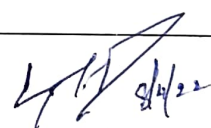
Board of Studies Members List for the Year 2021-2022


SL	NAME	DESIGNATION	Role in the BoS
1	Dr. R S Kulkarni	Professor & Head, Dept. of Aerospace Engg RVCE, Bangalore Ph:+91 9945602861 Email: ravindraskulkarni@rvce.edu.in	 Chairman
2	Dr Jitendra Jadhav	Director, National Aerospace Laboratories, Bangalore Office-26763205 Residence-25265579 Email: director@nal.res.in www.nal.res.in	VTU- Nominee
3	Dr. Shyam Chetty	Former Director, National Aerospace Laboratories, Bangalore Ph:9845107331 Email: shysur54@gmail.com	Subject Expert (Research Lab)
4	Dr. B N Raghunandan	Professor, Dept. of Aerospace Engg, IISc Bangalore Ph: +91 80 2293 2753 E-mail: raghubn@aero.iisc.ernet.in	Subject Expert (Academic)
5	Mr Satya Iyengar	General Manager Quest Global Engg Pvt Ltd. #5B, Ground Floor, Pritech II SEZ, Bellandur, Varthur Hobli, Bangalore-560103.	 Expert from the Industry
6	Mr Adishesha Srinivasamurthy	Director, Technology & Systems Engineering Collins Aerospace, Bangalore Email: adishesha.sivaramasastry@collins.com	 Expert from the Industry
7	Prof. C S Prasad	Former Professor Dept. of Mechanical Engg, RVCE, Bangalore	 Invited Member
8	Dr Ramachandra K	Former Director Gas Turbine Research Establishment Defense Research & Development Organization (DRDO) Ministry of Defence, Government of India, Bangalore	 Invited Member



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Approved by AICTE,
New Delhi, Accredited
by NAAC, Bengaluru

9	Dr H Narasimhamurthy	Professor Dept. of Mechanical Engg, RVCE, Bangalore	Invited Member
10	Gp Cpt. Mr Deepak Bana	Visiting Faculty Dept of Aerospace Engg, RVCE, Bangalore deepakbana@rvce.edu.in	Invited Member  08/04/2022
11	Mr. Mugilan T R	Skylark Dones, 1st Floor, IKP Eden, Tavarekere main road, Opp Forum Mall, Bangalore Ph: 9740331193 Email: trmugilan@skylarkdrones.co	Student Alumni - Mechanical Presently working in Aerospace Industry
12	Mr S Srinivasan	Asst. Professor, Dept of Aerospace Engg, RVCE, Bangalore Ph: 9980844119 Email: ssrinivasan@rvce.edu.in	 Member
130	Mr. Supreeth	Asst. Professor, Dept of Aerospace Engg, RVCE, Bangalore Ph: 9980844119 Email: supreethr@rvce.edu.in	 Member
14	Mr Benjamin	Asst. Professor, Dept of Aerospace Engg, RVCE, Bangalore Ph: 9980844119 Email: benjaminr@rvce.edu.in	Member


Professor & Head

Professor & Head

Department of Aerospace Engineering
RV College of Engineering
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Status: 5.0.0

 **noname**
5K

DSU AERO AE <chairman-ae@dsu.edu.in>

Wed, Jul 5, 2023 at 12:16 PM

To: AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Cc: Aerospace Engineering <ae_faculty@rvce.edu.in>, Aerospace Engineering <ae_nts@rvce.edu.in>, "Sreelakshmi K." <sreelakshmik@rvce.edu.in>, "Ravish Aradhya H. V." <ravisharadhya@rvce.edu.in>, subodh@agreydesigntech.com, id-subodh@agreydesigntech.com, swathireddysr@gmail.com, Ramachandra Krishnaswamy <drkrc2006@gmail.com>, bvn.ramkumar@gmail.com

Thanks, I will be there.

