Mahatma Education Society's

PILLAI COLLEGE OF ENGINEERING

Dr. K. M. Vasudevan Pillai's Campus, Sector 16, New Panvel, Navi Mumbai -410206
Tel No :- +91 22 2745 1700/ 6100 ♦www.pce.ac.in ♦

Dear Students/Parents,

Welcome to Pillai College of Engineering, PCE. I am delighted that you have chosen Engineering as your profession and pleased even further that Pillai College of Engineering is your chosen pathway to the career of your dreams. The career opportunities for engineering graduates in this era of globalization are immense. It is imperative that students are fully prepared to take advantage of these opportunities. PCE will make every effort to create the perfect environment for you to hone required professional skills. One's personal initiative will become vital in order to make full advantage of the extracurricular activities and social opportunities available at PCE.

Engineering education has been among the key enablers of growth for transforming India's economy. Though there is huge demand for the knowledge professionals, the quality of teaching and research will play a crucial role in the emergence of our country as a global knowledge leader. Quality education provides vital inputs for enhancing productivity across sectors. To meet the growing demand for manpower there has been eight-fold increase in the number of engineering institution in the last two decades. The distinguishing factor between the different institutes will be the quality of training imparted to the student. This is the area where PCE is very strong with highly qualified and experienced faculty members imparting in- depth knowledge in engineering. The performance of each student is monitored and appropriate actions are taken to make sure that they receive the appropriate support to meet all requirements of the education program. The laboratories at PCE are fully equipped with advanced facilities to foster the practical skills. The opportunity and facility that we provide will transform the enthusiastic student into a thorough engineering professional.

Many lectures and seminars by experts from industry as well as academia are given regularly to give the students insights into latest happening in business and technology and evoke their natural curiosity.

I assure you that your engagement with Pillai College of Engineering in the coming years will be enriching experience for you. I am confident that with the contemporary education and strong moral values at PCE, you will march ahead triumphantly to capture all glory and success in your professional, social as well personal life. I wish you all the best for your career.

With best wishes

Dr Sandeep M Joshi

Principal   1

TEACHING SCHEME and CREDITS ASSIGNED

Sub Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEC101	Applied Mathematics-I	04	-	01	04		01	05
FEC102	Applied Physics-I	03	01	-	03	0.5	-	3.5
FEC103	Applied Chemistry –I	03	01	-	03	0.5	-	3.5
FEC104	Engineering Mechanics	05	02	-	05	01	-	06
FEC105	Basic Electrical & Electronics Engineering	04	02	-	04	01	-	05
FEC106	Environmental studies	02	-	-	02	-	-	02
FEL101	Basic Workshop Practice-I	-	04	-	-	02	-	02
		21	10	01	21	05	01	27

MARKING SCHEME and EXAMINATION SCHEME

Sub. Code	Subject Name	Examination Scheme							
		Theory Marks				Term Work	Pract.	Oral	Total
		Internal Assessment			End Sem. Examination				
		IA 1	IA 2	Average					
FEC101	Applied Mathematics-I	20	20	20	80	25	-	-	125
FEC102	Applied Physics-I	15	15	15	60	25	-	-	100
FEC103	Applied Chemistry–I	15	15	15	60	25	-	-	100
FEC104	Engineering Mechanics	20	20	20	80	25	-	25	150
FEC105	Basic Electrical Engineering	20	20	20	80	25	-	25	150
FEC106	Environmental Studies	15	15	15	60	-	-	-	75
FEL101	Basic Workshop Practice-I	-	-	-	-	50	-	-	50
				105	420	175		50	750

GRADING OF PERFORMANCE

Percentage Marks	Grade	Points	Performance
80.00 and above	O	10	Outstanding
75.00 – 79.99	A	9	Excellent
70.00 – 74.99	B	8	Very Good
60.00 – 69.99	C	7	Good
50.00 – 59.99	D	6	Fair
45.00 – 49.99	E	5	Average
40.00 – 44.99	P	4	Pass
Less than 40.00	F	0	Fail

OUTLINE FOR APPLIED MATHEMATICS COURSE IN ENGINEERING

Mathematics is an essential tool in many fields of study such as natural science, engineering, medicine, social sciences, etc. Applied Mathematics is the branch of Pure Mathematics which emphasizes on the application of mathematical knowledge to other fields. This also leads to the development of entirely new mathematical disciplines, such as statistics and game theory.

