RTU/F(17)/CBCS/2019/ 338-44

Date: 22/04/2019

OFFICE ORDER

In partial modification of office order RTU/F(17)/CBCS/2019/271 dated 05.04.2019 issued for B.Tech. (4 Yr. Program) under CBCS scheme, the amended guidelines are as below:-

Note: The amendment has been made at point no. 18 regarding Pass Rules only.

The guidelines for new Scheme for Undergraduate B.Tech. Courses in Engineering & Technology

1   Rajasthan Technical University, Kota has implemented the AICTE Model Curriculum for Undergraduate Degree Courses in Engineering & Technology (with some modifications):

   (i)   For students admitted in Session 2018-19 and onwards.
   (ii)   For students admitted in Session 2017-18, from II year onwards.
   (iii) The CGPA system shall be implemented for students admitted in session 2018-19 and onwards. However, for the students admitted in session 2017-18 the percentage (absolute marks) system shall prevail as per existing rules.

2   Definition of Credit:

Table: 2.1

1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
1 Hr. Practical (P) per week	0.5 credits

3   General rules for Credits:

   (i)   Total 166 credits will be required to earn by a student to be eligible to get Undergraduate Degree in Engineering & Technology.
   (ii)   Total 125 credits (i.e. 166-41) will be required for a student to be eligible to get Undergraduate Degree in Engineering & Technology admitted through Lateral Entry (LEEP) in 2018-19 and onward.
   (iii) A student will be eligible to get B. Tech. (Honours) Degree, if he/she completes an additional 20 credits. These 20 credits could be acquired through MOOCs only.
   (iv)   The structure of the degree will be as follows:

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Table: 3.1

Degree	Required Credits
B. Tech.	166*
B. Tech. (Honours)	166+20 (Through MOOC's)

* for LEEP students 125 credits

4   Structure of Undergraduate Engineering & Technology Program:

Table: 4.1

S. No.	Category	Abbreviation	Code	Break up of Credits
1	Humanities and Social Sciences including Management courses	HSMC	1	10
2	Basic Science courses	BSC	2	23
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	ESC	3	24
4	Professional core courses	PCC	4	84
5	Professional Elective courses relevant to chosen specialization/branch	PEC	5	
6	Open subjects – Electives from other technical and /or emerging subjects	OE	6	6
7	Project work, seminar and internship in industry or elsewhere	PSIT	7	15
8	Social Outreach, Discipline & Extra Curriculum Activities	SODECA	8	4
9	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Traditional Knowledge].	MC	9	(non-credit)
	Total Credits required for the award of B. Tech. degree			**166**
10	Massive Open Online Courses	**MOOC**	**0**	**20**
	Total Credits required for the award of B. Tech. (Honours) Degree (on acquiring additional 20 credits through MOOCs)			**166+20 (186)**

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5   Definition of Course Code:

$$< N_1 >< XX >< N_2 >< ->< YY >$$

(i) N_1: "Semester Code" in numeric single digit, i.e. 1 to 8.

(ii)   XX: "Branch Code" in two digit alphabets as per the following:

Table: 5.1

SN	UG-Branch	Code (XX)
1	First Year	FY
2	Aeronautical Engineering	AN
3	Agriculture Engineering	AG
4	Automobile Engineering	AE
5	Bio- Medical Engineering	BM
6	Bio-Technology	BT
7	Civil Engineering	CE
8	Chemical Engineering	CH
9	Ceramic Engineering	CR
10	Computer Science & Engineering	CS
11	Electronics & Communication Engineering	EC
12	Energy & Environmental Engineering	EN
13	Electrical Engineering	EE
14	Electrical & Electronics Engineering	EX
15	Electronics Inst.& Control Engineering	EI
16	Food Technology	FT
17	Information Technology	IT
18	Industrial Engineering	IE
19	Mechanical Engineering	ME
20	Mechatronics	MH
21	Petroleum Engineering	PE
22	Production and Industrial Engineering	PI
23	Textile Chemistry	TC
24	Textile Engineering	TE
25	Textile Technology	TT
26	Applied Electronics & Inst. Engineering	AI
27	Mining Engineering	MI
28	Nanotechnology	NT
29	Petrochemical Engineering	PC
30	Energy Technology	ET

(iii) N_2: 0-9: "Category Code" in single digit (as per the above table available in point no. 4)

(iv) $< ->$: Symbol dash.

