### VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI Scheme of Teaching and Examination 2018 – 19 Outcome Based Education(OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2018 – 19)

Programme: B.E AERONAUTICAL ENGINEERING

					Teachi	ng Hours	s/Week		Exam	ination		-
SI. No	Course and Course Code		Course Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
			Transform Calculus, Fourier Series and Numerical		L	Т	Р					
1	BSC	18MAT31	Techniques (Common to all Branches)	Mathematics	2	1		03	40	60	100	
2	PCC	18AE32/ 18AS32	AF	3	1		03	40	60	100		
3	PCC	18AE33/ 18AS33	Mechanics Of Materials	AE	3	0		03	40	60	100	
4	PCC	18AE34	Elements Of Aeronautics	AE	3	0		03	40	60	100	
5	PCC	18AE35/ 18AS35	Mechanics Of Fluids	AE	3	0		03	40	60	100	
6	PCC	18AE36	Measurement & Metrology	AE	3	0		03	40	60	100	
7	PCC	18AEL37 A\18AEL3 7B	Measurement And Metrology Lab/ Material Testing Lab	AE		2	2	03	40	60	100	
8	PCC	18AEL38	Machine Shop Lab	AE		2	2	03	40	60	100	
	HSMC	18KVK39/ 49	Vyavaharika Kannada (Kannada for communication)/			2			100			
9		18KAK39/ 49	Aadalitha Kannada (Kannada for Administration)	HSMC		2			100		100	
			OR	_			1		40		-	
		18CPC39/ 49	Constitution of India, Professional Ethics and Cyber Law		1	Examination is b		02		60		
		7	Law		17	06		24	420	480		-
				TOTAL	OR	OR	04	OR	OR	OR	900	2
					18	08		26	360	540		
Note	BSC: Bas	ic Science, PC	C: Professional Core, HSMC: Humanity and Social Scient	nce, NCMC: Non-	credit ma	ndatory c	ourse.					
			da (Kannada for communication) is for non-Kannada spe who speak, read and write Kannada.						litha Kanı	nada (Kan	nada for	
	1	1	Course prescribed to lateral entry Diploma holde		semester	r of Engi	neering p	rograms	1	1	1	-
10	NCMC	18MATDIP3		Mathemati cs	02	01		03	40	60	100	(
seme exam grade (b)Th C <b>our</b>	ster of BE ination. In c. In such a nese Course rses prescu al entrant s	/B. Tech prog case, any stud case, the stude es shall not be or ribed to latera	t courses Additional Mathematics I and II prescribed for grams, shall attend the classes during the respective a ent fails to register for the said course/fails to secure the ents have to fulfill the requirements during subsequent ser considered for vertical progression, but completion of the I entry B. Sc degree holders admitted to III semester of B.Sc. Stream, shall clear the non-credit courses Eng e Courses shall not be considered for vertical progression	semesters to comp e minimum 40 % of nester/s to appear e courses shall be n of Engineering pr ineering Graphics	plete all of the pre for SEE. nandatory ograms and Elen	the formation of Control of Contr	alities of TE marks ward of de Civil Engi	the cours , he/she sh egree.	e and ap hall be de	pear for eemed to h	the Unive nave secur	rec

Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other Universities to fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card.

The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, minimum hours' requirement should be fulfilled. Activity Points (non-credit) have no effect on SGPA/CGPA and shall not be considered for vertical progression.

In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

# VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI Scheme of Teaching and Examination 2018 – 19 Outcome Based Education(OBE) and Choice Based Credit System (CBCS) B.E. AERONAUTICAL ENGINEERING (Effective from the academic year 2018 – 19)