Applied Mathematics concerns itself with mathematical methods that are typically used in science, engineering, business, and industry. Thus, Applied Mathematics is a mathematical science with emphasis on application for real life problem. It describes the professional specialty in which mathematicians and engineers work together on practical problems. It focuses on the formulation and study of mathematical models.

PREREQUISITES :- Number system, Algebra of Complex number, Limit of a function, Derivatives, Trigonometric formulae, Roots of quadratic equation, Values of a function at given point, Algebra of matrices and Properties of Logarithms.

TOPICS TO BE COVERED:-Complex number, Matrices, Partial Differentiation, Maxima and Minima of function, Series and expansions of functions, Indeterminate forms, Successive differentiation and Numerical solution.

COURSE OBJECTIVES

1. To develop basic Mathematical skills to understand the Engineering subjects effectively.

2. It is a basic tool for mathematical modeling to solve real life Problems.

COURSE STRUCTURE

S.No.	Activity	Contact Hours/Week
1	**Lecture**	**04**
2	**Tutorial**	**02**

INTERNAL ASSESSMENT

Based on the two class tests conducted during the semester as per term calendar.

TERM WORK ASSESSMENT

1) Class Tutorial on entire syllabus.
2) Scilab Tutorials
3) Attendance (Minimum 75% attendance required to be eligible for examination)

TEXT BOOKS-
1. A Text Book of Applied Mathematics , P. N. & J. N. Wartikar Vol I and II by Pune Vidyarthigraha.
2. Matrices, Shanti Narayan, S. Chand Publication.

REFERENCES-
1) Higher Engineering Mathematics ,Dr. B.S.Grewal Khanna Publication, Delhi
2) Advanced Engineering Mathematics, Erwin Kreyszing, Wiley Eastern Limited, 9th Ed.
3) Numerical Methods, Dr.P Kandasamy, S. Chand Publication.

OUTLINE FOR APPLIED PHYSICS COURSE IN ENGINEERING

Physics is one of the fundamental sciences. All engineering sciences have branched out from the basic sciences like physics, chemistry, mathematics, etc. So broadly speaking, an engineering branch is mainly an applied physics.

Applied Physics course includes basic foundations like crystallography, Quantum mechanics, semiconductor devices, acoustics, ultrasonics, Electrodynamics etc. It includes advanced technologies like Superconductivity, LASER, Nanoscience, Nanotechnology, Fiber Optics etc.

PRE REQUISITES:- Basic concepts of Physics and Mathematics at higher secondary level

TOPICS TO BE COVERED :- Crystallography, Physics of semiconductors, Acoustics, Ultrasonics, Quantum Mechanics and Superconductivity.

COURSE OBJECTIVES:-
The study of Applied Physics in the course of engineering helps us to identify and understand the fundamental physical principals underlying engineering devices and processes. This is the prerequisite to become a successful engineer. The course of Applied Physics provides inclusive knowledge of fundamental physical principles encouraging the engineering student to venture into the research arena.

COURSE STRUCTURE

S.No.	Activity	Contact Hours/Week
1	**Lecture**	**04**
2	**Practical**	**01**

INTERNAL ASSESSMENT

Based on the two class tests conducted during the semester as per term calendar.

TERM WORK ASSESSMENT

1) Practicals conducted during the course.
2) Class assignments based on course topics
3) Attendance (Minimum 75% attendance required to be eligible for examination)

REFERENCES-

1. A Text Book of Engineering Physics , Avandhanulu and Kshirsagar,S.Chand Publications
2. Engineering Physics ,Vasudeva, S.Chand
3. Engineering Physics ,V. Rajendran ,Tata McGraw Hill
4. Concepts of Modern Physics- Arther Beiser,Tata MC Graw Hill

OUTLINE FOR APPLIED CHEMISTRY COURSE IN ENGINEERING

Engineering and technology have become interdisciplinary with chemical, physical and biological sciences contributing immensely to the development of engineering practices. Applied chemistry is a fascinating area and an area of significance for engineers.