[Quoted text hidden]

DSU AERO AE <chairman-ae@dsu.edu.in>

Thu, Jul 6, 2023 at 6:36 AM

To: AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

FYI

----- Forwarded message -----

From: **Ramachandra Krishnaswamy** <drkrc2006@gmail.com>

Date: Wed, 5 Jul, 2023, 18:48

Subject: Re: Invitation to Participate in the 9th OFFLINE Board of Studies in Aerospace Engineering, R V College of Engg, Bangalore

To: DSU AERO AE <chairman-ae@dsu.edu.in>

Hello Prof Kulkarni

Good day

Thanks for the info on the BoS meeting

I will be with you for the meeting

Request: inform Dr Supreeth for arranging a vehicle at 8-30 at my Residence and send the Driver details

Regards

Dr Ramachandra

[Quoted text hidden]



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Invitation to Participate in the 9th OFFLINE Board of Studies in Aerospace Engineering, R V College of Engg, Bangalore

4 messages

AEROSPACE ENGINEERING RVCE <hod.ae@rvce.edu.in>

Wed, Jul 5, 2023 at 12:07 PM

To: Aerospace Engineering <ae_faculty@rvce.edu.in>, Aerospace Engineering <ae_nts@rvce.edu.in>, "Sreelakshmi K." <sreelakshmik@rvce.edu.in>, "Ravish Aradhya H. V." <ravisharadhya@rvce.edu.in>, subodh@agreydesigntech.com, id-subodh@agreydesigntech.com, swathireddysr@gmail.com, Ramachandra Krishnaswamy <drkrc2006@gmail.com>, bvn.ramkumar@gmail.com, DSU AERO AE <chairman-ae@dsu.edu.in>

Good Morning Professor,

I would like to inform you that the Department of Aerospace Engineering is conducting the 9th Board of Studies (BoS)-Aerospace Engg meeting on 7th July 2023 at 10.30 AM in the Aerospace Engg Department CAD Lab 1. The topics of discussion are:

- 1) Review of Syllabus for 5th and 6th semesters-2021-Scheme
- 2) Review of Syllabus for 3rd and 4th semesters-2022-Scheme
- 3) Discussion on the skill labs for the III year Aerospace Engg students

The syllabus for the above-said schemes is provided with the mail for your valuable suggestions and feedback.

In view of the above, I request you to kindly participate in the BoS meeting and render your valuable suggestions in framing a competitive curriculum. The meeting would be held in OFFLINE mode in the CAD Lab 1, Aerospace Engg Department.

Also, after the meeting, I would request you to kindly join us for Lunch in the canteen from 1.00 PM onwards.

Thanks & Regards

Dr. Ravindra S. Kulkarni
Professor & Head,
Department of Aerospace Engineering,
R.V.College of Engineering,
RVV Post, Bangalore - 560 059.
Mobile: 9945602861

2 attachments

- Aerospace 5th and 6th Sem Syllabus 2021 Scheme.pdf**
1460K
- Aerospace 3rd and 4th Sem Syllabus 2022 Scheme.pdf**
1367K

Mail Delivery System <Mailer-Daemon@gsgpm1035.siteground.biz>

Wed, Jul 5, 2023 at 12:08 PM

To: hod.ae@rvce.edu.in

This message was created automatically by mail delivery software.

A message that you sent could not be delivered to one or more of its recipients. This is a permanent error. The following address(es) failed:

id-subodh@agreydesigntech.com
No Such User Here

Action: failed

Final-Recipient: rfc822;id-subodh@agreydesigntech.com



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Meeting #9

9th Board of Studies (BoS) Meeting

Agenda	<ol style="list-style-type: none"> 1. <i>Read and Record the Proceedings of the 8th BoS meeting held on 8th April 2022</i> 2. <i>Read and record the Action taken Report on 8th BoS Meeting</i> 3. <i>Analysis and Action Taken Report of Stakeholders Feedback for the Academic Year 2022-2023</i> 4. <i>Review and approval of Syllabus for 5th and 6th semesters-2021-Scheme</i> 5. <i>Review and approval of Syllabus for 3rd and 4th semesters-2022-Scheme</i> 6. <i>Suggestions/Recommendations for implementing skill labs for the III year Aerospace Engg students</i>
Date	Friday, 7 th July 2023
Time	10.30 AM
Venue	CAD LAB 1, Department of Aerospace Engg., RVCE

