BIKANER TECHNICAL UNIVERSITY, BIKANER

SCHEME

B.Tech. (Electrical Engineering)

Effective From Session: 2022-23

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

DC:	Departmental Core	DE:	Departmental Elective	UC:	University Core
UI:	University Independent Elective	UGE:	University General Elective		

BIKANER TECHNICAL UNIVERSITY, BIKANER

Scheme

B.Tech. (Electrical Engineering)

Teaching and Examination Scheme
2nd Year – III Semester

THEORY											
S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DC	3EE4-01	Electrical Circuit Analysis-I	3	0	0	3	30	70	100	3
2	DC	3EE4-02	Electrical Machines-I	3	0	0	3	30	70	100	3
3	DC	3EE4-03	Electrical Measurements	3	0	0	3	30	70	100	3
4	DC	3EE4-04	Analog Electronics	3	0	0	3	30	70	100	3
5	DC	3EE4-05	Power System Instrumentation	2	0	0	2	30	70	100	2
6	UC	3EE3-06	Advanced Engineering Mathematics-I	3	0	0	3	30	70	100	3
			Sub Total	**17**	**0**	**0**	**-**	**180**	**420**	**600**	**17**
PRACTICAL & SESSIONAL											
7	DC	3EE4-20	Electrical Machines Lab-I	0	0	3	3	60	40	100	1.5
8	DC	3EE4-21	Electrical Measurement and Instrumentation Lab	0	0	3	3	60	40	100	1.5
9	DC	3EE4-22	Analog Electronics Lab	0	0	3	3	60	40	100	1.5
10	DC	3EE4-23	Electrical Circuit Lab	0	0	3	3	60	40	100	1.5
11	UI	3EE7-30	Industrial Training (15 days)	0	0	2	-	60	40	100	1
12	UGE	3EE8-00	*Co-Curricular Activities*	0	0	2	-	60	40	100	1
			Sub- Total	**0**	**0**	**16**	**-**	**360**	**240**	**600**	**8**
			TOTAL OF III SEMESTER	**17**	**0**	**16**	**-**	**540**	**660**	**1200**	**25**

BIKANER TECHNICAL UNIVERSITY, BIKANER

Scheme

B.Tech. (Electrical Engineering)

Teaching and Examination Scheme
2nd Year – IV Semester

THEORY											
S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DC	4EE4-01	Electrical Machines-II	3	0	0	3	30	70	100	3
2	DC	4EE4-02	Generation of Electrical Power	3	0	0	3	30	70	100	3
3	DC	4EE4-03	Electrical Circuit Analysis-II	3	0	0	3	30	70	100	3
4	DC	4EE4-04	Electrical Machine Design	3	0	0	3	30	70	100	3
5	DC	4EE4-05	Computer Programming	3	0	0	3	30	70	100	3
6	UC	4EE3-06	Advanced Engineering Mathematics-II	3	0	0	3	30	70	100	3
			Sub Total	**18**	**0**	**0**	**-**	**180**	**420**	**600**	**18**
PRACTICAL & SESSIONAL											
7	DC	4EE4-20	Electrical Machines Lab-II	0	0	3		60	40	100	1.5
8	DC	4EE4-21	Power System Design Lab	0	0	3		60	40	100	1.5
9	DC	4EE4-22	Computer Programming Lab	0	0	3		60	40	100	1.5
10	DC	4EE4-23	Electrical Machine Design Lab	0	0	3		60	40	100	1.5
11	UGE	4EE8-00	*Co-Curricular Activities*	0	0	2		60	40	100	1
			Sub- Total	**0**	**0**	**14**		**300**	**200**	**500**	**7**
			TOTAL OF IV SEMESTER	**18**	**0**	**14**		**480**	**620**	**1100**	**25**

BIKANER TECHNICAL UNIVERSITY, BIKANER

Scheme

B.Tech. (Electrical Engineering)

Teaching and Examination Scheme
3rd Year – V Semester

THEORY											
S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DC	5EE4-01	Control System Engineering	3	0	0	3	30	70	100	3
2	DC	5EE4-02	Power System-I	3	0	0	3	30	70	100	3
3	DC	5EE4-03	Computer Architecture and Microprocessors	3	0	0	3	30	70	100	3
4	DC	5EE4-04	High Voltage Engineering	3	0	0	3	30	70	100	3
5	DE-1	5EE5-11	Digital Electronics	2	0	0	2	30	70	100	2
		5EE5-12	Optimisation Techniques								
		5EE5-13	Introduction to VLSI								
6	DE-2	5EE5-14	Engineering Materials	2	0	0	2	30	70	100	2
		5EE5-15	Fundamentals of Communication Systems								
		5EE5-16	Energy Conversion and Auditing								
			Sub Total	**16**	**0**	**0**	**-**	**180**	**420**	**600**	**16**
PRACTICAL & SESSIONAL											
7	DC	5EE4-20	Control System Engineering Lab	0	0	3		60	40	100	1.5
8	DC	5EE4-21	MATLAB Programming Lab	0	0	3		60	40	100	1.5
9	DC	5EE4-22	Microprocessors Lab	0	0	3		60	40	100	1.5
10	DC	5EE4-23	High Voltage Engineering Lab	0	0	3		60	40	100	1.5
11	UI	5EE7-30	Industrial Training (45 days)	0	0	6		60	40	100	3
12	UGE	5EE8-00	*Co-Curricular Activities*	0	0	2		60	40	100	1
			Sub- Total	**0**	**0**	**20**		**360**	**240**	**600**	**10**
			TOTAL OF V SEMESTER	**16**	**0**	**20**		**540**	**660**	**1200**	**26**