Materials fabricated and used in our daily lives are derived from chemicals both natural and synthetic and their extent of utility is growing day by day. It is imperative that engineers of different disciplines acquire sufficient knowledge of materials and its applicability for the intended use. Hence a basic understanding of chemistry of materials and processes is a must for an engineer or technologist. Applied chemistry emphasizes on application of knowledge acquired in the field of chemistry for engineering technology.

PREREQUISITES: - Basic concepts of Chemistry at higher secondary level

TOPICS TO BE COVERED: - Water treatment, Polymers, Lubricants and their mechanism, Phase Rule, Important Engineering Materials

COURSE OBJECTIVES –

1) To analyze and design chemical processes that span molecular to macroscopic scales.
2) Specializations acquire skills needed to solve practical problems from the realms of chemical technology, process engineering and chemistry of materials and are well prepared to work in industrial, research and marketing environments.
3) Understanding of composition and properties of materials used in the field of engineering.

COURSE STRUCTURE

S.No.	Activity	Contact Hours/Week
1	**Lecture**	**04**
2	**Practical**	**01**

INTERNAL ASSESSMENT

Based on the two class tests conducted during the semester as per term calendar.

TERM WORK ASSESSMENT

1. Class assignments based on course topics and viva.
2. Periodic revision test
3. Attendance (Minimum 75% attendance required to be eligible for examination)

TEXT BOOKS-

1) Engineering Chemistry , Jain and Jain
2) Engineering Chemistry , S.S.Dara
3) Applied Chemistry , Dr. Manju Pillai and Dr. Panda

REFERENCES-
1. Quantitative Analysis, A. I. Vogel,
2. Polymer Chemistry, Gowarikar,
3. Material Science, W.D. Callister

OUTLINE FOR BASIC ELECTRICAL ENGINEERING

The main objective of this course is to acquire the basic concepts of Electrical Engineering and to develop capability to apply these to solve complicated networks and circuits. This course will help students to understand the basic concepts of A.C and D.C. circuits, working principle of transformers and their applications. In addition to this, the students will understand the basic concepts of Electrical Machine.

PREREQUISITES: - Concepts of e.m.f., potential difference & current, battery, capacitors, inductors, energy stored in a capacitor and inductor, R-C time constant, magnetic field, magnetic circuit, Faraday's laws of electromagnetic induction, hysteresis & eddy current losses.

TOPICS TO BE COVERED: - D.C circuits, 1Ø A.C. circuits, 3Ø A.C. circuits, Single phase transformer, and DC Machine.

COURSE OBJECTIVES –

1) To study basic electrical laws and their applications in electrical circuits.
2) To understand basic D.C. network theorems and their real time applications.
3) Study the concepts of 1- phase and 3- phase A.C. circuits.
4) To understand working principle and the concepts of single phase Transformers.
5) To study basic operation of DC Machine.

COURSE STRUCTURE

S.No.	Activity	Contact Hours/Week
1	**Lecture**	**05**
2	**Practical**	**02**

INTERNAL ASSESSMENT

Based on the two class tests conducted during the semester as per term calendar.

TERM WORK ASSESSMENT

1. Class assignments based on course topics
2. Periodic revision tests
3. Attendance (Minimum 75% attendance required to be eligible for examination)

TEXT BOOKS-

1) A Text Book of Electrical Technology, Vol 1 and2 , B. L. Theraja
2) Basic Electronics, V.K. Mehta
3) Basic Electrical and Electronics Engineering, B.R. Patil

REFERENCES-

1. Basic Electrical Engineering,Dr. P S Bimbhra,Khanna Publishers
2. Basic Electrical and Electronics Engineering,Ravish Singh,Tata McGraw Hill

OUTLINE FOR ENGINEERING MECHANICS COURSE IN ENGINEERING

Engineering mechanics deals with the study of forces acting on body when the body is at rest or in a state of motion. It also deals with the study of kinematics of rigid bodies and kinetics of particles.

PREREQUISITES: - Basic Concepts of Physics and Mathematics .

TOPICS TO BE COVERED: - Resultant of Forces, Forces in space, Centroid of plane lamina, Equilibrium, Friction, Kinematics of rigid bodies and kinetics of particle, etc.

COURSE OBJECTIVES –

1. To acquaint the concept of equilibrium in two and three dimensional system.
2. To study and analyse motion of moving bodies.