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(v) YY: "Course Code" in two digit numeric as per the following table:

Table: 5.2

SN	Course Detail	Course Code (YY)
1	SODECA	00
2	All theory courses (in a semester), except elective courses.	01-10
3	Program elective (PEC)	11-19
4	Lab/Practical/Design course (in a semester)	20-29
5	PSIT (Training)	30
6	PSIT (Seminar)	40
7	PSIT (Project)	50
8	Open Elective (OE)	60
9	MOOC's	61 Onwards

6 Semester wise credit system:

Table: 6.1

Sr. No.	Semester	Credits		Total Credit
		Courses	**SODECA**	
1	I	20	0.5	20.5
2	II	20	0.5	20.5
3	III	24	0.5	24.5
4	IV	23	0.5	23.5
5	V	22.5	0.5	23
6	VI	23	0.5	23.5
7	VII	14.5	0.5	15
8	VIII	15	0.5	15.5
	Total	162	04	166

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7   Mandatory Trainings:

Table: 7.1

S. No.	Duration of Training	Mode of Training	After	Exam Semester	Credit
1	15 Days	In-house/ Industry	I Year (II Semester)	III	1*
2	45 Days	In-house/ Industry	II Year (IV Semester)	V	2.5
3	45 Days	Industry only	III Year (VI Semester)	VII	2.5
	Total				6

Dates of Training shall be notified in University's academic calendar.

*The Lateral Entry (LEEP) students may complete their Soft skill part time training, which will be decided at Institute level during III semester.

Distribution of Project/Seminar/Industrial Training (PSIT):

Table: 7.2

	Credits			Total Credit
PSIT**	Project	Seminar	Training	
	7	2	6	15

**Teaching load of 1/2/3 Hrs. may be considered for Industrial Training/Seminar/Project in the respective semesters.

8   Distribution of number of Theory and Practical Courses in each semester.
I to VI Semesters:

Table: 8.1

Category	Total Number of papers
Theory	5-8
Practical	3-5

VII Semester:

Table: 8.2

Category	Total Number of papers
Theory	2-3
Practical	3-4

VIII Semester:

Table: 8.3

Category	Total Number of papers
Theory	2-3
Practical	2

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9 I Semester (First Year): Common to all branches of UG Engineering & Technology

Table: 9.1

S. No.	Category	Credit
1	Theory	14
2	Practical	6
3	SODECA	0.5
	Total	20.5

Table: 9.2

SN	Category	Course Code	Course Title	Hours			Marks			Cr
				L	T	P	IA	ETE	Total	
1	BSC	1FY2-01	Engineering Mathematics-I	3	1	-	40	160	200	4
2	BSC	1FY2-02/ 1FY2-03	Engineering Physics/ Engineering Chemistry	3	1	-	40	160	200	4
3	HSMC	1FY1-04/ 1FY1-05	Communication Skills/ Human Values	2	-	-	20	80	100	2
4	ESC	1FY3-06/ 1FY3-07	Programming for Problem Solving/ Basic Mechanical Engineering	2	-	-	20	80	100	2
5	ESC	1FY3-08/ 1FY3-09	Basic Electrical Engineering/ Basic Civil Engineering	2	-	-	20	80	100	2
6	BSC	1FY2-20/ 1FY2-21	Engineering Physics Lab/ Engineering Chemistry Lab	-	-	2	30	20	50	1
7	HSMC	1FY1-22/ 1FY1-23	Language Lab/ Human Values Activities	-	-	2	30	20	50	1
8	ESC	1FY3-24/ 1FY3-25	Computer Programming Lab/ Manufacturing Practices Workshop	-	-	3	45	30	75	1.5
9	ESC	1FY3-26/ 1FY3-27	Basic Electrical Engineering Lab/ Basic Civil Engineering Lab	-	-	2	30	20	50	1
10	ESC	1FY3-28/ 1FY3-29	Computer Aided Engineering Graphics/ Computer Aided Machine Drawing	-	-	3	45	30	75	1.5
11	SODECA	1FY8-00							25	0.5
								Total	1025	20.5

L = Lecture, **T** = Tutorial, **P** = Practical, **IA**=Internal Assessment,
ETE=End Term Exam, **Cr**=Credits

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10   II Semester (First Year): Common to all branches of UG Engineering & Technology

