PROSPECTUS FOR Ph.D. PROGRAM
2012-13

YMCA UNIVERSITY OF SCIENCE AND TECHNOLOGY

NH- 2, SECTOR-6, MATHURA ROAD, FARIDABAD

HARYANA-121006, www.ymcaust.ac.in

Ph.:(0129) 2242142, 2210372 Fax: 2242143

YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY FARIDABAD

(Established by Haryana State Legislative Act No.21 of 2009
& Recognized by UGC Act 1956 U/S 2(f) to Confer Degrees)

Important Dates

S.No.	Event	Date&Time
1	Availability of application form & Prospectus on University Website: www.ymcaust.ac.in	21.5.2012(Monday)
2	Last date of submission of application forms	20.6.2012(Wednesday)
3	Date of Entrance test	12.7.2012(Thursday) 10.00 a.m to 11.30 a.m. at YMCAUST Main Building, Sector-6,Faridabad-121006
4.	Date of Declaration of results on University Website &Notice Board	17.7.2012(Tuesday)
5	Date of interview before DRC in respective Deptt and Provisional Admission	26. 7. 2012(Thursday)
6	Commencement of Course Work Classes	8- 8- 2012 (Wednesday)

The Application Form and prospectus can be downloaded from the University Website (www.ymcaust.ac.in). Filled application forms should be accompanied with a Demand draft for the amount of Rs.1000/- (250/- for SC/ST)drawn in favour of the "Registrar, YMCAUST, FARIDABAD" payable at FARIDABAD.

LT GEN (RETD) KARAN SINGH YADAVA

PVSM, AVSM, SM, VSM

VICE-CHANCELLOR

WELCOME

YMCA University of Science &Technology has emerged as one of the leading universities of the region. It has contributed immensely in the field of technical education and plays an important role in creating highly skilled technical manpower which is employable in an equally competitive market.

It is a moment of pleasure for the University to welcome the next batch of UG/PG students for the academic year 2012-13. YMCAUST is a pioneer Institution that has been providing qualified, trained manpower to the industry since its inception as an Indo German project in 1969. It has produced large number of entrepreneurs who are actively contributing to the socio – economical development of the country in general and the state of Haryana in particular. The friendly atmosphere with the faculty and non-faculty members provides an atmosphere of home away from home.

My best wishes are always with the students for their bright future.

(KARAN SINGH YADAVA)

YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY, FARIDABAD, HARYANA

The Chancellor

His Excellency Sh.Jagannath Pahadia

Hon'ble Governor of Haryana

S.No.	Name	Designation	Telephone No.
1.	LT GEN (Retd) Karan Singh Yadava	Vice-Chancellor	0129-2310111
2.	Ms. Shimla	Registrar	0129-2242142
3.	Dr. A.K. Sharma	Dean of Faculty (Engg & Tech)	0129-2242143
4.	Dr S. Grover	Chairperson (Mech. Engg.)	
5.	Dr. S.K. Aggarwal	Dean of Management Studies	0129-2210372
6.	Dr M.L. Aggarwal	Dean Academic Affairs	8130826520
7.	Dr. Tilak Raj	Dean(HAS) &COE	0129-2241036
8	Dr. P.R. Sharma	Dean Student Welfare	
9.	Dr. Munish Vashisht	Proctor &CHW	0129-2242143
10.	Sh. Rajesh Ahuja	Controller of Finance	0129-2242142
11	Sh. P.N. Bajpai	Librarian	

YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY FARIDABAD

INTRODUCTION

YMCA University of Science & Technology, Faridabad established in 2009 vide Haryana Govt. Gazette Notification No.29 of 2009 dated 16.9.2009(Haryana Act No. 21 of 2009) formerly known as YMCA Institute of Engineering, Faridabad, established in year 1969 as a Joint Venture of Govt. of Haryana and National Council of YMCA of India with active assistance from overseas agencies of West Germany to produce highly practical oriented personnel in specialized field of engineering to meet specific technical manpower requirement of industries. The Institute (now University) has been well known for its track record of employment of the pass out students since its inception. The Institute(now University) has been allowed to conduct B.Tech. Course of 4-Years duration from the session 1997-98 and students are admitted through centralized counseling conducted by agency nominated by State Govt. from time to time in 1st Year and also has been allowed to admit students in 2nd year through Lateral Entry Entrance Test. The students of B.Tech, M.Tech, MCA and MBA shall be granted their respective degree for the students who were admitted upto 2008-09 by MDU Rohtak. The YMCA University of Science & Technology, Faridabad shall grant the degree to the students of all streams including Ph.D. Programmes admitted in 2009-10 onward (Except LEET students). It has excellent record of placement and has been the first preference in Haryana State.

The University is situated right on the National Highway No.2 known as Mathura Road, 32 Kms. from the Nation's Capital, New Delhi. It had been upgraded from erstwhile YMCA Institute of Engineering during session 2009-10. The University has its own Campus on a plot area of 20 acres. It is located in the growing and sprawling Faridabad Ballabgarh Industrial Complex of Haryana. The University is well connected with Rail and Road Transport from Delhi/New Delhi.

1. The University

The University has been well known for its track record of employment of the passed out students since its inception as erstwhile YMCA Institute of Engineering. The University has been conducting B.Tech. Degree Courses of 4 years duration from the session 1997-98 and candidates are admitted through Centralized Counseling. Besides Under Graduate Degree Courses, University is also running a number of Post Graduate Degree programmes like M.Tech., M.Sc., MBA, MCA and Ph.D.

1.1 The Department of Computer Engineering, Besides conducting B.Tech. programme in Computer Engg. , IT & MCA, the department also conducts M.Tech. & Ph.D. in the discipline of CE&IT from the year 2002-03 and 2010-11 respectively. The department is having highly qualified and experienced faculty as given below (List is in Alphabetic order in a cadre):

Professor	
1. Dr. A.K.Sharma, Chairperson	2. Dr. Naresh Chauhan
Associate Professor	
1. Sh. Atul Mishra	2. Dr. Ashutosh Dixit
3. Dr. Komal Kumar Bhatia	4. Dr. Manjeet Singh
5. Dr. Neelam Duhan	6. Dr. Sapna Gambhir
Assistant Professor	
1. Ms. Amita Arora	2.Dr. Anuradha
3. Ms. Ashlesha Gupta	4. Ms. Deepika
5. Sh. Harish Kumar	6. Dr. Jyoti
7. Ms. Mamta	8. Ms. Manvi
9. Ms. Parul Gupta	10.Ms. Parul Tomar
11.Ms. Payal Gulati	12. Ms. Poonam
13. Ms. Preeti Arora	14. Ms. Rashmi Popli
15. Ms. Shilpa Sethi,	16. Ms. Shruti Sharma
17. Sh. Sushil Kumar	18. Sh. Ved Pal

The computer Centre in the Department is well equipped with more than 660 computers and is having state of art equipment. The department is actively engaged in research work in broad area of Fuzzy Expert Systems, Internet Technology, Nature Language Processing and Network Technology.

1.2 The Department of Mechanical Engineering Besides conducting B.Tech. course in Mech. Engg. and Ph.D. Course, is also offering M.Tech. Programme in Mech. Engg. with specialization in Manufacturing Technology and Automation from the academic year 2003-04. The department is having well equipped labs/workshops. The department is having highly qualified and experienced faculty as given below (List is in Alphabetic order in a cadre):

Professor	
1. Dr. Sandeep Grover, Chairperson	2. Dr. M.L. Aggarwal
3. Dr. Raj Kumar	4. Dr. Tilak Raj
Associate Professor	
1. Sh. Arvind Gupta	2. Sh. Hari Om
3. Sh. Lakhwinder Singh	4. Dr. Niranjan Lal Mangla
5. Sh. S. Raina	6. Dr. Vikas Kumar
7. Dr. Vikram Singh	**Workshop Supdt.** 1. Sh. Naresh Yadav
Assistant Professor	
1. Sh. Bhaskar Nagar	2. Sh. Bhupinder Singh
3. Dr. Kamal Kumar	4. Sh. Krishan Kumar
5. Sh. Mahesh Chand	6. Sh. Mukesh Gupta
7. Sh. Nikhil Dev	8. Sh. O.P. Mishra
9. Ms. P.N. Sandhya	10. Sh. Rajesh Attri