COURSE STRUCTURE

S.No.	Activity	Contact Hours/Week
1	Lecture	06
2	Practical	02

INTERNAL ASSESSMENT

Based on the two class tests conducted during the semester as per term calendar.

TERM WORK ASSESSMENT

1. Class assignments based on course topics
2. Periodic revision test
3. Attendance (Minimum 75% attendance required to be eligible for examination)

TEXT BOOKS-

1) Engineering Mechanics, A. K. Tayal
2) Problems in Engineering Mechanics, Schaum Series

REFERENCES-
1. Engineering Mechanics ,F.L.Singer,Harper ,Raw   Publications
2. Engineering Mechanics ,Beer and Johnson,Tata McGrawHill

OUTLINE FOR ENVIORNMENTAL STUDIES COURSE IN ENGINEERING

Environmental studies are an interdisciplinary academic field which systematically studies human interaction with the environment in the interests of solving complex problems. It is a broad field of study that includes also the natural environment, built environment and, the sets of relationships between them. The field encompasses study in basic principles of ecology and environmental science, as well as associated subjects such as ethics, policy, politics, law, economics, philosophy, environmental sociology and environmental justice, planning, pollution control and natural resource management.

PREREQUISITES:- Multidisciplinary Nature of Environmental Studies, Environmental Pollution Renewable sources of Energy, Environment and Technology, Knowledge on current environmental issues.

TOPICS TO BE COVERED :- Scope and Importance of subject, Need for Public Awareness, Global Environmental Crisis, Ecosystem, Concept of sustainable development, Control Measures: 3R (Reuse, Recovery, Recycle), Air Pollution, Water Pollution, Land Pollution, Global Warming, Acid Rain, Functions and powers of Central & State Pollution Control Board,MoEF, Environmental Protection Act, Various renewable energy sources (Solar Energy, Wind Energy), Disaster Management (Two Events: Earthquakes,flood),case studies

COURSE OBJECTIVES -

1. Objective of this course is to develop concern for our environment which will lead us to act at our own level to protect the environment we all live in.
2. Creating awareness about environmental problems
3. Imparting basic knowledge about the environment and its allied problems
4. Striving to attain harmony with nature

COURSE STRUCTURE

S.No.	Activity	Contact Hours/Week
1	Lecture	02

INTERNAL ASSESSMENT

Based on the two class tests conducted during the semester as per term calendar.

Attendance (Minimum 75% attendance required to be eligible for examination)

REFERENCES-

1. Environmental Studies, Benny Joseph, Tata McGraw Hill
2. Environmental Studies, R.Rajagopalan, Oxford University Press
3. Environmental studies by Anandita Basak,Pearson Education
4. Essentials of Environmental studies by Kurian Joseph and Nagendran
5. Perceptives of Environmental Studies by Kaushik and Kaushik

DIGITAL LIBRARY

1. Open URL : **http://192.168.0.2:8080/jspui/** for access Digital Library
2. Browse to the community Pillai College of Engineering

Sub-communities within this community

Pillai College of Architecture
PiCA

Pillai College of Arts, Commerce and Science
PCACS

Pillai College of Engineering
Pillai College of Engineering

Pillai Insitite of Management Studies and Research
PiMSR

3. You can access all the digital resources in following categories

Sub-communities within this community

Publication
Publication

Study Material
Study Material

Thesis and Project Reports
Thesis and Project Reports

DIGITAL RESOURCES

1. Open the URL : **http://digitalresource.mes.ac.in** to access the digital resources of MES.
2. You can access resources like - E-book, Videos(Seminar, WEbinar), Questions Paper, Syllabus.
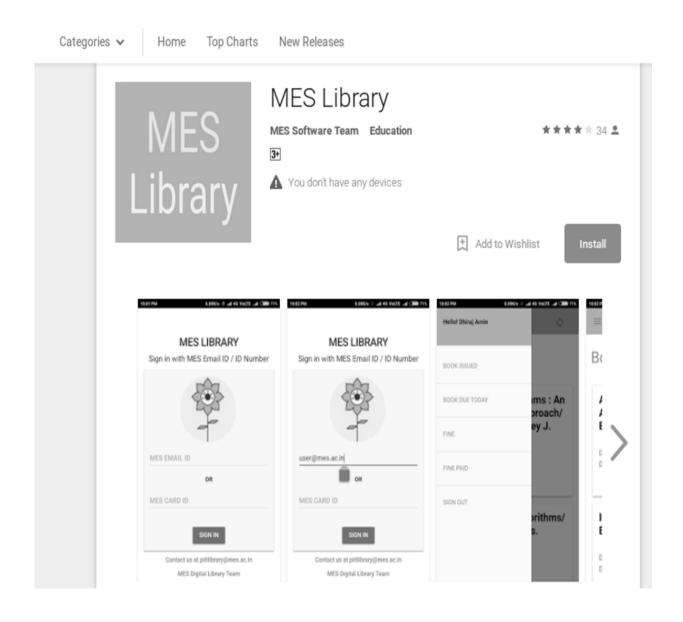
MES Digital Resource | Home