IV	SEMESTER
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3 H 4 H	-	18MAT41 18AE42/ 18AS42	Course Title Complex Analysis ,Probability And Statistical Method	Teaching Department	Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	Marks	<b>Aarks</b>	<b>Aarks</b>	dits
2 H 3 H 4 H	PCC	18AE42/			L	Т	d Practical/ Drawing	Dura ho	05 CIE Marks	SEE Marks	Total Marks	Credits
3 H 4 H	PCC			Mathematics	2	1		03		60		3
4 I			Aerodynamics –I	AE	3	1		03	40	60	100	4
4 I		18AE43	Aircraft Propulsion	AE	3	0		03	40	60	100	3
5 I		18AE44/ 18AS44	Mechanisms And Machine Theory	AE	3	0		03	40	60	100	3
	PCC	18AE45	Aircraft Material Science	AE	3	0		03	40	60	100	3
6 I	PCC	18AE46	Turbomachines	AE	3	0		03	40	60	100	3
7 F	PCC	18AEL47A/ 18AEL47B	Measurement And Metrology Lab/ Material Testing Lab	AE		2	2	03	40	60	100	2
8 F	PCC	18AEL48/ 18ASL48	Computer Aided Aircraft Drawing Lab	AE		2	2	03	40	60	100	2
		18KVK39/49	Vyavaharika Kannada (Kannada for communication)/			2			100		100	1
	Ŋ	18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
9	HSMC		OR	HSMC								
	H	Constitution of India Professional Ethics and			1			02		60	60	
		18CPC39/49		Examination is by obj type questions			ective					
				TOTAL	17	08		24	420	480		
					OR	OR	04	OR	OR	OR	900	24
					18	10		26	360	540		
3KVK3	39/49V	yavaharika Kanna	Professional Core, HSMC: Humanity and Social Scie ada (Kannada for communication) is for non-Kannada ts who speak, read and write Kannada. Course prescribed to lateral entry Diploma hold	a speaking, reading a	nd writir	ng studen	ts and 18			itha Kan	nada (Kai	ınada
10 1	NCMC	18MATDIP4		Mathematics	02	01	neering	03	40	60	100	0
			courses Additional Mathematics I and II prescribed f			0 I						
mester	of BI	B. Tech progra	ms, shall attend the classes during the respective	semesters to comp	olete all	the form	alities of	the cou	irse and	appear f	or the U	niversit
			t fails to register for the said course/fails to secure th			scribed (	CIE mark	s, he/she	shall be	deemed	to have s	ecured
			s have to fulfill the requirements during subsequent se	11		c .1	1 0					
These	e Cours		nsidered for vertical progression, but completion of th									
. 1			Courses prescribed to lateral entry B. Sc degree ho				•	0 X 0			C .1	
			.Sc. Stream, shall clear the non-credit courses Eng Courses shall not be considered for vertical progression									rst Yea
			students fail to earn the prescribed activity Points, Eig e award of degree only after the release of the Eighth s			ıll be issı	ed only a	after earn	ing the r	equired a	ctivity Po	oints.

### VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI Scheme of Teaching and Examination 2018 – 19 Outcome Based Education(OBE) and Choice Based Credit System (CBCS) B.E. AERONAUTICAL ENGINEERING (Effective from the academic year 2018 – 19)

**V SEMESTER Teaching Hours** Examination /Week Teaching Department Practical/ Drawing Duration in hours Theory Lecture Tutorial **CIE Marks Fotal Marks** Credits SEE Marks SI. **Course Title** Course and No Course code Р L Т 18AE51/ 1 HSMC Management and Entrepreneurship AE 3 0 03 40 60 100 3 18AS51 2 PCC 18AE52/ 40 60 100 ---AE 3 03 4 Aerodynamics-II 1 18AS52 AE 03 PCC 18AE53 Aircraft Structures-I 100 3 3 1 --40 60 4 Introduction To Composite Materials 4 PCC AE 40 60 100 3 ----18AE54 3 03 5 PCC 18AE55/ AE 40 60 100 3 ------Aircraft Systems & Instrumentation 3 03 18AS55 18AE56 PCC Theory of Vibrations AE 03 100 6 3 40 60 3 ----PCC 18AEL57/ AE 2 2 40 60 100 2 7 ---Aerodynamics Lab 03 18ASL57 2 8 PCC Energy Conversion & Fluid AE 2 2 40 60 100 ---03 18AEL58 Mechanics Lab Civil/ Environmental HSMC 18CIV59 **Environmental Studies** 1 02 40 60 100 1 -----9 [Paper setting: Civil Engineering Board] TOTAL 19 06 04 26 360 540 900 25 Note: PCC: Professional Core, HSMC: Humanity and Social Science. AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examination 2018 – 19
Outcome Based Education(OBE) and Choice Based Credit System (CBCS)
B.E. AERONAUTICAL ENGINEERING

(Effective from the academic year 2018 – 19)

VI SEMESTER	
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					Teachir	g Hours	/Week		Exam	ination		
SI. No	Course and Course code		Course Title	Teaching Department	Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	Т	Р		0	02	E	
1	PCC	18AE61	Aircraft Performance	AE	3	1		03	40	60	100	4
2	PCC	18AE62	Aircraft Structures II	AE	3	1		03	40	60	100	4
3	PCC	18AE63/ 18AS63	Finite Element Method	AE	3	1		03	40	60	100	4
4	PEC	18AE64X	Professional Elective -1	AE	3			03	40	60	100	3
5	OEC	18AE65X	Open Elective -A		3			03	40	60	100	3
6	PCC	18AEL66	Aircraft Propulsion Lab	AE		2	2	03	40	60	100	2
7	PCC	18AEL67	Aircraft Structures Lab	AE		2	2	03	40	60	100	2
8	MP	18AEMP68	Mini-project	AE			2	03	40	60	100	2
9	Internship		Internship	To be carrie semesters.	d out during	the vacat	ion/s of VI	and VII s	semesters	and /or V	II and VII	I
				TOTAL	15	07	06	24	320	480	800	24

## Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.

