Summer (June-July) Courses and Syllabus

PUC 1		
Course code:	**Course Name:** Basic English	**Credits:**

Detailed Syllabus:

1. Parts of body, 2. List of vegetables and fruits, 3. Gender & People & relations, 4. Kinds of clothes, 5. Animals & their babies, 6. Animals &their cry (sounds), 7. Dwelling places – people & animals, 8. Introduction to parts of speech, 9. Collective nouns & countable and uncountable nouns, 10. Professions, 11. Phobias & Manias, 12. Instruments & Tools, 13. Countries & Nationalities, 14. Abbreviations & Zodiac Signs, 15. Synonyms, Antonyms, Homonyms &Homophones and Acronyms, 16. One word substitution & Odd man out, 17. Regular & irregular Verbs, 18. Kitchen verbs & Things in kitchen (Food & Grocery), 19. Singular & Plural, 20. Branches of Study.

Reference Books:

1. A Course in Listening and Speaking Book I & II by G. Rajgopal

2. Phonetics for Indian Students by T. Balasubramaniyan

3. Lesikar, Raymond V and John D. Pettit. Report Writing for Business. Boston: McGraw-Hill, 1998

4. Ruesh, Jurgen and Weldon Kees. Non-verbal Communication: Notes on Visual Perception of Human Relations. Berkeley: University of California Press, 1966

5. Objective English – Edgar Thorpe & Showick Thorpe

Course code:	**Course Name:** Communication Skills	**Credits:**

Detailed Syllabus:

1. Greetings & Introduction, 2. Seeking Information, 3. Telling the Time –Days and Dates, 4. Dos and Don'ts, 5. Filling a Form, 6. Transco-ding Information, 7. Describing a Process, 8. Learning English with Pictures, 9. Free time activity, 10. Things you will find in different places, 11. Personality Traits, 12. People –Health Problems, 13. Means of Transport, Traffic rules & Signs, 14. Panchatantra/ Chandamama Stories, 15. Translation.

Reference Books:

1. Technical Communication: Principles and Practice by Meenakshi Raman and Sangeeta Sharma: Oxford University Press

2. Effective English Communication by Krishna Mohan and Meenakshi Raman

3. Communication Skills by Meenakshi Raman and Sangeeta Sharma: Oxford University Press

PUC 2		
Course code:	**Course Name:** Linear Algebra	**Credits:**

Detailed Syllabus:

1. System of linear Equations, 2. Vector space, 3. Linear Combination Of Vectors, 4. Linear Dependence and Independence, 5. Bases and Dimension, 6. Linear Transformations, 7. Matrix Representations of Linear Transformation, 8. The inverse of matrix, 9. The rank of a matrix, 10. Eigen values and Eigen vectors.

Reference Books: 1. Advanced Engineering Mathematics by RK Jain, 2. Advanced Engineering Mathematics by Erwin Kreyszig.

Course code:	**Course Name:** Ordinary Differential Equations	**Credits:**

Detailed Syllabus:

1. Basic Concepts, 2. First order differential Equations, 3. Exact first order differential Equations, 4. Linear Differential Equation of First Order and Bernoulli's form, 5. Solutions of Homogeneous Linear Differential Equations with Constant Coefficients part-1, 6. Solutions of Homogeneous Linear Differential Equations with Constant Coefficients part-2, 7. Method of Variation of Parameters, 8. Solutions of Euler Cauchy Equation.

Reference Books: 1. Advanced Engineering Mathematics by RK Jain, 2. Advanced Engineering Mathematics by Erwin Kreyszig.

Course code:	**Course Name:** Introduction to Engineering Departments	**Credits:**

The teachers are expected to go through all the references and give the gist of them to the students, to enable them to get an idea about each branch of engineering.
Libraries must procure all the books mentioned.

