RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES
ANDHRA PRADESH
(NUZVID   RKVALLEY SRIKAKULAM   ONGOLE CAMPUSES)

DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING

DRAFT COURSE STRUCTURE AND DETAILED SYLLABI FOR THE B.TECH
PROGRAM IN ELECTRONICS AND COMMUNICATION ENGINEERING

(BOARD OF STUDIES PROPOSED COPY)

[AY 2020-21]

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Chapter-1

General, Course structure, Semester-wise credit distribution

A. Definition ofCredit:

1 Hour Lecture (L) per week	1 credit
1 Hour Tutorial (T) per week	1 credit
3 Hours Practical (Lab)/week	1.5 credits

B. Total number of credits:160

C. Minimum number of contact hours/weeks per semester: 15 weeks ofteaching

  i.   For 1 credit course: 15 contact hours persemester
  ii. For 2 credit course: 30 contact hours persemester
  iii. For 3 credit course: 45 contact hours persemester
  iv. For 4 credit course: 60 contact hours persemester

D. Course code and definition,Abbreviations

Course code	Definitions
L	Lecture
T	Tutorial
P	Practical
EC	Core Courses
ECEL	Program Electives
ECP1	Project Stage-I
ECP2	Project Stage-II
8ECMP2	Mini Project Stage-II

ECSI	Summer Internship
BS	Basic Science
ES	General Engineering Courses
HS	Humanities and Social Sciences including Management Science
OE	Open Electives
MC	Mandatory Courses
PCC	Program Core Course
PEC	Program Elective Course
OEC	Open Elective Course
BSC	Basic Science Course
HSC	Humanities and Social Sciences including Management Science Course
PROJ	Mini project/Project

E. Structure ofProgram

S.No	Category	Credits
1	Basic Science Courses	16.5
2	Engineering Science Courses	29.5
3	Humanities and Social Sciences including Management courses	8.5
4	Program core courses	63
5	Program Elective courses	15
6	Open Elective courses	12
7	Project work, Miniproject work, Summer internships project	15.5
8	Mandatorycourses - 03 [Indian Constitution, Environmental Studies, Career Development Course]	(non-credit)
	Total	**160**

F. Semester-wise CreditsDistribution

	TOTAL	E1-S1	E1-S2	E2-S1	E2-S2	E3-S1	E3-S2	E4-S1	E4-S2
BSC	**16.5**	9.5	4	3	0	0	0	0	0
ESC	**29.5**	13.5	5	1.5	2.5	7	0	0	0
HSC	**8.5**	0	2.5	0	0	1.5	2.5	0	2
PCC	**63**	0	13.5	19.5	20.5	9.5	0	0	0
PEC	**15**	0	0	0	0	0	6	6	3
OEC	**12**	0	0	0	0	0	6	3	3
PROJECTS/ MINI PROJ	**12.5**	0	0	0	0	1.0	1.5	4	6
SUM INTERN	**3**	0	0	0	0	0	0	3	0
	160	23	25	24	23	19	16	16	14

Total number of Mandatory Courses (MC): 03 (Indian Constitution, Environmental Science, Career Development Course)

*Mandatory Induction Program completes before the start of First year Semester-I.

Notations:

E1-S1: Engineering first year first semester
E1-S2: Engineering first sear second semester
E2-S1: Engineering second year first semester
E2-S2: Engineering second year first semester
E3-S1: Engineering third year first semester
E3-S2: Engineering third year second semester
E4-S1: Engineering fourth year first semester
E4-S2: Engineering fourth year second semester
SUM INTERN: Summer Internship program

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Chapter – 2
Semester-Wise Structure of Curriculum

Mandatory Induction Program

3 Weeks Duration
• Physical activity • Creative Arts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent people • Visit to local areas • Familiarization of Dept./Branch Innovations