Professional Elective -1										
Course code under18XX64X	Course Title									
18AE 641	Aircraft Transportation Systems									
18 AE 642	Numerical Methods									
18 AE 643	Artificial Intelligence & Expert Systems									
18 AE 644	Gas Turbine Technology									
	Or or Election A									

#### **Open Elective -A**

Students can select any one of the open electives offered by other Departments expect those that are offered by the parent Department (Please refer to the list of open electives under 18XX65X). Selection of an open elective shall not be allowed if,

• The candidate has studied the same course during the previous semesters of the programme.

• The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.

• A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

#### Mini-project work:

Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini-project can be assigned to an individual student or to a group having not more than 4 students.

#### **CIE procedure for Mini-project:**

(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the Mini-project work shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

(ii) Interdisciplinary: Continuous Internal Evaluation shall be group wise at the college level with the participation of all the guides of the college.

The CIE marks awarded for the Mini-project shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 50:25:25.The marks awarded for the project report shall be the same for all the batch mates.

### SEE for Mini-project:

(i) Single discipline: Contribution to the Mini-project and the performance of each group member shall be assessed individually in the semester end examination (SEE) conducted at the department.

(ii) Interdisciplinary: Contribution to the Mini-project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belongs to.

**Internship:** All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. Internship shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared fail and shall have to complete during subsequent University examination after satisfying the internship requirements.

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

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			VISVESVARAYA TECHNOLO Scheme of Teaching				LAGAV	I				
		(	Dutcome Based Education(OBE) an B.E. AERONAUT (Effective from the	nd Choice B TICAL ENG	ased Cre INEERI	edit Sys NG	tem (CB	CS)				5
VII SE	EMESTER		(Effective from the	acadeniic ye	ai 2010	- 19)						5
					Tea	ching H /Week	hing Hours /Week		Examination			
		ourse and ourse code	Course Liffe	Teaching Department	Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
		-			L	Т	Р		_			
1	PCC	18AE71	Aircraft Stability & Control	AE	3			03	40	60	100	3
2	PCC	18 AE 72	Computational Fluid Dynamics	AE	3			03	40	60	100	3
3	PEC	18 AE 73X	Professional Elective - 2	AE	3			03	40	60	100	3
4	PEC	18 AE 74X	Professional Electives - 3	AE	3			03	40	60	100	3
5	OEC	18 AE 75X	Open Elective -B	AE	3			03	40	60	100	3
6	PCC	18 AE L76	Modelling & Analysis Lab	AE		2	2	03	40	60	100	2
	PCC	18 AE L77	Flight Simulation Lab	AE		2	2	03	40	60	100	2
7	Project	18 AE P78	Project Work Phase - 1	AE			2		100		100	1
8	Internship		Internship								, it shall be	
0	internship		internship	carried o	ut during	the vaca	tion of V	II and V	III seme	sters)		
				TOTAL	15	04	06	18	340	360	700	20
Note: P	CC: Profession	nal core, PEC: Pr	ofessional Elective.									
				nal Elective	- 2							
Course	code under	Course Titl	e									
18XX7.	3X											
8AE73	31	Fatigue And	Fracture Mechanics									
8AE73	32	Control Eng	ineering									
8AE73			and Pneumatics									
18AE73		Heat and Ma										
18AS73		ficat allu Ma										
104573	94		Dusfasia	al Els dias	2							
a		0 514		nal Electives	- 3							
	code under	Course Titl	e									
18XX7												
18AE74		High Perform	mance Computing									
18AE74	42/											
18AS74	42	Wind Tunne	el Techniques									
18AE74	43/											
18AS74	43	Guidance, N	lavigation & Control									
18AE74		Operations I										
101127		operations		Elective -B								
of open Selectio • The • The • A si	electives unde on of an open e candidate has syllabus conte imilar course, u	r 18XX75X). elective shall not b studied the same ent of open electiv under any categor	a electives offered by other Departme be allowed if, course during the previous semesters ve is similar to that of the Department y, is prescribed in the higher semester tented under the guidance of Program	s of the progr tal core cours rs of the prog	amme. es or pro gramme.	fessional	l electives					
Based of ndividu he proj CIE pr (i) Sing	ual student or t ect student stre ocedure for P le discipline:	to a group having ength can be 5 or roject Work Pha	ase - 1: nall be awarded by a committee consi	linary cases,	like the f	funded p	rojects ree	quiring s	tudents f	rom diffe	erent discip	line
The CII Problem the Proj (ii) Inte external The CII identific project Interns	E marks award n identification ject report shal rdisciplinary: ( l guide/s, if any E marks award cation, Objecti report shall be ship: All the st	ded for the project n, Objectives and l be the same for Continuous Interry y, is desirable. ed for the project ves and Methodo the same for all t tudents admitted	ct work phase -1, shall be based on Methodology), project presentation s all the batch mates. The Evaluation shall be group wise at twork phase -1, shall be based on the ology), project presentation skill and	kill and ques the college le e evaluation of d question ar e to undergo	tion and wel with of project ad answe mandato	answer s the partic t work pl r sessior ry intern	session in cipation of hase -1 Ro hase the r ship of 4	the ratio of all gui eport(co atio 50:2 weeks o	des of the vering Li 25:25.The luring the	5.The ma e college. terature \$ e marks e vacatio	arks awarde Participati Survey, Pro awarded fo n of VI an	ed fo ion o oblem or th d V
internsh AICTE	nip shall be dec 2 <b>activity Poin</b>	clared fail and sha ts: In case studen	idered as a head of passing and shall all have to complete during subsequent ts fail to earn the prescribed activity and for the award of degree only after	t University Points, Eight	examinat h semest	tion after er Grade	satisfyin Card sha	g the into	ernship re	equireme	nts.	