Detailed Syllabus:

I. Science, Engineering, Technology, Mathematics, Role of each Stem, Why to study Engineering?, Engineering course Goals, Applications, Evolution of Engineering, Human needs, Historic Approach, Professional Education, Engineering education in India

II. Concepts in Engineering: What is an engineer? Engineer as problem solver, Introduction to Design Engineering Communications. Engineering Fundamentals and problem solving, The Engineering Profession, Engineering Solutions, Representation of Technical Information, Engineering estimation and Approximations, Engineering Economics. Engineering Design, A process. Engineering problem solving and presentation communication skills and presentation,

Engineering ethics, professional obligations.

III. Current Trends in Engineering Practice:

1. Computers Engineering: What is computer Engineering? What do you do as Computer Engineer? Scope and opportunities for Computer Engineering, career opportunities, Top Recruiters, Information Technology , Cyber security, Net working, Software, Hardware, Artificial Intelligence, Natural Networks, Telemedicine, Web Technology, Mobile Apps – other emerging areas.

2. Electronics and Communication Engineering: What is E & C Engineering?, Historic evolution, what do you do as E & C Engineer?, Scope and Opportunities, Job Profiles, Top Companies in this area, Nanoelectronics, communication Net works, Optical communication, Antennas, Satellite Communication, Mobile Communication, Microwaves, Signal Processing, Image processing, Sensors - V L S I - Chip Design, Embedded systems, other emerging areas

3. Chemical Engineering: What is Chemical Engineering? Historic evolution, what do you do as Chemical Engineer?, Scope and opportunities for Chemical Engineers, career opportunities, Top companies in this area, Plastic Age, Wonder Drugs, Environment, Petro chemicals.

4. Mechanical: What is Mechanical Engineering? Historic evolution, what do you do as Mechanical Engineer?, Scope and opportunities for Mechanical Engineers, career opportunities, Top companies in this area.

5. Civil: What is Civil Engineering? Historic evolution, what do you do as Civil Engineer?, Scope and opportunities for Civil Engineers, career opportunities, Top companies in this area.

6. MME: What is MME Engineering? Historic evolution, what do you do as MME Engineer?, Scope and opportunities for MME Engineers, career opportunities, Top companies in this area.

IV) Making transition from High School to College. Time Management - Daily studying and preparation - forming study groups - Expectations from an Engineer - Study habits of successful engineering students.

V) Ethics and professionalism, Moral reasoning and Codes of Ethics - Moral frame work.

References:

1) Engineering Fundamentals: An introduction to Engineering: Saeed Moaveni: Books cole Thomson learning.

2) http: //info.bookscole.com/Moaveni.

3) Engineering a creative profession : Beekely. C. George

4) Fundamentals of Engineering: Brovomiscy, Jacob

5) The Ascent of Man

6) Encyclopedia Britannica

7) Current Trends in Engineering Practice: Sneh Anand.Mounsa publication

8) Mc.Graw Hill Encyclopedia of Science and Technology

9) www.ece.vit.edu (Virginia Tech University)

10)www.engineering. Careers 360.com

11) Concepts in Engineering: Holtzapple,Reece (Ms. Grawthill higher education) (620465c)

12) Engineering Fundamentals and problem solving 3rd Edition, MCGraw Hill J E (620Em33)

13) Current Tradends in Engineering practice: Editor C.V. Rama Krishnan (Narosa Publishers) (620C94-)

14) Engineering,Fundamentals and Problem Solving by Arvid R Eide, Roland D- Jension, Lame H Mashaw Larry L. Northup IV Edition, Mc.Graw Hill publishers. (620En31-)

15) Ethics in Engineering: IV Edition: Mike.W. Martin, Roland Schinzinger, Tata Ms Graw Hill Publishers.

16)A History of engineeringin classical and medieval times: DONALD HILL Barnes and Noble Books, NewYork

17)Engineering : An introduction to creative Profession IV Edition,Goerge Beakley,H W Leach

Engineering 1st Year		
Course code:	**Course Name:** Advanced English	**Credits:**

Detailed Syllabus:

The primary objective of this course will be to equip the students ample enough to speak, write and represent in internationally acceptable English that is grammatical, fluent, mutually intelligible and appropriate for different purposes, audiences and contexts. It also aims to enable pupils to listen, read and view critically and with accuracy and understanding through appreciation of a wide range of literary and informational/ functional texts from print and non-print sources. Teaching should be organised at four different levels.