Table: 10.1

S. No.	Category	Credit
1	Theory	14
2	Practical	6
3	SODECA	0.5
	Total	20.5

Table: 10.2

SN	Category	Course Code	Course Title	Hours			Marks			Cr
				L	T	P	IA	ETE	Total	
1	BSC	2FY2-01	Engineering Mathematics-II	3	1	-	40	160	**200**	**4**
2	BSC	2FY2-03/ 2FY2-02	Engineering Chemistry/ Engineering Physics	3	1	-	40	160	**200**	**4**
3	HSMC	2FY1-05/ 2FY1-04	Human Values/ Communication Skills	2	-	-	20	80	**100**	**2**
4	ESC	2FY3-07/ 2FY3-06	Basic Mechanical Engineering/ Programming for Problem Solving	2	-	-	20	80	**100**	**2**
5	ESC	2FY3-09/ 2FY3-08	Basic Civil Engineering/ Basic Electrical Engineering	2	-	-	20	80	**100**	**2**
6	BSC	2FY2-21/ 2FY2-20	Engineering Chemistry Lab/Engineering Physics Lab	-	-	2	30	20	**50**	**1**
7	HSMC	2FY1-23/ 2FY1-22	Human Values Activities/ Language Lab	-	-	2	30	20	**50**	**1**
8	ESC	2FY3-25/ 2FY3-24	Manufacturing Practices Workshop/ Computer Programming Lab	-	-	3	45	30	**75**	**1.5**
9	ESC	2FY3-27/ 2FY3-26	Basic Civil Engineering Lab/Basic Electrical Engineering Lab	-	-	2	30	20	**50**	**1**
10	ESC	2FY3-29/ 2FY3-28	Computer Aided Machine Drawing/ Computer Aided Engineering Graphics	-	-	3	45	30	**75**	**1.5**
11	SODECA	1FY8-00							**25**	**0.5**
								Total	**1025**	**20.5**

L = Lecture, **T** = Tutorial, **P** = Practical, **IA**=Internal Assessment,
ETE=End Term Exam, **Cr**=Credits

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11   III Semester (Second Year):

Table: 11.1

S. No.	Category	Credit
1	Theory	17
2	Practical	6
3	PSIT (Training)	1
4	SODECA	0.5
Total		24.5

Table: 11.2

Sr. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
1	BSC	3XX2-01	Advance Mathematics	3	0	0	3
2	HSMC	3XX1-02/ 3XX1-03	Technical Communication/ Managerial Economics and Financial Accounting	2	0	0	2
3	ESC	3XX3-04		2	0	0	2
4	PCC/PEC	3XX4/5-YY		10	0	12	16
5	PSIT (Training)	3XX7-30		1			1
6	SODECA	3XX8-00					0.5
			Total credits				24.5

12   IV Semester (Second Year):

Table: 12.1

S. No.	Category	Credit
1	Theory	17
2	Practical	6
3	SODECA	0.5
Total		23.5

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Table: 12.2

Sr. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
1	BSC	4XX2-01		2	0	0	**2**
2	HSMC	4XX1-03/ 4XX1-02	Managerial Economics and Financial Accounting/ Technical Communication	2	0	0	**2**
3	ESC	4XX3-04		2	0	0	**2**
4	PCC/PEC	4XX4/5-YY		11	0	12	**17**
6	SODECA	4XX8-00					**0.5**
			Total credits				**23.5**

13   V Semester (Third Year)

Table: 13.1

S. No.	Category	Credit
1	Theory	**16**
2	Practical	**4**
3	PSIT (Training)	**2.5**
4	SODECA	**0.5**
	Total	**23**

Table: 13.2

Sr. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
1	ESC	5XX3-01		2	0	0	**2**
2	PCC/PEC	5XX4/5-YY		14	0	8	**18**
3	PSIT (Training)	5XX7-30		1			**2.5**
4	SODECA	5XX8-00					**0.5**
			Total credits				**23**

14   VI Semester (Third Year):

Table: 14.1

S. No.	Category	Credit
1	Theory	**17**
2	Practical	**6**
3	SODECA	**0.5**
	Total	**23.5**

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Table: 14.2

Sr. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
1	ESC	6XX3-01		2	0	0	**2**
2	PCC/PEC	6XX4/5-YY		15	0	12	**21**
3	SODECA	6XX8-00					**0.5**
			Total credits				**23.5**

