

B.Sc. ELECTRONICS

SYLLABUS - 2017

SCHOOLS OF EXCELLENCE
with
CHOICE BASED CREDIT SYSTEM (CBCS)

SCHOOL OF PHYSICAL SCIENCES
St. JOSEPH'S COLLEGE (Autonomous)

Special Heritage Status Awarded by UGC
Accredited at "A" Grade (3rd cycle) by NAAC
College with Potential for Excellence Conferred by UGC
DBT-STAR & DST-FIST Sponsored College
TIRUCHIRAPPALLI - 620 002, INDIA

B.Sc. ELECTRONICS COURSE PATTERN - 2017 SET

Sem	Part	Code	Subject Title	Hrs	Cr	
I	I	Language	17UGT110001	Language - I (Tamil/Hindi/French/Sanskrit)	4	3
	II	English	17UGE120101	General English –I	5	3
	III	Core	17UEL130201	Basic Electronics	6	4
			@	Electronics Practical –I	3	-
			@	Workshop Practice –I	3	-
	III	Allied	17UEL130401	Mathematics –I	6	4
	IV	NMC	17UCE140801	Communicative English	-	5
	IV	V.Edn	17UFC141001	Essentials of humanity	2	2
			Problem Solving & Discussion	1	-	
			Total Credits for Semester 1	30	21	
II	I	Language	17UGT210002	Language - II (Tamil/Hindi/French/Sanskrit)	4	3
	II	English	17UGE220102	General English – II	5	3
	III	Core	17UEL230202	Electric Circuit Analysis	5	4
			17UEL230203	Electronics Practical –I	3	3
			17UEL230204	Workshop Practice –I	3	4
	III	Allied	17UEL230402	Mathematics –II	6	4
	IV	NMC	17UCE240802	Computer Literacy / SAP	2	2
	IV	V.Edn	17UFC241002	Fundamentals of Human Rights	2	2
			Total Credits for Semester 2	30	25	
III	I	Language	17UGT310003	Language - III (Tamil/Hindi/French/Sanskrit)	4	3
	II	English	17UGE320103	General English – III	5	3
	III	Core	17UEL330205	Digital Electronics	6	5
			@	Electronics Practical – II	3	-
			17UEL330403A	Allied Physics - I	4	4
			@	Allied Physics Practical (OR)	2	@
	III	Allied	17UEL330403B	Allied Computer Science – I	4	4
			@	Allied Computer Science Practical	2	@
	IV	NMC	17UCE340901	Environmental studies (Partial online course)	2	2
	IV	V.Edn	17UFC341003A	Formation of youth- I (OR)	2	2
17UFC341003B			Religious Doctrine – I			
			Lab equipment servicing	2		
			Total credits for Semester 3	30	19	
IV	I	Language	17UGT410004	Language -IV (Tamil/Hindi/French/Sanskrit)	4	3
	II	English	17UGE420104	General English – IV	5	3
	III	Core	17UEL430206	Electronic Devices and Circuits	6	4
			17UEL430207	Electronics Practical – II	3	3
			17UEL430301A	Home Appliances Servicing and Repair (OR)	4	4
			17UEL430301B	Lab Equipments Maintenance and Servicing		
	III	Allied	17UEL430404A	Allied Physics –II	4	4
			@	Allied Physics Practical (OR)	2	2
			17UEL430404B	Allied Computer Science – II	4	4
			@	Allied Computer Science	2	2
	IV	V.Edu	17UFC441004A	Formation of youth- II (OR)	2	2
17UFC441004 B			Religious Doctrine - II			
			Total credits for Semester 4	30	25	

