



# Bharath

## INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Declared as Deemed-to-be University under section 3 of UGC Act, 1956)  
(Vide Notification No. F.9-5/2000 - U.3, Ministry of Human Resource Development, Govt. of India, dated 4<sup>th</sup> July 2002)

### DEPARTMENT OF AERONAUTICAL ENGINEERING

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173, Agaram Road, Selaiyur, Tambaram,  
Chennai - 600 073. Tamil Nadu.



**Dr. M.Sundararaj** M.E., Ph.D  
Head

17/09/2018

F.No.Aero/Events-1.1/Value Added Course/2018

### CIRCULAR

Department of Aeronautical Engineering is organising a Value Added Course on Gas Dynamics to be delivered by the eminent Industry expert and speaker , Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited on **19/09/2018** for the students of B.Tech (Aero & Aerospace Engineering). All the students are hereby instructed to be available for the said course.



HOD-Aero

**Dr. M. SUNDARARAJ, M.E., Ph.D.,**  
HOD  
Department of Aeronautical Engineering  
Bharath Institute of Higher Education & Research  
(Declared as Deemed to be University U/S 3 of UGC Act. 1956)  
Selaiyur, Chennai-600 073. INDIA





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INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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## Department of Aeronautical Engineering

Value Added Course

Gas Dynamics

### Objective :

This course essentially deals with the very high speed fluid flows, mainly the flows in the regime of supersonic speed. Hence understanding of this flow regime and its characteristic signatures is the objective of this course

Course Co-ordinator: Mr.R.Karthikeyan

### COURSE LAYOUT

SNO	Date	Course Content	Duration	Instructor
1	19/09/2018(FN)	Basic concepts : Introduction to compressible flow, A brief review of thermodynamics and fluid mechanics, Integral forms of conservation equations,	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
2	19/09/2018(AN)	Differential conservation equations, Continuum Postulates, Acoustic speed and Mach number, Governing equations for compressible flows.	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions
3	22/09/2018(FN)	One-dimensional compressible flow: One dimensional flow concept, Isentropic flows, Stagnation/Total conditions, Characteristics speeds of gas dynamics	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
4	22/09/2018(AN)	Dynamic pressure and pressure coefficients, Normal shock waves, Rankine-Hugonit equations, Rayleigh flow, Fanno flow, Crocco's theorem	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
5	23/09/2018(FN)	Two-dimensional flows: Oblique shock wave and its governing equations, $\theta$ -B-M relations, The Hodograph and Shock Polar, Supersonic flow over wedges	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
6	23/09/2018(AN)	Quasi-one dimensional flows: Governing equations, Area-velocity relations, Isentropic flow through variable-area ducts, Convergent-divergent (or De Laval) nozzles, Over-expanded and under-expanded nozzles, Diffusers.	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited





7	29/09/2018 (FN)	Unsteady wave motions: Moving normal shock wa	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
8	29/09/2018 (AN)	Physical features of wave propagation, Elements of	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
9	30/09/2018 (FN)	Piston analogy, Incident and reflected expansion w	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited
10	30/09/2018 (AN)	Introduction to experimental facilities: Subsonic wind tunnels, Supersonic wind tunnels, Shock tunnels, Free-piston shock tunnel, Detonation-driven shock tunnels, and Expansion tubes	3 Hours	Ms.Kavya, Managing Director, Big Bang Boom Solutions private limited

#### BOOKS AND REFERENCES

1	John D. Anderson Jr (1990), Modern Compressible Flow with Historical
2	Liepmann HW and Roshko A (1957), Elements of Gas Dynamics, John
3	Shapiro A (1954) The Dynamics and Thermodynamics of Compressible Flow, Ronald Press,







# Shriharath

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Department of Aeronautical Engineering

## Certificate of Participation

This acknowledges that

PEREZHIL MUGUNDAN D  
U17AE012

Has undertaken 30 hours course on "GAS DYNAMICS" Organized by DEPARTMENT  
OF AERONAUTICAL ENGINEERING, BIHER FROM 19.09.2018 TO 30.09.2018.