PROJECT REPORTS	JOURNAL FINDER	ONLINE FORMS
NPTEL	SYLLABUS	QUESTION PAPERS
E-BOOKS	VIDEOS	E-PAPERS

ONLINE PUBLIC ACCESS CATALOGUE (OPAC)

1. All Engineering Students can avail the book borrowing facility from library.
2. You can use OPAC to shortlist or search for books.
3. We have above nearly 50000 Engineering Books and 2000 Higher Engineering Books in the library located on the 3rd floor S Wing .
4. URL to access OPAC : **http://opac.mes.ac.in:9000/**
5. You can borrow 4 books at a time from library for 15 days

Note:- The student misusing the ID and borrowing books using ID of other students shall be refrained from using Library for 6 months. Misuse and Impersonation shall be dealt with strictly.
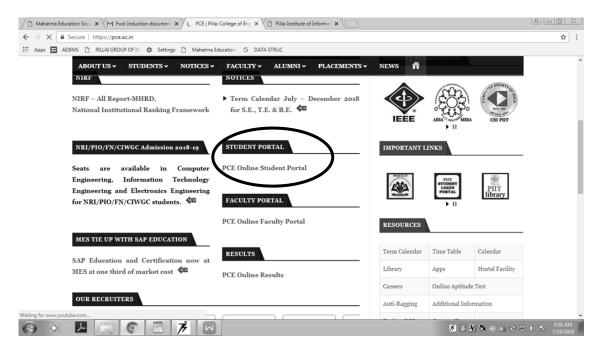
MES LIBRARY APP

1. GOOGLE PLAY STORE APP
2. It can be downloaded on Android phones .
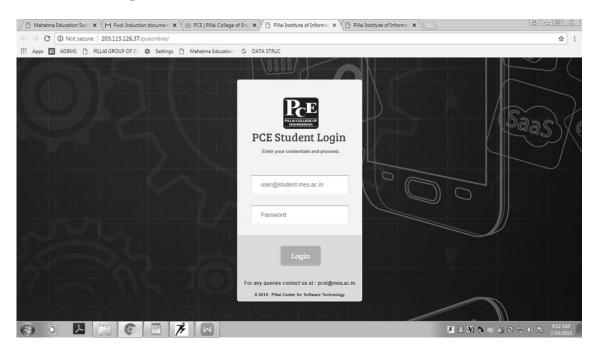3. You can browse books, check due dates and view fines(if any) in your account.

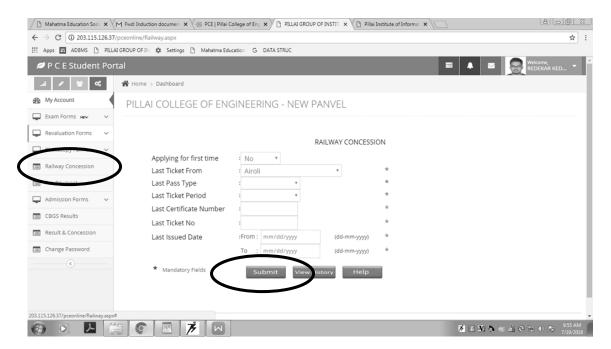# HOW TO APPLY FOR RAILWAY CONCESSION

1. **Visit college website www.pce.ac.in. Go to Student Portal**

2. Go to Student portal

3. Enter your user name and password

4. After Submitting your form a PRC NO will be generated which has to be submitted to Ms. Seema Nair, Engineering Office (Ground Floor) to get your railway concession.