

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												
III SEMESTER												
Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	BSC	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques (Common to all Branches)	Mathematics	2	1	--	03	40	60	100	3
2	PCC	18AE32/ 18AS32	Aero Thermodynamics	AE	3	1	--	03	40	60	100	4
3	PCC	18AE33/ 18AS33	Mechanics Of Materials	AE	3	0	--	03	40	60	100	3
4	PCC	18AE34	Elements Of Aeronautics	AE	3	0	--	03	40	60	100	3
5	PCC	18AE35/ 18AS35	Mechanics Of Fluids	AE	3	0	--	03	40	60	100	3
6	PCC	18AE36	Measurement & Metrology	AE	3	0	--	03	40	60	100	3
7	PCC	18AEL37 A/18AEL3 7B	Measurement And Metrology Lab/ Material Testing Lab	AE	--	2	2	03	40	60	100	2
8	PCC	18AEL38	Machine Shop Lab	AE	--	2	2	03	40	60	100	2
9	HSMC	18KVK39/ 49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39/ 49	Aadalitha Kannada (Kannada for Administration)									
		OR										
		18CPC39/ 49	Constitution of India, Professional Ethics and Cyber Law									
TOTAL					17	06	04	24	420	480	900	24
					OR	OR		OR	OR	OR		
					18	08		26	360	540		

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.

18KVK39Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0
----	------	------------	----------------------------	-------------	----	----	----	----	----	----	-----	---

(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. In case, any student fails to register for the said course/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have secured F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

AICTE Activity Points to be earned by students admitted to BE/B.Tech/B.Plan day college programme (For more details refer to Chapter 6,AICTE Activity Point Programme, Model Internship Guidelines):

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)

2

IV SEMESTER

	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
					L	T	P					
1		18MAT41	Complex Analysis ,Probability And Statistical Method	Mathematics	2	1	--	03	40	60	100	3
2	PCC	18AE42/ 18AS42	Aerodynamics –I	AE	3	1	--	03	40	60	100	4
3	PCC	18AE43	Aircraft Propulsion	AE	3	0	--	03	40	60	100	3
4	PCC	18AE44/ 18AS44	Mechanisms And Machine Theory	AE	3	0	--	03	40	60	100	3
5	PCC	18AE45	Aircraft Material Science	AE	3	0	--	03	40	60	100	3
6	PCC	18AE46	Turbomachines	AE	3	0	--	03	40	60	100	3
7	PCC	18AEL47A/ 18AEL47B	Measurement And Metrology Lab/ Material Testing Lab	AE	--	2	2	03	40	60	100	2
8	PCC	18AEL48/ 18ASL48	Computer Aided Aircraft Drawing Lab	AE	--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
		OR										
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
TOTAL					17	08		24	420	480		
					OR	OR	04	OR	OR	OR	900	24
					18	10		26	360	540		

Note: BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.

18KVK39/49Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39/49 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

10	NCMC	18MATDIP41	Additional Mathematics - II	Mathematics	02	01	--	03	40	60	100	0
----	------	------------	-----------------------------	-------------	----	----	----	----	----	----	-----	---

((a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. In case, any student fails to register for the said course/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have secured F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

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)

V SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	HSMC	18AE51/ 18AS51	Management and Entrepreneurship	AE	3	0	--	03	40	60	100	3
2	PCC	18AE52/ 18AS52	Aerodynamics-II	AE	3	1	--	03	40	60	100	4
3	PCC	18AE53	Aircraft Structures-I	AE	3	1	--	03	40	60	100	4
4	PCC	18AE54	Introduction To Composite Materials	AE	3	--	--	03	40	60	100	3
5	PCC	18AE55/ 18AS55	Aircraft Systems & Instrumentation	AE	3	--	--	03	40	60	100	3
6	PCC	18AE56	Theory of Vibrations	AE	3	--	--	03	40	60	100	3
7	PCC	18AEL57/ 18ASL57	Aerodynamics Lab	AE	--	2	2	03	40	60	100	2
8	PCC	18AEL58	Energy Conversion & Fluid Mechanics Lab	AE	--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/ Environmental [Paper setting: Civil Engineering Board]	1	--	--	02	40	60	100	1
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)

4

VI SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
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	OE	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 carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
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 under 18XX64X	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

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 as a head of passing and 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.

VII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
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	(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters)								
TOTAL					15	04	06	18	340	360	700	20

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective - 2

Course code under 18XX73X	Course Title
18AE731	Fatigue And Fracture Mechanics
18AE732	Control Engineering
18AE733	Hydraulics and Pneumatics
18AE734/ 18AS734	Heat and Mass Transfer

Professional Electives - 3

Course code under 18XX74X	Course Title
18AE741	High Performance Computing
18AE742/ 18AS742	Wind Tunnel Techniques
18AE743/ 18AS743	Guidance, Navigation & Control
18AE744	Operations Research

Open Elective -B

Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (Please refer to the list of open electives under 18XX75X).

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.

Project work:

Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

CIE procedure for Project Work Phase - 1:

(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 project work phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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 guides of the college. Participation of external guide/s, if any, is desirable.

The CIE marks awarded for the project work phase -1, shall be based on the evaluation of project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), 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.

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 as a head of passing and 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.

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)												
VIII SEMESTER												
Sl. No.	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
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	Completed during the vacation/s of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
Total					06	--	04	15	260	240	500	18
Note: PCC: Professional Core, PEC: Professional Elective.												
Professional Electives - 4												
Course code under 18XX82X		Course Title										
18AE821		Avionics										
18AE822		Boundary Layer Theory										
18AE823		Helicopter Dynamics										
18AE824		Flight Testing										
Project Work												
CIE procedure for Project Work Phase - 2:												
(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 project work phase -2, shall be based on the evaluation of project work phase -2 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 guides of the college. Participation of external guide/s, if any, is desirable. The CIE marks awarded for the project work phase -2, shall be based on the evaluation of project work phase -2 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 Project Work Phase - 2:												
(i) Single discipline: Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.												
(ii) Interdisciplinary: Contribution to the 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 belong to.												
Internship: Those, who have not pursued /completed the internship shall be declared as fail and 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. Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).												