Sem	Part	Code	Subject Title	Hrs	Cr	
V	III	Core	17UEL530208	Microprocessors and its application	5	4
			17UEL530209	Linear Integrated Circuits	5	4
			17UEL530210	Communication System	6	4
			17UEL530211	Electronics Practical – III	6	4
		SPL	17UEL530212A	Programmable Logic Controller (Partial online course) (OR)	-	2
			17UEL530212B	Audio Electronics	-	
	Addl Core	17UEL530501	Electromagnetic theory	-	(2)	
		III Core Elective (WD)	17UEL530302A	Programming in C Language (OR)	4	4
	17UEL530302B		Computer hardware and Networks			
	IV	SBE (BS)	17UEL540601	Entrepreneurial Electronics	2	2
	IV	IDC	17USS540701A	Soft Skills	2	2
			17USS540701B	National Cadet Corps (For NCC Cadets)		
				Total Credits for Semester 5	30	26
VI	III	Core	17UEL630213	Microcontroller and its applications	5	4
			17UEL630214	Power Electronics	5	4
			17UEL630215	Sensor Technology	5	4
			17UEL630216	Electronics Practical – IV	6	4
			17UEL630217	Comprehensive Examination	-	2
			17UEL630218	Internship	-	2
			17UEL630219	Project Work	3	3
		Addl. core	17UEL630502	Bio Medical Electronics	-	(2)
	Core Elective (WD)	17UEL630303A	Control System (OR)	4	4	
		17UEL630303B	Electronic measurement system			
	IV	SBE (WS)	17UEL640602	Troubleshooting Computer hardware	2	2
			Total Credits for Semester 6	30	29	
I-V	V	shepherd	17UCW651101	Community service work (SHEPHERD) & Gender Studies		5
				Total Credits for all Semesters		150+ 4

பொதுத்தமிழ் - 1

கற்றலின் உறுதிப்பாடு

1. சமூகமாற்றச் சிந்தனைகளை உள்ளடக்கியதற்காலஇலக்கியப்பரப்பை அறிதல்
2. புதுக்கவிதை, சிறுகதை, உரைநடை ஆகியவற்றின் இலக்கியத்திறன் கண்டறிதல்.
3. சந்திப்பிழையின்றி எழுதும் திறன் பெறுதல்

அலகு-1 மகாகவி பாரதியார் கவிதைகள்
பாரதிதாசன் கவிதைகள்
நாமக்கல் கவிஞர் கவிதைகள்
உரைநடை- முதல் மூன்று கட்டுரைகள் (12 மணி நேரம்)

அலகு-2 பாவலரேறு பெருஞ்சித்திரனார் பாடல்கள்
கண்ணதாசன் கவிதைகள்
இலக்கியவரலாறு (பக். 239- 300)
இலக்கணம் -வலிமிகும் இடங்கள் (14 மணி நேரம்)

அலகு-3 சமூகக்கவிதைகள்
இலக்கியவரலாறு (பக்.300 -362)
சிறுகதை முதல் ஆறு சிறுகதைகள் (14 மணி நேரம்)

அலகு-4 அரசியல் கவிதைகள்
இலக்கணம் - வலி மிகா இடங்கள் (10 மணி நேரம்)

அலகு-5 மொழிபெயர்ப்புக்கவிதைகள்
சிறுகதை 7 முதல் 12 முடிய உள்ள சிறுகதைகள்
உரைநடை- 4 முதல் 6 முடிய உள்ள கட்டுரைகள் (10 மணி நேரம்)

பாடநூல்

1. பொதுத்தமிழ்- செய்யுள் திரட்டு- தமிழாய்வுத்துறை வெளியீடு-2017 -2020
2. சமூகவியல் நோக்கில் தமிழ் இலக்கியவரலாறு, தமிழாய்வுத்துறை வெளியீடு, தூய வளனார் கல்லூரி திருச்சிராப்பள்ளி-2
3. உரைநடை நூல் - தமிழாய்வுத்துறை வெளியீடு.
4. சிறுகதைத்தொகுப்பு : (நாட்டுடைமையாக்கப்பட்ட படைப்பாளர்களின் சிறுகதைகள்), தமிழாய்வுத்துறை வெளியீடு.

Semester: I
Subject Code: 17UGH110001

Hours/Week: 4
Credits: 3

HINDI PAPER – I

Assurance of learning

- To enable the students to develop their effective communicative skills in Hindi.
- To introduce the socially relevant subjects in Modern Hindi Literature
- To appreciate the features of Modern Hindi Prose.

UNIT – I

8 hours

Dr Abdul Kalam, Ling Badaliye, Vachan Badaliye, Baathcheeth-Aspathal Mein

UNIT – II

12 hours

Hamara Rajchinha, Noun Ling, Kaarak Chinha, Chaar Baayee, Baathcheeth, Dookan Mein

UNIT – III

12 hours

Moun hee mantra hai, Vachan, Kaarak, Vishwamitra Ka yagna, Baathcheeth, Hotel mein

UNIT – IV

14 hours

Veer Shivaji, Pronoun, Danush Yagna, Baathcheeth-Maidaan mein

UNIT – V

14 hours

Rajatilak Kee Thaiyaree, Adjectives, Baathcheeth-Pareeksha ke baare mein

Books Recommended

1. Dakshina Bharathi Hindi Prachar Sabha, Thiagaraya Nagar, Chennai – 600 017, Subhodh Hindi Patamala-2, Bharath Milap, Bharath-1, 2016.
2. Ramdev, Vyakaran Pradeep, Hindi Bhavan, 63, Tagore Nagar, Allahabad 2, 2016.