Contextualisation: Learning tasks and activities will be designed with a goal to learn the language in authentic and meaningful contexts of use. Lessons will be planned around learning outcomes to help students use related language skills, grammatical items/ structures and vocabulary appropriately in spoken and written language to suit the purpose, audience and context.

Learning-focused Interaction: Pupils should be provided an environment for communication that will explicitly foster listening and speaking skills and focus on the achievement of the Learning Outcomes. Learners should be actively engaged by encouraging participation in the learning process, boosting their confidence in the use of language, and promoting collaboration among students.

Integration: The areas of language learning – the receptive skills, the productive skills, and grammar and vocabulary will be taught in an integrated way, together with the use of relevant print and non-print resources, to provide multiple perspectives and meaningful connections.

Spiral Progression Skills: Grammatical items, structures and various types of texts will be taught, revised and revisited at increasing levels of difficulty and sophistication. This will allow pupils to progress from the foundational level to higher levels of language use. The syllabus is

designed to achieve its ends through four different phases; they are as enlisted and explained in the next few pages.

PHASE-1

The first stage undertakes an intense study of English grammatical structure and its uses. This stage acts as a threshold towards enhancing students' ability to communicate in English by: • Increasing awareness of the form, meaning, and usage of target structures • Providing practice which will help students internalize the grammar • Increasing students' ability to monitor their own and others' language use • Providing opportunities for spontaneous, communicative use of grammatical structures. The structures to be addressed are as follows:

1. Nouns, 2. Pronouns, 3. Verbs, 4. Adverbs, 5. Adjectives, 6. Conjunctions, 7. Prepositions, 8. Interjections, 9. Phrases and Clauses, 10. Finite and Non-finite Verbs, 11. Auxiliary Verbs, 12. Subject-Verb Concord, 13. Kinds of Sentences, 14. Tenses, 15. Articles, 16. Determiners, 17. Active and Passive Voice, 18. Direct and Indirect Speech, 19. Literary Devices, 20. Synonyms and Antonyms, 21. Punctuation, 22. Phrasal Verbs, 23. Question Tag

References:
- H. N., & R. M. (2001). ESSENTIAL ENGLISH GRAMMAR (Indian ed.). New Delhi: Cambridge University Press.
- Martha Kolln and Robert Funk. Understanding English Grammar (Eighth Edition). Pearson Education, Inc., 2006
- Mamie Hixon. Real Good Grammar, Too (Second Edition). Kendall/Hunt Publishers, 1997.

PHASE-2

The second phase initiates a balance between decoding and meaning-based instruction, word recognition and passage comprehension. Emphasis will be on enhancing the reading and comprehending capability of the learners • Students will be guided through the beginning reading stage to the independent reading stage • Learners will be provided opportunity to read, view and interpret a variety of text types from print, non-print and electronic sources • The use of materials other than the textbook to encourage reading, language acquisition and self-access learning will be the thrust idea• Developing reading comprehension strategies for comprehending at the literal, interpretive and evaluative levels, and developing critical reading in pupils will be the expected outcome.

Effective reading will be taught through the following methods:
Construct meaning from visual texts (e.g., pictures, diagrams, charts, icons, maps, graphs, tables). Make inferences and draw conclusions. Skim for the gist/ main idea. Paraphrase information and summarise essential ideas. Scan for specific information Track sequence details. Identify and analyse the literary/media techniques employed.

References:

- Swenson, E. (2011). *Reading comprehension*. Greensboro, NC: Carson-Dellosa Publishing.

- A. S. (2015). *Proficiency in Reading Comprehension Simplifying The 'Passage' for You*.

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Phase-3

In this phase students will be taught to apply skills and strategies for idea generation, selection, development, organization and revision in writing and representing to address purpose, audience, and context in a plethora of genres. The thrust areas will be •Applying spelling rules and conventions consistently • Stimulating imagination to generate and/ or gather ideas appropriate to the writing and representing tasks and topics, using learner strategies. • Planning how to support the key message of a text with factual/ descriptive details and/ or examples appropriate to purpose, audience, context. • Ensure coherence in a text by selecting organisational patterns appropriate.