BIKANER TECHNICAL UNIVERSITY, BIKANER

Scheme

B.Tech. (Electrical Engineering)

Teaching and Examination Scheme
3rd Year – VI Semester

THEORY											
S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DC	6EE4-01	Power Electronics	3	0	0	3	30	70	100	3
2	DC	6EE4-02	Modern Control Systems	3	0	0	3	30	70	100	3
3	DC	6EE4-03	Power System-II	3	0	0	3	30	70	100	3
4	DC	6EE4-04	Switchgear and Protection of Power System	3	0	0	3	30	70	100	3
5	DC	6EE4-05	Electromagnetic Field Theory	3	0	0	3	30	70	100	3
6	DE-3	6EE5-11	Signals and Systems	2	0	0	2	30	70	100	2
		6EE5-12	Database Management Systems								
		6EE5-13	Digital Control System								
			Sub Total	**17**	**0**	**0**		**180**	**420**	**600**	**17**
PRACTICAL & SESSIONAL											
7	DC	6EE4-20	Power Electronics Lab	0	0	3		60	40	100	1.5
8	DC	6EE4-21	Power System Simulation Lab	0	0	3		60	40	100	1.5
9	UI	6EE7-50	Mini project	0	0	4		60	40	100	2
10	UGE	6EE8-00	*Co-Curricular Activities*	0	0	4		60	40	100	2
			Sub- Total	**0**	**0**	**14**		**240**	**160**	**400**	**7**
			TOTAL OF VI SEMESTER	**17**	**0**	**14**		**420**	**580**	**1000**	**24**

Teaching and Examination Scheme
4th Year – VII Semester

THEORY											
S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DC	7EE4-01	Electrical Drives	3	0	0	3	30	70	100	3
2	DE-4	7EE5-11	Micro and Smart Grid Systems	2	0	0	2	30	70	100	2
		7EE5-12	Renewable Energy Systems								
		7EE5-13	Digital Communication and Information								
3	UE-1	7EE6-60	Environmental Science and Engineering	3	0	0	3	30	70	100	3
		7EE6-61	Cyber Security								
		7EE6-62	Analog Communication								
		7EE6-63	Data Structure in C								
			Sub Total	**8**	**0**	**0**		**90**	**210**	**300**	**8**
PRACTICAL & SESSIONAL											
4	DC	7EE4-20	Computer Based Power System Lab	0	0	2		60	40	100	1
5	UI	7EE7-30	Industrial Training (45 days)	0	0	6		60	40	100	3
6	UI	7EE7-50	Minor Project	0	0	4		60	40	100	2
7	UGE	7EE8-00	*Co-Curricular Activities*	0	0	2		60	40	100	1
			Sub- Total	**0**	**0**	**14**		**240**	**160**	**400**	**7**
			TOTAL OF VII SEMESTER	**8**	**0**	**14**		**330**	**370**	**700**	**15**

Teaching and Examination Scheme
4th Year – VIII Semester

THEORY											
S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	UE-2	8EE6-60	Artificial Intelligence Techniques	3	0	0	3	30	70	100	3
		8EE6-61	Big Data Analytics								
		8EE6-62	Robotics and control								
		8EE6-63	Internet of Things								
			Sub Total	**3**	**0**	**0**		**30**	**70**	**100**	**3**
PRACTICAL & SESSIONAL											
2	UI	8EE7-40	Seminar	0	0	4		60	40	100	2
3	UI	8EE7-50	Major Project	0	0	8		60	40	100	4
4	UGE	8EE8-00	*Co-Curricular Activities*	0	0	4		60	40	100	2
			Sub- Total	**0**	**0**	**16**		**180**	**120**	**300**	**8**
			TOTAL OF VIII SEMESTER	**3**	**0**	**16**		**210**	**190**	**400**	**11**

Specialization Subjects (VII Sem.):

NOTE: Students must opt **three core subjects** in VII semester for the minor specialization.