Semestre: I

Heures /Semaine: 4

Code du sujet : 17UGF110001

Points : 3

FRANÇAIS – I

Assurance of learning

- Introduire la langue et la culture française aux étudiants
- I Comparer la culture de l'Inde et de la France
- Familiariser l'étudiant avec le vocabulaire, la grammaire et les conversations

UNIT I : A l'aéroport Kamaraj domestic de Chennai

(10 heures)

Saluer, demander et dire le nom, présenter quelqu'un, se présenter, souhaiter la bienvenue a quelqu'un, demander et dire l'identité de quelqu'un.

Grammaire : Etre, s'appeler, pronoms sujets, interrogation

UNIT II : A l'Université

(10 heures)

Demander comment on se porte, présenter quel qu'un, prendre congé, exprimer, l'appréciation.

Grammaire : Articles définis et indéfinis, genre des noms, adjectifs, présent de l'indicatif : verbes réguliers en er, être avoir, apprendre, prépositions a, en, au, aux.

UNIT III : Au café

(10 heures)

Dire ce qu'on aime, donner des informations, exprimer l'admiration, demander des informations sur quelqu'un.

Grammaire : Adjectifs interrogatifs, présent de l'indicatif : avoir, verbes en er , savoir, qu'est ce que c'est?, adjectifs possessifs, négation ,adjectifs irréguliers

UNIT IV : A la plage

(15 heures)

Proposer une sortie, accepter, refuser la proposition

Grammaire : phrases au singulier et au pluriel, pronom indéfini- on, il y a, adjectifs démonstratifs, négation, interrogation, présent de l'indicatif : faire, voir, aller, sortir, connaitre

UNIT V : Un concert et chez Nalli**(15 heures)**

Inviter, accepter, exprimer son incapacité d'accepter, complimenter, parlé au téléphone, demander le prix, protester contre le prix.

Grammaire : Présent de l'indicatif : verbes en er, venir, pouvoir, vouloir, articles contracte, avec, a chez, le futur, interrogation est ce que, adverbess interrogatifs, adjectifs possessifs, accord de l'adjectif, adjectifs exclamatifs, très/trop, présent de l'indicatif : acheter-regarder, l'impératif.

Manuel :

1. K.Madanagobalane, **Synchronie-1**, Samhitâ Publication, 2011.

Livre de référence :

1. Annie Berthet /B_atrix Sampsonis/ Catherine Hugot /V_ronnique M Kizirian / Monique Waendendries, **Alter Ego A1**, Hachette, 2006.
2. Yves Loiseau/R_gineM_rieux, Connexions 1, Didier, 2011.

Semester: I**Hours/week: 4****Subject Code: 17UGS110001****Credits: 3****SANSKRIT PAPER – I****Assurance of learning**

- To introduce Sanskrit Aksharas.
- To improvise the writing skills.
- To introduce Present tense forms

UNIT – I**8 hours**

Akharavivaranam – Svaras & Vyanjanaani – Samyukta Aksharani.

UNIT –II**12 hours**

Shabdadayah – Aakaaraanta, ikaar aantah. ukaaraantah.

Shabdadayah – Aakaaraanta, iikaar aantah. uukaaraantah.

UNIT – III**12 hours**

Anuvaada Prayogah.

UNIT – IV**14 hours**

Lat Lakarh – Parasmai – Pada Prayogah = Vakyarupah.

Books Recommended

1. Kulapathy, K. M., Saral Sanskrit Balabodh, Bharathiya Vidya Bhavan, Munshimarg, Mumbai-400 007, 2014
2. R.S. Vadhyar & Sons, Book-Sellers and Publishers, Kalpathi, Palghat- 678003, Kerala, South India, Shabdha Manjari, 2014
3. Balasubramaniam R., Samskrita Akshara Siksha, Vangals Publication, 14th Main Road, JP Nagar, Bangalore -78, 2015.