11. Dr. Rajeev Saha	12. Sh. Sanjay Kumar
13. Sh. Sanjeev Goyal	14. Ms. Shefali Trivedi
15. Sh. Surender Singh	16. Dr. Vasdev Malhotra

The Department is actively engaged in research work in the broad area of Total Quality Management, Service Quality Mgmt., Operations Mgmt., Systems Approach, Thermal, Energy Conservation, Design & Manufacturing, Advanced manufacturing, Manufacturing, E-manufacturing, Flexible Manufacturing System, Manufacturing Quality, JIT, Supply Chain, Condition Monitoring, Aerodynamics, Fluids, Thermodynamics, RMS, Process Optimization, etc.

1.3 The Department of Electrical & Electronics Engineering Besides conducting Ph.D. and B.Tech. Course in Electrical Engineering, Electronics & Instrumentation Control Engg., Electronics & Communication Engg., is offering M.Tech. Programme in Electrical Engineering (with specialization in Power Systems & Drives) from the academic year 2004-05 & specialization in Electronics & Communication Engg. from the academic year 2008-09, VLSI Tech in 2010 respectively. The Department is having well equipped labs/workshops. The Department is having qualified and experienced faculty as given below (List is in Alphabetic order in a cadre):

Professor	
1. Dr. S.K. Aggarwal, Chairperson (Electronics Deptt)	2. Dr. P.R. Sharma, Chairperson (Electrical Deptt)
Associate Professor	
1. Ms. Anju Gupta	2. Ms. Archana Agarwal
3. Ms. Archana Aggarwal	4. Dr. Munish Vashisht
5. Ms. Poonam Singhal	6 Sh. Rajesh Kr.Ahuja
7. Sh. V.K. Sharma	8. Dr. Neelam Mehla

Assistant Professor	
1. Ms. Anubhav Gautum	2. Sh. Bal Kishan
3. Sh. Bharat Bhushan	4 Sh. Dushyant Kumar Shukla
5. Ms. Gunjan Sardana	6. Mrs. Kalpana Shehrawat
7. Sh. Lalit Rai	8. Ms. Manju kumari
9.Ms. Neetu Gupta	10. Sh. Nitin Goel
11. Ms. Nitin Julka	12. Ms. Shakuntla
13 Sh. Pradeep Kumar	14. Sh. Prashant Kumar
15. Ms. Preet Kaur	16. Ms. Priyanka
17. Sh. Shalender Gupta	18. Ms. Sangeeta Dhall
19. Ms. Rashmi Jain	20. Ms. Rashmi Talwar
21. Ms. Sakshi	22. Ms. Saswati
23. Ms. Sheilza	24. Ms. Sonam Khera
25. Sh. Sunil Jadav	26. Sh. Vinod Kr.Rathore

The Department is actively engaged in research work in broad areas of FACT System, Power System and Power Electronics.

1.4 The Department of MBA: The department started MBA Courses in 2008. The Department is having qualified and experienced faculty as given below (List is in Alphabetic order in a cadre):

Associate Professor	
1. Dr. Rachna Aggarwal, Chairperson	2. Dr. Manisha Singla

Assistant Professor	
1. Ms. Anushree Chauhan	2. Ms. Jyotsana
3. Ms. Neha Goyal	4**.** Sh. Rajeev Sindwani
5. Dr. Renu Aggarwal	6. Ms. Rupali Madan

1.5 The Department of HAS: The Department started M.Sc. Courses in Math & Physics w.e.f. 2010. The Department is having qualified and experienced faculty as given below(List is in Alphabetic order in a cadre):

Professor	
1. Dr. Tilak Raj, Chairperson	
Assistant Professor	
1. Dr. Anuradha Sharma	2. Ms. Bindu
3. Ms. Divyajyoti	4**.** Ms. Jyoti Grover
5. Dr. Maneesha Garg	6. Dr. M.K.Yadav
7. Dr. Neetu Gupta	8. Ms. Reena Garg
9. Dr. Renuka Gupta	10. Dr. Sonia Bansal

The department is actively engaged in research work in broad area like nuclear physics, nano-technology, plasma physics, Spectroscopy techniques etc.