ENGINEERING FIRST YEAR: SEMESTER-1					
SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
1	BSC	20MA1101	Differential Equations and Multivariable calculus	3-1-0	4
2	BSC	20PY1101	Engineering Physics	3-1-0	4
3	BSC	20PY1181	Engineering Physics Lab	0-0-3	1.5
4	PCC	20EC1203	Signals and Systems	3-1-0	4
5	ESC	20EE1110	Electrical Technology	3-1-0	4
6	ESC	20EE1180	Electrical Technology Lab	0-0-3	1.5
7	ESC	20EC1102	Introduction to Latest Technical Advancements	1-0-0	1
8	ESC	20CS1108	Programming & Data Structures	3-0-0	3
9	ESC	20CS1188	Programming & Data Structures Lab	0-0-3	1.5
				Total Credits	**24.5**
Total contact hours : 29 hours					

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SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
* ENGINEERING FIRST YEAR: SEMESTER-2					
1	BSC	20MA1201	Mathematical Methods	3-1-0	4
2	ESC	20CS1209	Object Oriented Programming	2-0-0	2
3	ESC	20CS1289	Object Oriented Programming Laboratory	0-0-3	1.5
4	ESC	20EC1285	Computational Lab	0-0-3	1.5
5	HSC	20EG1281	English-Language Communication skills Lab-1	1-0-3	2.5
6	PCC	20EC1201	Electronic Devices and Circuits	3-1-0	4
7	PCC	20EC1281	Electronic Devices and Circuits Lab	0-0-3	1.5
8	PCC	20EE1211	Network Theory	3-1-0	4
9	ESC	20CE1114	Engineering Graphics and Design	1-0-3	2.5
				Total Credits	23.5
Total contact hours : 31 hours					

SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
* ENGINEERING SECOND YEAR: SEMESTER-1					
1	BSC	20MA2101	Probability & Random Variables	2-1-0	3
2	ESC	20EC2185	Internet of Things Lab	0-0-3	1.5
3	PCC	20EC2101	Analog Electronic Circuits	3-1-0	4
4	PCC	20EC2181	Analog Electronic Circuits Lab	0-0-3	1.5
5	PCC	20EC2102	Digital Logic Design	3-1-0	4
6	PCC	20EC2182	Digital Logic Design Lab	0-0-3	1.5
7	PCC	20EC2103	Digital Signal Processing	3-1-0	4
8	PCC	20EC2183	Digital Signal Processing Lab	0-0-3	1.5
9	PCC	20EE21XX	Control Systems	3-0-0	3
Total Credits					24
Total contact hours: 30 hours					

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ENGINEERING SECOND YEAR: SEMESTER-2					
SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
1	ESC	20EC2285	Robotics Laboratory	1-0-3	2.5
2	PCC	20EC2201	Communication Systems-1	3-1-0	4
3	PCC	20EC2281	Communication Systems-1 Lab	0-0-3	1.5
4	PCC	20EC2202	Digital System Design	3-1-0	4
5	PCC	20EC2282	Digital System Design Lab	0-0-3	1.5
6	PCC	20EC2203	Linear Integrated Circuits	3-1-0	4
7	PCC	20EC2283	Linear Integrated Circuits Lab	0-0-3	1.5
8	PCC	20EC2204	Electromagnetic Waves & Guided Media	3-1-0	4
Total Credits					**23**
Total contact hours : 29 hours					

ENGINEERING THIRD YEAR: SEMESTER-1					
SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
1	ESC	20EC3102	Computer Networks	3-0-0	3
2	ESC	20EC3103	Computer Organization & Architecture	3-1-0	4
3	HSC	20EG3182	English-Language Communication skills Lab-2	0-0-3	1.5
4	PCC	20EC3101	Communication Systems- 2	3-1-0	4
5	PCC	20EC3181	Communication Systems -2 Lab	0-0-3	1.5
6	PCC	20EC3182	Microprocessors, Microcontrollers & Computer Networks Lab	0-0-3	1.5
7	PCC	20EC3185	Radio Frequency & Microwave Engg. Lab	1-0-3	2.5
8	PROJ	20EC3190	Mini-Project-I (Socially Relevant Project)	0-0-2	1
Total Credits					**19**
MC	20HS3101	Indian Constitution	2-0-0	0	
Total contact hours: 25 hours					
*Mini Project-1 workload not included in above workload calculation					