On a general note two modes of writing will be taught 1) Imaginative/ Narrative 2) Discursive /Argumentative. Its contents are listed below

Imaginative/ Narrative Writing

   i.   **Travel Narratives**: narrative accounts of journeys embarked by the pupils. Ideally situations will be given and students will be asked to weave an imaginary account about their journey.
   ii. **Story Writing**: to be completed both as groups and individually. Students will have to create fictional accounts by stimulating their imagination. The features of a well structured plot and the various conclusion techniques (open ended, cliff hanger, ambiguous etc) will be taught.
   iii. **Diary writing**: methods to make proper diary accounts will be discussed. The ways to bring in a personal note in writing will be the key focus.

Discursive /Argumentative Writing

   i.   **Technical and Literary writings**- differences, similarities

   ii. **Letter writing-** formal, informal and business letters

   iii. **Email writing**- etiquettes and rules

   iv. **Report writing-** structure, variants

   v.   **Essay writing**- structure, variants

   vi. **Paragraph writing**- structure , variants

   vii. **Resume writing-** etiquettes, models

References:

   ❖ Brien, T. O. (2011). *Modern Writing Skills* (Paperback ed.). Little Red Book.
   ❖ Zinsser, W. (2006). *On writing well: The classic guide to writing*

Phase-4

In this phase focus shifts to the communicative aspect of the language. Evaluation and teaching will mostly be based on class room activities. The aim is to inculcate confidence in the pupils so as to freely use English for communication. Thrust areas will be: • Getting acquainted with the use of English for communication. • Formal and Informal modes of communication • Tracing out

the common errors in speech • Overcoming the barriers in communication •Developing a balanced body language.

Forms of communication which will be discussed are as follows:

Formal Modes of Communication

i.   **Group Discussion**- etiquettes, roles (initiator, facilitator, time keeper, concluder)

ii. **Interview skills**- etiquettes, possible questions (managerial, human resource, technical)

iii. **Debates**- etiquettes, techniques, topics frequently asked

iv. **Presentation Skills-** non academic yet formal (topics will mostly be taken from current affairs)

Informal Modes of Communication
i.   **Team work Skills**- presentation of skits and other varied team activities
ii. **Ice Breaking Sessions**- introducing a friend to the class
iii. **Dialogue writing and presentation-** writing dialogues for an imaginary situation and then acting it out.

References:
- J. B. (2010). *Spoken English* (Second ed.). Tata Mc GrawHill.
- I. T. (2015). *Communication Skills: A Practical Guide to Improving Your Social Intelligence, Presentation, Persuasion and Public Speaking* (Paperback ed., Vol. 9). Positive Psychology Coaching series.
- Hadfield, J., & Hadfield, C. (2009). *Simple speaking activities*. Oxford: Oxford University Press.
- Brien, T. O. (2011). *Effective Speaking Skills* (Paperback ed.). Little Red Book.

Course code:	Course Name: Soft skills	Credits:

Detailed Syllabus:

1. Introduction to Communication: Provide a panoptic overview of the ideas and theories of communication. Teaching will be more peripheral in nature than a detailed study.

i.   Need for Effective Communication.
ii. Barriers in communication
iii. Process of communication (theories involved)
iv. Common errors in speech
v.   Formal forms of communication(vocabulary included)
vi. Informal forms of communication(vocabulary included)

2. Writing Skills: To enhance the various skills required for clearing written exams at academic and corporate levels.

i.   Technical and Literary writings- differences, similarities
ii. Letter writing- formal, informal and business letters
iii. Email writing- etiquettes and rules

    iv.   Report writing- structure, variants
     v.   Essay writing- structure, variants
    vi.   Paragraph writing- structure , variants
   vii.   Resume writing- etiquettes, models