15 VII Semester (Fourth Year):

Table: 15.1

S. No.	Category	Credit
1	Theory	**6**
2	Practical	**4**
3	PSIT (Training)	**2.5**
4	PSIT (Seminar)	**2**
5	SODECA	**0.5**
	Total	**15**

Table: 15.2

Sr. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
1	PCC/PEC	7XX4/5-YY		3	0	8	**7**
2	OE	7XX6-60		3			**3**
3	PSIT (Training)	7XX7-30		1			**2.5**
4	PSIT (Seminar)	7XX7-40		2			**2**
5	SODECA	7XX8-00					**0.5**
			Total credits				**15**

16 VIII Semester (Fourth Year):

Table: 16.1

S. No.	Category	Credit
1	Theory	**6**
2	Practical	**2**
3	PSIT (Project)	**7**
4	SODECA	**0.5**
	Total	**15.5**

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Table: 16.2

Sr. No.	Category	Course Code	Course Title	Hours per week			Credits
				L	T	P	
1	PCC/PEC	8XX4/5-YY		3	0	4	5
2	OE	8XX6-60		3			3
3	PSIT (Project)	8XX7-50		3			7
4	SODECA	8XX8-00					0.5
			Total credits				15.5

17 Examination Scheme:

1 Credit – 50 Marks

166 Credit – 8300 Marks

125 Credit – 6250 Marks for LEEP

There will be an internal assessment for all theory subjects:

Distribution of Marks:

Table: 17.1

S. No	Credit of Theory Paper	End Term Exam (Hours)	Internal Assessment (20%)	End Term Exam (80%)	Total Maximum Marks
1	1	2 hours	10	40	50
2	2		20	80	100
3	3	3 hours	30	120	150
4	4		40	160	200

Table: 17.2

Practical	Internal	External
	60%	40%

For 1 & 2 Credit courses the internal assessment will be done through two midterm tests. For 3 & 4 credit courses the internal assessment component shall be further divided as under :

Table: 17.3

Mark	Internal Assessment		
	I Mid Term	II Mid Term	Assignments/ Presentations
	40%	40%	20%
30	12	12	6
40	16	16	8

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18   Pass Rules for B. Tech. (4 Yr. Program)

The result of a candidate will be worked out at the end of each Semester Examination. The absolute marks of a student (p_i) shall be converted into relative marks (x_i) on 100 point scale as below:

$$x_i = \frac{p_i}{p_{max}} q \, ,$$

where,

x_i = Converted relative marks of an individual student in a particular ith subject/course (rounded off to next higher integer number).

p_i = Absolute percentage (%) of marks obtained by an individual student in the ith subject/course.

p_{max} = It should be from range of highest absolute percentage of marks obtained in a subject, as per the following table:

Table: 18.1

Range of highest absolute percentage (%) marks obtained in a subject/ paper exam by the student	p_{max} (%)
90-100	90
80-89	80
70-79	70
60-69	60
50-59	50
40-49	40
30-39	30

q = Highest equivalent relative marks taken for conversion purpose (as given in column 2 of the following table).

Table: 18.2

Absolute highest marks obtained in a subject ($p_{absolute\ max}$)	Highest equivalent relative marks taken for conversation purpose (q) on 100 point scale
Column 1	Column 2
$p_{absolute\ max} \geq 75\%$	100
$60\% \leq p_{absolute\ max} < 75\%$	89
$30\% \leq p_{absolute\ max} < 60\%$	79
$p_{absolute\ max} < 30\%$	Not considered for conversion

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The Grade and Grade Point shall be awarded to an individual student as under:

Table: 18.3

S. No.	Relative Marks (x_i)	Grade	Grade Points
1	$x_i \geq 90$	A++	10
2	$85 \leq x_i < 90$	A+	9.0
3	$80 \leq x_i < 85$	A	8.5
4	$75 \leq x_i < 80$	B+	8.0
5	$70 \leq x_i < 75$	B	7.5
6	$65 \leq x_i < 70$	C+	7.0
7	$60 \leq x_i < 65$	C	6.5
8	$55 \leq x_i < 60$	D+	6.0
9	$50 \leq x_i < 55$	D	5.5
10	$45 \leq x_i < 50$	E+	5.0
11	$40 \leq x_i < 45$	E	4.0
12	$x_i < 40$	F	0

(i)   For a Pass, candidate must obtain at least grade **E** for each theory and practical.