Sem-I
17UGE120101

Hours/Week: 5
Credits: 3

GENERAL ENGLISH-I

Assurance of Learning

To help students

- use words and phrases related to self, home, friends and relatives in meaningful contexts
- develop positive self-esteem and thereby communicate confidently
- use language to perform basic functions like describing, clarifying, suggesting, and giving directions

Unit-I:

01. Personal Details
02. Positive Qualities
03. Listening to Positive Qualities
04. Relating and Grading Qualities
05. My Ambition
06. Abilities and Skills
07. Self-Improvement Word Grid
08. What am I doing?
09. What was I doing?
10. Unscramble the Past Actions
11. What did I do yesterday?

Unit-II:

12. Body Parts
13. Actions and Body Parts
14. Value of Life
15. Describing Self
16. Home Word Grid
17. Unscramble Building Types
18. Plural Form of Naming Words
19. Irregular Plural Forms
20. Plural Naming Words Practice
21. Whose Words?

Unit-III:

22. Plural Forms of Action Words
23. Present Positive Actions
24. Present Negative Actions
25. Un/Countable Naming Words
26. Recognition of Vowel Sounds
27. Indefinite Articles
28. Un/Countable Practice
29. Listen and Match the Visual
30. Letter Spell - Check
31. Drafting Letter

Unit-IV:

32. Friendship Word Grid
33. Friends' Details
34. Guess the Favourites
35. Guess Your Friend
36. Friends as Guests
37. Introducing Friends
38. What are We Doing?
39. What is (s)he / are they Doing?
40. Yes / No Question
41. What was s/he doing?
42. Names and Actions

43. True Friendship
44. Know your Friends
45. Giving Advice/Suggestions
46. Discussion on Friendship
47. My Best Friend

Unit-V:

48. Kinship Words
49. The Odd One Out
50. My Family Tree
51. Little Boy's Request
52. Occasions for Message
53. Words denoting Place
54. Words denoting Movement
55. Phrases for Giving Directions
56. Find the Destination
57. Giving Directions Practice
58. SMS Language
59. Converting SMS
60. Writing Short Messages
61. Sending SMS
62. The family debate
63. Family Today

Textbook

Joy, J.L. & Peter, F.M. *Let's Communicate 1*, New Delhi, Trinity Press, 2014. Print.

Extensive Reader

Dodd, E F. *Six Tales From Shakespeare*. London: Macmillan, 1987. Print. (First three tales)

BASIC ELECTRONICS

Assurance of learning

- Acquire knowledge about band theory and waveforms
- Ability to analyze passive circuits
- Acquire knowledge about PN diode
- Ability to know about optoelectronics devices

UNIT-I: Electrical Theory (12 Hrs)

The structure of an atom- Classification of materials based on band theory - Intrinsic, extrinsic Semiconductor -The unit of charge - Electric current - Potential difference - Power-signals - AC, DC, Pulsed DC waveform -Triangular waveforms - Saw tooth waveforms -Trigger pulse.

UNIT-II: Resistance, Capacitance, Inductance & Their Circuits (15 Hrs)

Introduction - Ohms law - Resistance - Basic definitions - Resistor color code - Calculating resistor value - Resistor parameters - Connecting resistors together.Capacitance: Capacitance and charge - Dielectric materials of a capacitor-Voltage rating of a capacitor - Energy stored in capacitors -Types of capacitors - Characteristics of capacitors - Charging and Discharging of a capacitor - Capacitor in parallel - Capacitor in series. Construction of Inductor - Inductance-factors affecting inductance -Time constant of an inductor - Power and energy in an inductor -Inductor in series and parallel - self inductance

UNIT-III: Semiconductor Diode (15 Hrs)

Introduction PN - junction - PN junction formation - Depletion region formation - Barrier potential-Biasing of a PN - junction diode -VI characteristics of a diode - Diode resistance-Static and dynamic resistance of a diode-Diode comparison-Diode specification-Type of diodes-Rectifier circuits using diodes -Half wave rectifier - Full wave rectifier.

UNIT-IV: Transistors**(15 Hrs)**

Introduction- Construction- Transistor biasing -VI characteristics - Operation of NPN transistor in active region- Operation of PNP transistor in active region- Circuit symbol and conventions-transistor configuration- Transistor-Darlington pair of transistor-Transistor specification parameters-Applications of BJT.Introduction to FET-Classification- Construction- Operation.