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ENGINEERING THIRD YEAR: SEMESTER-2					
SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
1	HSC	20EG3283	English-Language Communication skills Lab-3	0-0-3	1.5
2	HSC	20BMXY01	Product Design & Innovation	1-0-0	1
3	PEC	20EC32XX	Elective-1	3-0-0	3
4	PEC	20EC32XX	Elective-2	3-0-0	3
5	OEC	20XX32XX	Open Elective-1	3-0-0	3
6	OEC	20XX32XX	Open Elective-2	3-0-0	3
7	PROJ	20EC3291	Mini Project-II	0-0-3	1.5
Total Credits					**16**
MC		20MC3201	Career Development Course	2-0-0	0
Total contact hours : 18 hours					
*Mini Project-2 work load not included in above calculation					

ENGINEERING FOURTH YEAR: SEMESTER-1					
SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
1	PEC	20EC41XX	Elective-3	3-0-0	3
2	PEC	20EC41XX	Elective-4	3-0-0	3
3	OEC	20XX41XX	Open Elective-3	3-0-0	3
4	PROJ	20EC4192	Summer Internship Project	0-0-6	3
5	PROJ	20EC4193	Project I	0-0-8	4
Total Credits					**16**
MC		20BE4101	Environmental Science	2-0-0	0
Total contact hours : 11 hours					
*Project-1 work load not included in above calculation					
*Summer Internship Project will be after completion of Engineering Third Year Semester-2					

ENGINEERING FOURTH YEAR: SEMESTER -2					
SLNO	CATEGORY	COURSE CODE	SUBJECT NAME	L-T-P	Credits
1	HSC	20HS4299	Community Service	0-0-4	2
3	PEC	20EC42XX	Elective-5	3-0-0	3
5	OEC	20XX42XX	Open Elective-4	3-0-0	3
6	PROJ	20EC4294	Project-II & Dissertation	0-0-12	6
Total Credits					**14**
Total contact hours : 6 hours					
*Project-2 and Community Service work load not included in above calculation					

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List of Program Electives Courses/ Open Elective Courses

Program Elective Courses
Communication Stream
20ECXY01:Advanced Digital Communications
20ECXY02:Antenna and Radio wave propagation
20ECXY03:Cooperative Communications
20ECXY04:Design of Microwave systems
20ECXY05:Detection and Estimation Theory
20ECXY06:Error Correcting Codes
20ECXY07:Information Theory and Coding
20ECXY08:Millimeter wave Technology
20ECXY09:Optical Communications
20ECXY10:Principles of RADAR
20ECXY11:Radio Frequency and Microwave Engineering
20ECXY12:Satellite Communications
20ECXY13:Wireless Communications
Signal Processing Stream
20ECXY14:Advanced Digital Signal Processing
20ECXY15:Artificial Neural Networks
20ECXY16:Biomedical Signal Processing
20ECXY17:Digital Image Processing
20ECXY18:Digital Voice and Picture Communication

20ECXY19:Estimation of Signals and Systems
20ECXY20:Medical Image Analysis
20ECXY21:Pattern Recognition and applications
20ECXY55: Adapative Signal Processing
20ECXY56: Introduction to Deep Learning
VLSI and Embedded systems Stream
20ECXY22:Analog IC Design
20ECXY23:Digital IC Design
20ECXY24:Digital VLSI System Design
20ECXY25:Electronic System Packaging
20ECXY26:Embedded Systems
20ECXY27:Embedded System Software Testing
20ECXY28:FPGA based System Design
20ECXY29:Low Power Circuits and Systems
20ECXY30:MEMS and Microsystems
20ECXY31:RF IC Design
20ECXY32:Systemverilog
20ECXY33:VLSI DSP
20ECXY34:VLSI Physical Design
20ECXY35:VLSI Testing and Verification
OpenElectiveCourses   **(Offered to other departments)**
20ECXY50:Artificial Intelligence
20ECXY51:Computational science and Engineering using Python

20ECXY52:Linux Programming and Scripting
20ECXY53:Machine Learning
20ECXY54:Robotics Operating System: Drones
20ECXY57: Electronic Measurements and Instrumentation

COURSES BEING OFFERED TO OTHER DEPARTMENTS

COURSE CODE	SUBJECT NAME	L-T-P	CREDITS	BRANCHES
20ECXX10	Digital Logic Design	3-0-0	3	CSE
20ECXX80	Digital Logic Design Laboratory	0-0-3	1.5	CSE

CSE: Department of Computer Science and Engineering