R.KARTHIKEYAN, PROGRAM  
COORDINATOR

HOD/AERO



# Participant Feedback Form

(On course completion)

Date 30/09/2018

Course on gas dynamics

Student Name (optional) GHITTAJI THAMMANI

Student ID (optional) U15AE 00A

**a) Helpful and knowledgeable staff:**

Very satisfied       Satisfied       Somewhat satisfied       Not satisfied

**b) Staff friendliness:**

Very satisfied       Satisfied       Somewhat satisfied       Not satisfied

**c) Ease of registration:**

Very satisfied       Satisfied       Somewhat satisfied       Not satisfied

**2. Is there anything we can improve with our registration process?**

Need more informative like this

## B. The Training Facility

**3. How satisfied were you with the training facility on the follow**

**a) Cleanliness of facility:**

Very satisfied       Satisfied       Somewhat satisfied       Not satisfied

**b) Comfort of training room:**

Very satisfied       Satisfied       Somewhat satisfied       Not satisfied

**4. Is there anything we can improve with any of the above?**

More training needed





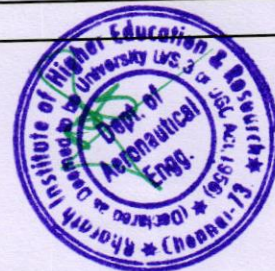
**Department of Aeronautical Engineering**

Value Added Course

Course on Gas Dynamics

List of students Registered on 19/09/2018

SNO	Reg NO	Name of the Student
1	U15AE001	A NAGANANDAN
2	U15AE002	AJAY S
3	U15AE003	AMUTHAN A
4	U15AE004	ARAVINDAN A
5	U15AE005	ARUP RATAN PARAMANIK
6	U15AE006	BANDARU KOTA NAGENDRA SURESH
7	U15AE007	BOJJA MANOJ KUMAR
8	U15AE008	CHILAKALAPUDI YASHWANTH TEJA
9	U15AE009	CHITTOJI THANMAYI
10	U15AE010	DASARI RUFUS
11	U15AE011	DEEPAK SIVAN
12	U15AE012	DEGALA VINODKUMAR
13	U15AE013	DIVYA A
14	U15AE014	EDWIN PRAKASH F
15	U15AE015	ERLA NAVEEN KUMAR
16	U16AE001	SARKAR ABHIJIT
17	U16AE002	MOHAMMED FAHATH M S
18	U16AE003	ANTANIESKEMIN Y
19	U16AE004	KEERTHIVASAN J
20	U16AE005	CHARANKUMAR A
21	U16AE006	VIGNESH T
22	U16AE007	BOYANAPALLE SRINIVAS ANSHU BAB
23	U16AE008	SEELAM DURGA LAKSHMI PRIYANKA
24	U16AE009	LOKESH B
25	U16AE010	KANDULA THRINATH
26	U16AE011	KODAVALURU SAI BHAVANA
27	U16AE012	UJJWAL KUMAR SINGH
28	U16AE013	SARATH KUMAR S
29	U16AE014	PRAKASH GUPTA
30	U16AE015	MOHANISH DHRUV
31	U16AS001	SARATH KUMAR S
32	U16AS002	KESAVARAJU K V
33	U16AS003	GUDIPATI SIVAKUMAR
34	U16AS004	PRITHIVIRAJAN S M
35	U16AS005	PRASANNA PRAKASH J
36	U16AS006	VISHAVAK P S
37	U16AS007	RUMADE SHUBHAM NARAYAN





38	U17AE001	BHARKAVI S
39	U17AE002	YETTULA RISHAN RAJ
40	U17AE003	YACOB S
41	U17AE004	PAVANKALYAN J
42	U17AE005	KARAMPUDI SAILOKESH
43	U17AE006	RAGUL S
44	U17AE007	PRATHAP V
45	U17AE008	JAYA SURYA R
46	U17AE009	AJAY KUMAR S
47	U17AE010	GANESH S
48	U17AE011	MANJUNADH ESHWAR P
49	U17AE012	PEREZHIL MUGUNDAN D
50	U17AE013	CHITTI SAI SRAVAN KUMAR
51	U17AE014	VALLALA MUKESH GOUD
52	U17AE015	BISMAYA BENNY KOLLICHIRA
53	U17AE016	VIJAY S
54	U17AE017	NARESH KUMAR G
55	U17AE018	SINGAMPALLI HARISH
56	U17AE019	SAMBANTHAM S M S
57	U17AE020	PRAVEENRAJ S
58	U17AE021	SOWMIYA V
59	U17AS001	TARWIN PRINCE U
60	U17AS002	JUSTIN LEO J
61	U17AS003	VISHAL M
62	U17AS004	S AJITH VIRAT
63	U17AS005	KISHORE KUMAR P
64	U17AS006	BATCHU NEERAJAKSHI
65	U17AS007	ARUL PRAKASH A