UNIT-V: Opto-Electronics**(15 Hrs)**

LED-construction-operation principle of LED- Calculating an LED resistor value-Application of LED-Advantages and disadvantages of LED-LDR operation-Photodiode: construction – principle - application- PIN Diode - Solar cell -Operation - Phototransistor -construction - Application

BOOKS FOR STUDY:

1. R.Y. Borse, “Basic electronic Devices and circuits”, First edition 2012, Adhyayan publishers & Distributors, New Delhi.
2. R.Y. Borse, “Basic electronic passive components” , First edition 2014, Adhyayan publishers & Distributors -New Delhi

BOOKS FOR REFERENCE:

1. Theraja B.L. “Basic electronics” 3rd edition, 2012, S. Chand & Co.
2. David Bell. “Electronic devices and circuits”2007, PHI
3. Mehta V.K “Principles of Electronics”, S. Chand & Co.
4. Forrest.M.Mims, “Getting Started in Electronics”, E- book

SECTION :

UNIT	BOOK	SECTIONS
I	1	1.2,1.4 lecture notes
II	2	1.1,1.1.1, 1.11, 1.13, 1.6, 1.6.2, 2.3, 2.5, 2.9, 2.10, 2.13-2.14, 3.2-3.5, 3.7, 3.18-3.19 (lecture notes – self inductance)
III	1	1.5.1-1.5.4.4, table 1.2, 3.1-3.3.1,3.4, 3.5.1
IV	1	4.1 - 4.2.13
V	1	2.3,2.3.3, 2.3.7-2.4.6,(lecture notes- solar cell, operation, phototransistor construction, application)

Allied:
MATHEMATICS – I

Learning Assurances

- Applications of matrices and the properties of matrices in their major discipline.
- Application of differential equations in the field of Electronics.
- Interpretation of data analysis in the field of Electronics.
- Use of probability in their major discipline.
- Use of probability distribution techniques in their major discipline.

Unit I: Matrices and Determinants :

Solutions of system of linear equations - Using Cramer's rule- Eigen values and Eigen vectors of a matrix - Cayley Hamilton's Theorem (Without proof). (Chapter I, pages 40-43,131-138,152-156)

Unit II: Differential Equations:

Second order differential equations - all the types of equations including constant coefficients and particular integral when X is of the form x , $\sin \alpha x$ and $\cos \alpha x$. (Chapter V, pages 534-570).

Unit III: Statistics:

Measures of Central tendency: Mean, Median, Mode (Direct method only) - Measures of variation: Range, Standard deviation (Chapter 9, Pages 124-170)
(Chapter 10- pages 241-245,259-267)

Unit IV: Probability :

Probability - Conditional probability - Baye's theorem (Problems only)
(Chapter 18, Pages 737-768)

Unit V: Theoretical of Distribution :

Applications of Binomial distributions, Poisson distributions, Normal distributions. (Problems only) (Chapter 19, Pages 769-802).

Textbook

1. M.K. Venkataraman, Engineering Mathematics (Vol II), Third Edition, The National Publishing Co., Madras, 1988. (Unit I & II)
2. R.S.N. Pillai and Bagavathi, Statistics- Theory and Practice, S. Chand and Co. Ltd., New Delhi 2014. (Unit III,IV & V)

References

1. Ancillary Maths, Book II, 1999 Edition, S. Narayanan and T.K. Manickavasagam pillai.
2. P.R. Vittal, Mathematical Statistics, Margham Publications, Chennai, 2004.
3. J.N. Kapur and H.C. Saxena. Mathematical Statistics 20th Edition, S.Chand & Co Ltd. New Delhi, 2010.

Semester-I
17UFC141001

Hours/Week: 2
Credits: 2

ESSENTIALS OF HUMANITY

Assurance of Learning

- * To educate the students in the basic principles of value education and to inculcate the same values in them
- * To teach the students various dimensions of human personality and the ways to develop them.
- * To empower the students in gender sensitization, gender differences and gender roles.
- * To prepare the students for the smooth transfer from the stage of teenage to earlier adulthood.

Unit-I

Principles of Value Education - Introduction - Value Education- Characteristics of Values –
Kinds of Values

Unit-II

Development of Human Personality - Personality traits - Theories of Personality - Discovering self- Defense mechanism - Power of positive thinking

Unit-III

Dimensions of Human Development - Physical development – Intellectual development - Emotional development - Social Development – Moral development - Spiritual development

Unit-IV

Responsible Parenthood - Human sexuality - Sex and love - Becoming a spouse - Responsible Parenthood

Unit-V

Gender Equality and Empowerment - Historical perspective - Education & economic development -Crimes against Women-Women's rights

Text Book:

Essentials of Humanity, Department of Foundation course, St.Joseph's College, Tiruchirappalli-2, 2016.