1.6 Placement

University has excellent placement record and has been the first preference of industries in Haryana State. Prof. S.Raina is actively engaged in Training &Placement activities of the students in Placement Cell.

1.7 Fee Structure

<u>At the time of admission:</u>

Fee for Pre Ph.D. Course = Rs 10000/-(Ten thousand only)
(Candidates must bring a DD of Rs 10000/- at the time of admission in the favour of "Registrar, YMCAUST, Faridabad" payable at Faridabad). Fee per semester is Rs 10000/-.

1.8 Seats for Part-time Ph.D. Courses

DISCIPLINE/ DEPARTMENT	Number of Seats GENERAL	Number of Seats Reserved for SC/ST of Haryana	Number of Seats Reserved for BC of Haryana	Physical Handicap	Total
Computer Engineering	**5**	**2**	**2**	**-**	**9**
Mechanical Engineering	**5**	**2**	**3**	**01**	**11**
Electrical/ Electronics Engineering	**3**	**1**	**1**	**-**	**5**
Physics	**1**	**-**	**1**	**-**	**2**
MBA*	**1**	**1**	**1**	**-**	**3**
Total	**15**	**6**	**8**	**01**	**30**

The numbers of seats are tentative and can be increased or decreased by the competent authority.

1.9. Eligibility for Admission to Part – Time Ph.D. Courses

(i) A candidate for admission to the course of Ph.D. must have obtained 60% marks at the Master's Degree level or any other equivalent examinations in relevant field. The relevance of the subject will be decided by the Board of Studies. *For Ph.D. in MBA, full time MBA recognized by AICTE/UGC Or PGDM full time regular course equivalent to MBA recognized by AIU(attested copy of proof to be enclosed) Or MBA distance education recognized by Distance Education Council(attested copy of proof to be enclosed). For

exemption from test, candidate must be NET qualified in MBA stream.

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(ii) The provision of relaxation of 5% in marks (SC/ST and Physically Handicapped candidate) for eligibility.

(iii) A candidate provisionally registered for Ph.D. shall be required to attend classes for one semester.

(iv) The applicant should be an employee of an educational institute/organization and must submit 'No Objection Certificate' from his employer on the letterhead in the prescribed format .

(v) The candidate proves to the satisfaction of the DRC that his/her official duties permit him to devote sufficient time for research.

(vi) The candidate proves to the satisfaction of the DRC that facilities for pursuing research are available at his place of work in the chosen field of research.

(vii) He/She will be required to meet his supervisor twice in a month in the Deptt. and such visit is to be reported to the Chairman of the DRC for record.

NOTES:

1. The Application Form can be downloaded from the University Website (www.ymcaust.ac.in). Such application forms should be accompanied with a Demand draft of Rs.1000/- drawn in favour of the "Registrar, YMCAUST, FARIDABAD" payable at FARIDABAD.

2. The eligible applicants will have to qualify the Ph.D. Entrance Test (PET). This test will be of 1.5 hours duration having 80 questions of one mark each with no negative marking. **80 questions will be of concerned discipline / branch(see syllabus attached) .**

3. The eligible applicants will have to qualify the prescribed Entrance Test by securing at least 40% marks in the entrance test. The applicants who have qualified and valid GATE/UGC/NET/CSIR(JRF)/SLET/ Passed regular M.Phil. Programme in the related discipline and the sponsored regular staff of this University (YMCAUST) and its constituent colleges are exempted from entrance test.