(ii) If a student remains **"Absent"** or obtains **"Zero"** marks in any of external component of theory or practical, he/she will be awarded **"F"** grade, respectively and will be required to appear in the subsequent back examinations. **"F"** grade student while applying for back paper exam., may opt either of the following options :-
   a) Wish to carry forward the previous marks of internal assessment.
   b) Wish to improve the internal assessment too.

(iii) No grace shall be awarded.

(iv) Revaluation and copy view system will prevail as per existing examination regulations. However, change of grade point of individual candidate after the revaluation will be independent and shall not affect the grade point of other students.

(v)   For a back examinee the grade and grade point of a particular subject/paper shall be calculated on the basis of its appearance in present (appearing) examination.

(vi) The result may include the absolute marks obtained by student in an individual subject with related grade. However, the mark-sheet will contained the Grade, SGPA and CGPA only along with the important related rules of CBCS system.

19   Semester wise SGPA:

$$SGPA = \frac{\sum_{i=1}^{n} c_i \times g_i}{\sum_{i=1}^{n} c_i}$$

where,

c_i = Number of credits of the ith course of a semester for which SGPA is to be calculated.

g_i = Grade points obtained in i^{th} course

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$i = 1, 2, \ldots, n$ represent the number of course in which a student is registered in the concerned semester.

20   Overall CGPA:

$$CGPA = \frac{\sum_{i=1}^{m} c_i \times g_i}{\sum_{i=1}^{m} c_i}$$

where,

c_i = Number of credits of the ith course of a semester.

g_i = Grade points obtained in i^{th} course. The Grade, lower than 'E' (i.e. grade point < 4.0) in a course shall not be taken into account.

$i = 1, 2, \ldots, m$ represent the number of courses in which a student was registered and obtained a grade not lower than 'E' up to that semester for which CGPA is to be calculated.

(i)   The SGPA/CGPA shall be awarded in each semester.

(ii)   SGPA/CGPA shall be rounded off to two decimal digits on higher side.

(iii) Final course merit will be decided on the basis of absolute marks obtained by an individual student considering relevant merit ordinance of the university. Revaluation result will be taken into account for deciding the merit of the students.

(iv)   Conversion of Percentage to CGPA

Equivalent Percentage= 10 x CGPA

(v)   Award of Division: The division of the student shall be awarded in the following manner (subject to the passing of all the semester courses):

Table: 20.1

1	CGPA≥7	1st Division with Distinction
2	6≤CGPA<7	1st Division
3	5≤CGPA<6	2nd Division
4	4≤CGPA<5	Pass

(vi)   Maximum duration for the completion of course will be eight (8) years.

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21 End Term Exam Theory Paper Pattern:

Table: 21.1

S. No.	Exam Hours	Max. Marks	Candidate has to attempt/ Total number of questions		
			PART A	PART B	PART C
1	2 Hours	40	5/5	4/6	2/3
2		80			
3	3 Hours	120	10/10	5/7	4/5
4		160			

Table: 21.2
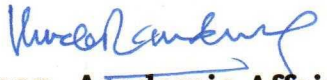
S. No.	Exam Time		Max. Marks	
			40	**80**
1	2 Hours	Part A	5x2=10	5x2=10
		Part B	4x4=16	4x10=40
		Part C	2x7=14	2x15=30
			120	**160**
2	3 Hours	Part A	10x2=20	10x3=30
		Part B	5x8=40	5x10=50
		Part C	4x15=60	4x20=80

PART A: Short answer questions (up to 25 words).
PART B: Analytical/Problem Solving questions.
PART C: Descriptive/ Analytical/Problem solving/Design questions.

This bears the approval of Hon'ble Vice-Chancellor at Para N/33 dated 18.04.2019

Dean, Academic Affairs

Copy to:
1. PS to HVC, RTU, Kota
2. Joint Secretary, Technical Education, Govt. of Rajasthan, Jaipur
3. Dean, FOEA/Dean Student welfare, RTU, Kota
4. Controller of Examination, RTU, Kota
5. Registrar, RTU, Kota: With request to report the office order, as a reporting agenda, in the next Academic Council (AC) and Board of Management (BOM) meetings.
6. Dr. Deepak Bhatia, RTU, Kota, Web Master: Requested to upload the office order on University Website.
7. All Principals/Directors: Affiliated Institutes of Rajasthan Technical University, Kota

Dy. Registrar
Dean, Academic Affairs