Proceedings of the 9th BoS Meeting:

The BoS meeting formally began at 10.30 AM in the CAD lab 1. **Dr Ravindra S Kulkarni**, chairman of the Board of Studies (BoS)-Aerospace Engineering, invited all the members of BoS and faculty to the 9th Board of Studies meeting. Due to the constitution of new board, HoD requested all the members present to introduce themselves to the board. After the introduction, HoD thanked all the external BoS members for accepting the request and being a part of the Board of Studies in Aerospace Engg at RV College of Engg.

The Chairman of the board officially began the BoS meeting by highlighting the agendas for the academic year 2022-2023.

Agenda #	Discussions and Resolutions
9.1	Read and Record the Proceedings of the 8th BoS meeting
	The minutes of the 8 th BoS meeting held on 8 th April 2022 were briefed and approved by the BoS members.

Agenda #	Action Taken on 7 th BoS Meeting	
	Suggestions	Action Taken
9.2	Collect thorough feedback from all stakeholders on course scope, depth, content, and faculty self-assessment.	Feedback collection initiated; surveys distributed to students, faculty, and industry partners.
	The credits of the course "Introduction to Aerospace Engg-21AS33" to be reduced	Credits reduced to 2
	In 4 th semester, the course Electronics and Communications should be renamed	Renamed as "Fundamentals of Electronics and Communications"
	Define rubrics and assessment criteria for experiential learning	Rubrics and assessment criteria developed and communicated to students
	Choose appropriate NPTEL courses for current and future needs	NPTEL courses reviewed and selected; list updated for students.



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	Study the feasibility of adding training courses on CATIA and ANSYS, MATLAB Etc.	CATIA and ANSYS, MATLAB would be offered as a part of skill lab training
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Agenda #	Analysis and Action Taken Report of Stakeholders Feedback	
	Recommendations	Action Taken
9.3	Students needed more ICT platforms for engaging lectures	Faculty are advised to use ICT like Google Classrooms, CANVA, etc for better delivery of lectures
	Students expressed the non-availability of courses on Unmanned Aerial Vehicles in the curriculum	The BoS had agreed to offer 1 or 2 courses on UAVs from NPTEL for the Students to choose during their semesters
	More support on Industry internships are required from the Department	The Department in collaboration with Boeing India is offering an Industry Based Elective for 6th Semester Local Elective
	Some of the companies desired to have some courses on Aircraft Maintenance which was not available in the curriculum	5 Days workshop was arranged for the III & IV year students on Aircraft Maintenance, Repair and Overhauling

Agenda #	Discussions and Resolutions
9.4	Recommendations on the Courses of 2021 and 2022 scheme
	<ol style="list-style-type: none"> a. All the Board members unanimously proposed the department to have greater autonomy in framing the syllabus. b. In order to improve the content delivery, Dr BVN Ramkumar suggested focussing more on tutorial classes especially for numerical courses. Tutorial classes would provide a platform for detailed coverage of the course curriculum. c. Mr Subodh, requested to include links for important videos and internet sources related to the courses in the reference books. d. Dr BVN Ramkumar underlined few errors in the scheme and syllabus and asked to rectify them. e. To overcome the non-availability of the Aircraft Performance course in the curriculum, the Flight Mechanics course can be clubbed with Aerodynamics. First 3 units can focus towards Aerodynamics, and the rest two units on Flight Performance. The course can be named as Aerodynamics and Flight Performance offered in 5th semester of 2021 scheme. f. The board members also suggested checking the provision on providing all the NPTEL courses under MOOC rather than department short listing for the students. g. Dr KR Ramachandra expressed his concern regarding the need for more Aerospace related courses in the curriculum. h. The course on Aerospace propulsion-22AS43 needs more basics concepts on Brayton cycle and jet engine derivatives as the IAE course is offloaded in the new 2022 scheme. i. Dr K Ramachandra and BVN Ramkumar suggested the department to offer open experiments in the lab to meet the requirements of NBA j. The Avionics course can be shifted to 6th semester in the 2021 scheme as the 2018 scheme has the same course in 7th semester. This will remove the burden on the faculty handling the course as it would overlap in the same Odd semester.