   The successful applicants who will qualify the entrance Test or otherwise exempted shall be tested by the DRC through seminar/ presentation/ interview.

The merit list shall be prepared by Department according to the following criteria:

For Sciences/Management

(a)40% marks of the percentage of marks in the Master's degree M.Sc./MBA.
(b) 20 % marks of the percentage of marks in the Bachelor's degree.
(c) 20% marks in the interview to be conducted by the respective Department.
(d) 10% marks (02 marks per year experience subject to max.10 marks).
(e) 10% marks (02 marks for each publication in refereed Journal subject to max.10marks)

For Engineering &Technology

(a)40% marks of the percentage of marks in the M.Tech.
(b) 20 % marks of the percentage of marks in the B.Tech./MCA.
(c) 20% marks in the interview to be conducted by the respective Department.
(d) 10% marks (02 marks per year experience subject to max.10 marks).
(e) 10% marks (02 marks for each publication in refereed Journal subject to max.10marks)

Where CGPA is awarded and percentage of marks is not mentioned,
Percentage of marks = 9 x CGPA

4. No separate admit cards will be issued for the entrance test. Applicants are required to download their admit cards from the University website(complete it with the information displayed on Website) or can obtain from the office of the Research Coordinator during working hours .

5. The LIST OF SUCCESSFUL APPLICANT will be displayed on University website and notice boards. The successful applicants will report to the Chairperson of the respective teaching department on the scheduled date for interview(26/7/2012) .

GENERAL INFORMATION

1. The Application Form for Admission to Ph. D. Programme is given at the end of the Prospectus.

2. The duly completed Application Form along with all required enclosures should reach the office of the Research Coordinator of the University by the last date as specified, at the following address:

Dr Manisha Garg, HAS Deptt
Research Coordinator for Ph.D.
YMCA University of Science & Technology
Sector-6, FARIDABAD - 121006 (Haryana)

3. The minimum period of Ph.D. registration will be 03 years for a part- time scholar.

4. A candidate, who furnishes particulars which are found to be false, or suppresses material information, will not be considered for admission and if he / she is admitted on such information,

notwithstanding the legal action under the law of the land, his / her admission shall be cancelled and all fees deposited by him / her shall be forfeited.

5. Before accepting the admission, the candidate must also ensure that he / she fulfils the minimum eligibility conditions. Fee once paid will not be refunded.

6. All the admitted candidates will be governed by the Rules and Regulations and / or Ordinance(s) as laid down by the University. All the admitted candidates may download Ordinances from the Website of the University.

7. In the event of any inconsistency in the rules or any clarification thereof, the matter shall be referred to the competent authority for interpretation whose decision shall be final and binding.

SYLLABUS FOR Ph.D.ENTRANCE-2012-13

(I)**Syllabus for Computer Engineering**

Digital Logic: Logic functions, Minimization,; Number representation and computer arithmetic (fixed and floating point).

Programming and Data Structures: Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked lists, Trees, Binary search trees, Binary heaps.

Algorithms: Asymptotic notation & Analysis, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching. Basic concepts of complexity classes - P, NP, NP-hard, NP-complete.

Theory of Computation & Compiler Design: Regular languages and finite automata, Context free languages and Push-down automata, Lexical analysis, Parsing.

Operating systems: Processes, Threads, Inter-process communication, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory

Databases: ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL)

Software Engineering: Process models, Software design concepts: coupling & cohesion, testing methods: white box, black box.

Computer Networks: ISO/OSI stack, TCP/IP model, Basic concepts of hubs, switches, gateways, and routers. Network security - basic concepts of public key and private key cryptography, digital signature, firewalls.

Web technologies: HTML, XML, basic concepts of client-server computing.

(II) MECHANICAL ENGINEERING

APPLIED MECHANICS AND DESIGN

(1) Engineering Mechanics:
Equivalent force systems, free-body concepts, equations of equilibrium, trusses and frames, virtual work and minimum potential energy. Kinematics and dynamics of particles and rigid bodies, impulse and momentum , energy methods, central force motion.