3. Reading Skills: Preparing students for quick comprehensive analysis of passages from an academic perspective.

     i.   Skim, Scan
    ii.   Identifying the nature of an essay/ passage
   iii.   Finding the key terms
    iv.   Comprehension exercises

4. Communication Skills: Enhancing the verbal forms of communication and the non-verbal cues associated.

     i.   Presentation skills- JAM (Just A Minute) segments and non-academic presentations
    ii.   Group Discussion- etiquettes, roles (initiator, facilitator, time keeper, concluder)
   iii.   Interview skills- etiquettes, possible questions (managerial, human resource, technical)
    iv.   Team work skills- roles, rules and regulations
     v.   Time management and stress management

5. Listening Skills: Developing a keen listening ability in all the participants will be the key aim of this segment.

     i.   Listening for general content -filling up blanks
    ii.   Intensive Listening- listening for specific content.
   iii.   Barriers to effective listening

Engineering 2nd Year		
Course code:	**Course Name:** Foundations of Management	**Credits:**
Detailed Syllabus: 1. Development of Management Thought and Functions of Management: Learning objectives, Concept of management, Scientific Management-Taylor, Henry Fayol contributions, Human Relations approach- Hawthorne experiments, Approaches to Management, Ethics in management. Management Processes and function: Nature and description of management process, Managerial functions: Planning, Organizing, Directing, Coordinating and Controlling. Communication process, Theories of motivation and leadership. 2. Human Resource Management: Nature and Scope of Human Resource Management, Functions of HRM, Industrial Relations. 3. Marketing Management: Marketing Environment, Consumer Markets and Buyer Behaviour, Segmentation, NPD, PLC, Marketing Mix (4Ps), Channels of Distribution. Advertising and Sales Promotion, Personal selling, Public relations.		

4. Production/Operation Management: Planning and Design of Production and Operation Systems, Facilities Planning, Location, Layout and Movement of Materials, Materials Management and Inventory Control, Maintenance management, Statistical Quality Control, TQM and ISO Certification.

Reference Books:

1. Arya Sri, A.R, Management Science, TMH, New Delhi, (2009)
2. Weirich,& Koontz Essentials of Management, TMH, New Delhi, (2008).
3. Kotler Philip, Marketing Management, 13th edition, Prentice Hall of India (2010).
4. Chary,S.N., Production and Operations Management, 4th edition, New Delhi: TMH (2009).
5. Aswathappa. K., Human Resource Management, 6th edition, McGraw Hill, (2010).

Course code:	Course Name: Skill development	Credits:

Detailed Syllabus:

Skill development in Chemical Engineering:

(1) CFD software for solving fluid and heat transfer problems
(2) ASPEN software for modeling and simulation of chemical engineering applications

Skill development in Civil Engineering:

(1) STAADPRO software with real time design of bridge, residential, commercial and pre engineered building design projects
(2) Project management software teaching with real time projects
(3) Auto CAD, 3D max software teaching with real time projects in architecture and interior decoration.

Skill development in CSE:

(1) Computer hardware and networking (assembly, disassembly of laptop and computers, installation of different operating systems, configuration of system),
(2) Android application development

Skill development in ECE:

(1) MATLAB
(2) Basic electrical workshop (house wiring, soldering, servicing of electrical appliances),
(3) Circuit designs for different applications

Skill development in MME:

(1) Material characterization (X-ray diffraction instrument, scanning electron microscope),
(2) Metal forming techniques (casting

Skill development in Mechanical Engineering:

(1) Interaction with machines: Dismantling and assembly of Automobiles, Dismantling and assembly of Refrigerator and air conditioner, learning practical aspects of different available machines
(2) Learning basics of 3-D printing, preparation of simple models using 3-D printer, complex shape generation using 3-D printer
(3) Software packages : Auto-Cad, CATIA, Pro-E, ANSYS, CFD

(4) Operational research: Linear programming, simplex and duplex model, assignment problems, transportation models, scheduling methods, game theory

Engineering 3rd Year		
Course code:	**Course Name:** Summer Internship	**Credits: 8**
Summer Internship (minimum 8 weeks)		