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Agenda #	Discussions and Resolution
9.5	Proposal for the Cluster and Global Elective Courses
	<p>a. To be job ready, courses on Manufacturing must be compulsorily offered. Since there are no slots available for core courses, manufacturing courses can be offered as electives. Those students interested alone can take them. To cater to the students, Aerospace Manufacturing-I and Aerospace Manufacturing-II can be offered in 5th and 6th semesters as Departmental electives.</p> <p>b. As composites is not included in the curriculum, it also can be offered as a Departmental elective as Introduction to Composite Materials. Students pursuing interest in structures can opt this course.</p> <p>c. Since, the Department is about Aerospace Engineering, the curriculum should have some courses on Aerospace Engineering. One course on Fundamentals of Satellite System can be offered to the students as Departmental Elective.</p> <p>d. For the inter-departmental students to appropriately choose the cluster and global elective courses, the prerequisites need to be thoroughly and specifically provided.</p> <p>e. The course on Airport Engineering and Space Vehicle Design can be offered as the Cluster Electives from Aerospace Engg Department.</p>

Agenda #	Discussions and Resolution
9.6	Recommendations for Summer Internship
	<p>The following recommendations/suggestions were proposed for summer internship course:</p> <p>a. For the summer internship, the Board members expressed their concerns regarding availability of 2 months' vacation for the students to pursue internship.</p> <p>b. Dr BVN Ramkumar suggested that the Internships can be pursued in the industry or academia by carrying it in house projects.</p> <p>c. Dr BVN Ramkumar requested the department to follow the internship model implemented at BITS, Pilani where the institute takes the responsibility of providing internship at industries to students at a nominal fee.</p>

Agenda #	Discussions and Resolution				
9.7	Recommendations for Inclusion of MOOC (NPTEL) Courses				
	<p>Due to the unavailability of the few courses under NPTEL, the following courses are to be offered as MOOC electives for 4th semester 2021 scheme Aerospace Engineering students.</p>				
	Sl.No	Course Code	Program	Course Code	Course Name
	1	noc23-ae10	Aerospace Engineering	21AS4A1	Fundamentals of combustion for propulsion
	2	noc23-ae12	Aerospace Engineering	21AS4A2	Computational science in engineering
	3	noc23-de20	Computer Engineering	21AS4A3	Data science for Engineers
	4	noc23-me99	Mechanical Engineering	21AS4A4	Introduction to uncertainty analysis and experimentation
	5	noc23-mg116	Management	21AS4A5	Design practice



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The following recommendations/suggestions were proposed for NPTEL Courses.

Agenda #	Discussions and Resolution
9.8	Suggestions on the Skill Lab for III Year Students'
	<ol style="list-style-type: none">For employability of students after third year, the Skill lab should focus more on the industry specific requirements.As per the Board members, to enhance the chance of securing jobs, the Skill lab should include Hands-on training and expertise on CAD, CFD simulation, structural simulation, numerical modelling Python and Matlab coding, CNC coding etc.

At the end, the Chairman of the Board of Studies (BoS)-Aerospace Engineering, Dr Ravindra S Kulkarni, summed up all the discussions and concluded the meeting by outlining the students' achievement for the year 2022-2023 and placement statistics. The chairman thanked the board for their active participation and critical feedback and suggestions towards the scheme and syllabus drafting.