(2) Strength of Materials:
Stress and strainm, Elastic constants, stress-strain relationship, Mohr's circle, deflection of beams, bending and shear stress, shear force and bending moment diagrams, torsion of circular shafts, thin thick cylinders, Eulers theory of columns, strain energy methods, thermal stress.

(3) Theory of machines:
Analysis of plane mechanisms, dynamic analysis of slider-crank mechanism, planer cams and followers, grear tooth profiles, kinematics and design of gears, governors and flywheels, balancing of reciprocating and rotating masses.

(4) Vibrations:
Free and forced vibrations of single degree freedom systems, effect of damping, vibrationisolation, resonance, critical speed shafts.

(5) Design of Machine Elements:
Desing for statics and dynamic loading, fatigue strength, failure theories, design of bolted, riveted and welded joints, design of shafts and keys, design of spur gears, brakes and clutches, rolling and sliding contact bearings , belt, ropes and chain drives.

THERMAL SCIENCE/ THERMAL ENGINEERING

(1) Fluid Mechanics:
Fluid properties, fluid statics, manumetry, buoyancy, control-volume analysis of mass, momentum and energy, fluid acceleration, differential equation of contunuity and momentum. Bernouli's equation. Viscous flow of incompressible fluids; boudary layer, flow through pipes, head losses in pipes, bends etc.

(2) Turbo machines:
velocity triangles Euler's equation, specific speed, Pelton wheel, centrifugal pump, Francis and Kaplan turbines.

(3) Heat-Transfer:
Modes of heat transfer, one dimentional heat conduction, resistance concept, electrical analogy, unsteady heat conduction, fins, dimensionless parameters in free and forced convective heat layer, effect of turbulence, radiative heat transfer, black and grey sufaces shape factors, networ analysis, heat exchanger

performance, LMTD and NTU methods.

(4) Thermodynamics:
Zeroth, first and second laws of thermodynamics, themodynamic system and processes, irreversibility and availability, behaviour of ideal and real gases, properties of pure substances, calculation of work and heat in ideal processes. Analysis of thermodynamics cycles related to energy conversion. Carnot, Rankine, Otto, Diesel, Brayton and Vapour compression cycle.

(5) Steam engineering:
Steam generators, Steam engines, steam turbines-impulse and reaction, velocity diagrams, compounding, reheat factor.

(6) I.C. Engines:
Requirements and suitability of fuels in IC engines, fuel ratings, fuel- air mixture requirements, normal combustion in SI and CI engines, engine performance calculations, components of gas turbine.

(7) Reciprocating Air Compressor:
Isothermal, adiabatic and polytropic compression, staging the compression process, intercooling and aftercooling, minimum work requirement, volumetric efficiency. Centrifugal and axial flow compressors.

(8) Refrigeration and air-conditioning:
Refrigerant compressors, expansion devices, condensers and evaporators, properties of moist air, psychrometric chart, basic psychrometric processes.

MANUFACTURING AND INDUSTRIAL ENGINEERING

(1) Engineering materials:
Structure and properties of engineering materials and their applications, heat treatment.

(2) Metal casting:
Casting processes- pattern making, moulds and cores, solidification, design of casting, casting defects.

(3) Metal working:
Stress-strain diagrams for ductile and brittle material, plastic deformation, mechanisms, fundamentals of hot and cold working processes-forging, extrusion, wire drawing, sheet metal working, punching, blanking, bending, deep drawing, coining and spinning.

(4) Machining Processes and Machine Tool Operation:
Mechanics of metal cutting, single and multipoint cutting tools, geometry and machining aspects, tool life, machinability, economics of machining, non- traditional machining processes.

(5) Metrology and Inspection:
Limits, fits and tolerances, linear and angular measurements, comparators, gauge design interferometry, form and finish measurement, measurement of screw threads, alignment and testing methods.

(6) Tool Engineering:
Principles of work holding, design of jigs and fixtures, design of press working tools.