I. *Specialization in Power Systems*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	7EE5-11	Advanced Distribution System	3	0	0	3	30	70	100	3
2	DE	7EE5-12	Electrical Power Utilization	3	0	0	3	30	70	100	3
3	DE	7EE5-13	Transmission of EHV AC/DC	3	0	0	3	30	70	100	3
4	DE	7EE5-14	Power System Economics	3	0	0	3	30	70	100	3
5	DE	7EE5-15	FACTS Devices	3	0	0	3	30	70	100	3
6	DE	7EE5-16	Power System Engineering	3	0	0	3	30	70	100	3
Total for specialization (Power Systems) in VII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

OR

II. *Specialization in Power Electronics*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	7EE5-11	Advanced Power Electronic Devices	3	0	0	3	30	70	100	3
2	DE	7EE5-12	High Power Converters	3	0	0	3	30	70	100	3
3	DE	7EE5-13	Electric Vehicles	3	0	0	3	30	70	100	3
4	DE	7EE5-14	Electrical Machine Modeling and Analysis	3	0	0	3	30	70	100	3
5	DE	7EE5-15	Switched Mode Power Conversion	3	0	0	3	30	70	100	3
6	DE	7EE5-16	Advanced Electrical Drives	3	0	0	3	30	70	100	3
Total for specialization (Power Electronics) in VII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

OR

III. *Specialization in Control Systems*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	7EE5-11	Measurement Systems	3	0	0	3	30	70	100	3
2	DE	7EE5-12	Optimal Control Systems	3	0	0	3	30	70	100	3
3	DE	7EE5-13	Artificial Neural Networks	3	0	0	3	30	70	100	3
4	DE	7EE5-14	Digital Control Systems	3	0	0	3	30	70	100	3
5	DE	7EE5-15	Robotics and Automation	3	0	0	3	30	70	100	3
6	DE	7EE5-16	Microprocessor based Control Systems	3	0	0	3	30	70	100	3
Total for specialization (Control Systems) in VII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

OR

IV. *Specialization in Renewable Energy*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	7EE5-11	Renewable Energy Technologies	3	0	0	3	30	70	100	3
2	DE	7EE5-12	Solar Photovoltaic System	3	0	0	3	30	70	100	3
3	DE	7EE5-13	Wind Energy Conversion System	3	0	0	3	30	70	100	3
4	DE	7EE5-14	Fuel Cell Technologies	3	0	0	3	30	70	100	3
5	DE	7EE5-15	Bio-Energy Conversion Systems	3	0	0	3	30	70	100	3
6	DE	7EE5-16	Hydro Power Plant and Analysis	3	0	0	3	30	70	100	3
Total for specialization (Renewable Energy) in VII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

Specialization Subjects (VIII Sem.):

NOTE: Students must opt **three core subjects** in VIII semester for the minor specialization.

I. *Specialization in Power Systems*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	8EE5-11	Power System Stability and Control	3	0	0	3	30	70	100	3
2	DE	8EE5-12	Power System Transients	3	0	0	3	30	70	100	3
3	DE	8EE5-13	Advanced Protection of Power System	3	0	0	3	30	70	100	3
4	DE	8EE5-14	Power System Operation and Control	3	0	0	3	30	70	100	3
5	DE	8EE5-15	Electrical machine Dynamics	3	0	0	3	30	70	100	3
6	DE	8EE5-16	SCADA Systems	3	0	0	3	30	70	100	3
Total for specialization (Power Systems) in VIII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

OR

II. *Specialization in Power Electronics*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	8EE5-11	Power Quality	3	0	0	3	30	70	100	3
2	DE	8EE5-12	Power Electronics in Renewable Energy Systems	3	0	0	3	30	70	100	3
3	DE	8EE5-13	Flexible AC Transmission Systems	3	0	0	3	30	70	100	3
4	DE	8EE5-14	PWM Converters and its Applications	3	0	0	3	30	70	100	3
5	DE	8EE5-15	Modeling and Control of Power Converters	3	0	0	3	30	70	100	3
6	DE	8EE5-16	Digital Signal Processing	3	0	0	3	30	70	100	3
Total for specialization (Power Electronics) in VIII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

OR

III. *Specialization in Control Systems*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	8EE5-11	Nonlinear Control Systems	3	0	0	3	30	70	100	3
2	DE	8EE5-12	Modeling of Dynamical Systems	3	0	0	3	30	70	100	3
3	DE	8EE5-13	Robust Control Systems	3	0	0	3	30	70	100	3
4	DE	8EE5-14	Multivariable Control Systems	3	0	0	3	30	70	100	3
5	DE	8EE5-15	Electric and Hybrid Vehicles	3	0	0	3	30	70	100	3
6	DE	8EE5-16	Adaptive Control Systems	3	0	0	3	30	70	100	3
Total for specialization (Control Systems) in VIII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**

OR

IV. *Specialization in Renewable Energy*

S. No.	Category	Code	Course Title	Contact hrs./week			Marks				Cr
				L	T	P	Exam Hrs.	IA	ETE	Total	
1	DE	8EE5-11	Solar Thermal Power Generation System	3	0	0	3	30	70	100	3
2	DE	8EE5-12	Modeling and Simulation of RES	3	0	0	3	30	70	100	3
3	DE	8EE5-13	Nuclear Power Plant Analysis	3	0	0	3	30	70	100	3
4	DE	8EE5-14	Energy Storage Systems	3	0	0	3	30	70	100	3
5	DE	8EE5-15	Management of Environmental Risks	3	0	0	3	30	70	100	3
6	DE	8EE5-16	Financial Evaluation of Renewable Energy	3	0	0	3	30	70	100	3
Total for specialization (Renewable Energy) in VIII semester				**3×3 =9**	**0**	**0**		**3×30 =90**	**3×70 =210**	**3×100 =300**	**3×3 =9**