Thanks and Regards

Professor & Head
Department of Aerospace Engineering
R V College of Engineering
Bangalore - 560 059

Dr Ravindra S Kulkarni
Chairman-BoS [Aerospace Engineering]





Meeting #9

9th Board of Studies (BoS) Meeting

Meeting held on Friday, 7th July 2023

Agenda	1) Review of Syllabus for 5th and 6th semesters-2021-Scheme 2) Review of Syllabus for 3rd and 4th semesters-2022-Scheme 3) Discussion on the skill labs for the III year Aerospace Engg students
Date	Friday, 7 th July 2023
Time	10.30am
Venue	Department of Aerospace Engg., RVCE

#	Name of the faculty	Designation	Role in the Committee	Signature
1	Dr. Ravindra S Kulkarni	Professor & Head Department of Aerospace Engg. RVCE, Bengaluru – 560 059 Ph: 9945602861 e-mail: ravindraskulkarni@rvce.edu.in	Chairman	 7/7/2023
2	Dr. Joseph Matthew	Professor & Chariman, Dept. of Aerospace Engg, Indian Institute of Science (IISc), Bangalore-560012	Professor & VTU- Nominee	Leave of ABSENCE
3	Dr. Dineshumar Harursamphath	Associate Professor Department of Aerospace Engineering, Indian Institute of Science, Bangalore CV Raman Rd, Bengaluru, Karnataka 560012	Academic Expert	Leave of ABSENCE
4	Dr. B V N Ramkumar	Prof and Chairman Department of Aerospace Engineering School of Engineering, Dayananda Sagar University	Academic Expert	 7/7/2023
5	Mr. Subodh R Babu	Founder Director Agrey DesignTech #1624, 35 th cross, 15 th main, Banashankari 2 nd Stage, Bengaluru-560070	Industry Expert	 7/7/2023



6	Ms. Swathi Reddy	Associate Design Engineer Caterpillar 3rd Floor, RMZ NXT, Campus 1A, Whitefield Road, Sonnenhali Village, Bengaluru, Karnataka 560066	Student Alumnus	Leave of ABSENCE
7	Dr. K. Ramachandra	Director (Retd.) Gas Turbine Research Establishment BOS, Chairman, Aeronautical & Aerospace Engg, VTU	Special Invitee	<i>[Signature]</i>
8	Gp. Capt. (Retd.) Deepak Bana	Visiting Professor Department of Aerospace Engg. RVCE, Bengaluru	Invited Member	<i>[Signature]</i> 07/1/23
9	Prof. Jitendra Singh	Professor of Practice Department of Aerospace Engg. RVCE, Bengaluru	Invited Member	<i>[Signature]</i> 7/1/23
10	Dr. K. Sreelakshmi	Professor and Head Dept. of Telecommunication Engg. RVCE, Bengaluru	Invited Member	Leave of ABSENCE
11	Dr. Promio Charles F.	Associate Professor Department of Aerospace Engg. RVCE, Bengaluru Ph: 9036546003 Email: promiocharlesf@rvce.edu.in	Member	<i>[Signature]</i>
12	Dr. Supreeth R.	Associate Professor Department of Aerospace Engg. RVCE, Bengaluru Ph: 9980844119 Email: supreethr@rvce.edu.in	Member	<i>[Signature]</i> 07/1/23
13	Prof. S Srinivasan	Assistant Professor Department of Aerospace Engg. RVCE, Bengaluru Ph: 9901998773 Email: ssrinivasan@rvce.edu.in	Member	<i>[Signature]</i>
14	Prof. Benjamin Rohit	Assistant Professor Department of Aerospace Engg. RVCE, Bengaluru Ph: 9986735896 Email: benjaminr@rvce.edu.in	Member	<i>[Signature]</i>

15 Siddharth

Rotor performance
Engineer

Student
Alumnus

[Signature]
Siddharth

Dr. Ravindra S Kulkarni
Prof and Head

[Signature] 7/1/23 Siemens Gamesa