			VISVESVARAYA TECHN Scheme of Teachi					VI						
			Outcome Based Education(OBE B.E. AERONA	E) and Choic AUTICAL F	e Based ( NGINEEI	Credit S RING		CBCS)						
VIII	SEMESTER		(Effective from	the academ	ic year 20	18 – 19)								
Sl.		se and	Course Title		Teachii	ng Hours	s /Week		Evam	ination				
No.		se code	course rule		Teachin	ig noun	37 WEEK		L'Adm	mation	T	4		
		Teaching Department	Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits				
				D	L	Т	Р		0					
1	PCC	18AE81	Flight Vehicle Design		3			03	40	60	100	3		
2	PEC	18AE82X	Professional Elective - 4		3			03	40	60	100	3		
3	Project	18AEP83	Project Work Phase - 2				2	03	40	60	100	8		
4	Seminar	18 AE S84	Technical Seminar	~ .			2	03	100		100	1		
5	Internship	18AEI85	Internship	VI and V	ted during t VII semeste semesters.	rs and /o		03	40	60	100	3		
				Total	1		04	15	260	240	500	18		
Note	PCC: Profess	sional Core, PE	C: Professional Elective.											
Profe	essional Electi	ives - 4												
Cour	se code under	r 18XX82X	Course Title											
18AE			Avionics											
18AE			Boundary Layer Theory											
18AF			Helicopter Dynamics											
18AE	E824		Flight Testing											
CIE i (i) Si memi The C quest (ii) I Partic The C quest SEE (i) Si exam (ii) I exam Inter exam	ngle disciplin bers of the Dep CIE marks awa ion and answe nterdisciplina cipation of exte CIE marks awa ion and answe for Project W ingle disciplin ination (SEE) nterdisciplina ination (SEE) nship: Those, ination after sa	partment, one o arded for the pr r session in the <b>rry:</b> Continuou ernal guide/s, if arded for the pr r session in the <b>/ork Phase - 2:</b> <b>ne:</b> Contributi conducted at th <b>rry:</b> Contributi conducted sepa who have not p atisfying the int	arks shall be awarded by a comm of whom shall be the Guide. roject work phase -2, shall be base ratio 50:25:25.The marks awarde s Internal Evaluation shall be gre f any, is desirable. roject work phase -2, shall be base ratio 50:25:25.The marks awarde to the project and the perfor ne department. ion to the project and the perfor arately at the departments to which pursued /completed the internship ternship requirements.	ed on the eva d for the pro- oup wise at ed on the eva d for the pro- mance of e rmance of e h the student, shall be dec	luation of p ject report s the college luation of p ject report s ach group sach group (s belong to lared as fail	project w shall be t e level w project w shall be t member member and hav	ork phase he same f ith the pa ork phase he same f shall be shall be e to comp	-2 Report or all the articipation -2 Report or all the assessed assessed	rt, projec batch m on of all rt, projec batch m I indivic I indivic ng subse	et present ates. guides of et present ates. lually in lually in quent Un	ation ski of the co ation ski semeste semeste iversity	ll and llege. ll and r end r end		
requi Activ seme	red activity Po ity points of t ster. In case of	ints. Students s he students wh	tudents fail to earn the prescribed shall be admitted for the award of no have earned the prescribed AIC have not satisfied the AICTE acti- vity Points).	degree only a CTE activity	after the rel Points sha	ease of the sen	he Eighth it the Univ	semester versity al	Grade Cong with	Card. n the CIE	E marks (	of 8th		