(7) Manufacturing Analysis:
Part-print analysis, tolerance analysis in manufacturing and assembly, time and cost analysis.

(8) Computer Integrated Manufacturing:
Basic concepts of CAD, CAM , Group technology.

(9) Work Study:
Method study, work measurement time study, work sampling, job evaluation, merit rating.

(10) Production planning and control:
Forecasting models, aggregate production planning, master scheduling, materials requirements planning.

(11) Inventory control:
Deterministic and probabilistic models, safety stock inventory control systems.

(12) Operations Research:
Linear programming, simplex and duplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM.

(III) MANAGEMENT(MBA)

Unit—I

Managerial Economics-Demand Analysis
Production Function
Cost-output relations
Market structures
Pricing theories
Advertising
Macro-economics
National Income concepts
Infrastructure—Management and Policy
Business Environment
Capital Budgeting

Unit—II

The concept and significance of organisational behaviour—Skills and roles in an organisation—Classical, Neo-classical and modern theories of organisational structure—Organisational design—Understanding and Managing individual behaviour personality—Perception—Values—Attitudes—Learning—Motivation.

Understanding and managing group behaviour, Processes—Inter-personal and group dynamics—Communication—Leadership—Managing change—Managing conflicts.

Organisational development

Unit—III

Concepts and perspectives in HRM; HRM in changing environment

Human resource planning—Objectives, Process and Techniques

Job analysis—Job description

Selecting human resources

Induction, Training and Development

Exit policy and implications

Performance appraisal and evaluation

Potential assessment

Job evaluation

Wage determination

Industrial Relations and Trade Unions

Dispute resolution and Grievance management

Labour Welfare and Social security measures

Unit—IV

Financial management—Nature and Scope

Valuation concepts and valuation of securities

Capital budgeting decisions—Risk analysis

Capital structure and Cost of capital

Dividend policy—Determinants

Long-term and short-term financing instruments

Mergers and Acquisitions

Unit—V

Marketing environment and Environment scanning; Marketing Information Systems and Marketing research; Understanding consumer and industrial markets; Demand Measurement and Forecasting; Market Segmentation—Targeting and Positioning; Product decisions, Product mix, Product Life Cycle; New product development; Branding and Packaging; Pricing methods and strategies.

Promotion decisions—Promotion mix; Advertising; Personal selling; Channel management; Vertical marketing systems; Evaluation and control of marketing effort; Marketing of services; Customer relation management;

Uses of internet as a marketing medium—other related issues like branding, market development, Advertising and retailing on the net.

New issues in Marketing.

Unit—VI

Role and scope of production management; Facility location; Layout planning and analysis; Production planning and control—production process analysis; Demand forecasting for operations; Determinants of product mix; Production scheduling; Work measurement; Time and motion study; Statistical Quality Control.

Role and scope of Operations Research; Linear Programming; Sensitivity analysis; Duality; Transportation model; Inventory control; Queueing theory; Decision theory; Markov analysis; PERT/CPM.

Unit—VII

Probability theory; Probability distributions—Binomial, Poisson, Normal and Exponential; Correlation and Regression analysis; Sampling theory; Sampling distributions; Tests of Hypothesis; Large and small samples; *t*, *z*, *F*, Chi-square tests.

Use of Computers in Managerial applications; Technology issues and Data processing in organizations; Information systems; MIS and Decision making; System analysis and design; Trends in Information Technology; Internet and Internet-based applications.

Unit—VIII

Concept of corporate strategy; Components of strategy formulation; Ansoff's growth vector; BCG Model; Porter's generic strategies; Competitor analysis; Strategic dimensions and group mapping; Industry analysis; Strategies in industry evolution, fragmentation, maturity, and decline; Competitive strategy and corporate strategy; Transnationalization of world economy; Managing cultural diversity; Global Entry strategies; Globalisation of financial system and services; Managing international business; Competitive advantage of nations; RTP and WTO.

Unit—IX

Concepts—Types, Characteristics; Motivation; Competencies and its development; Innovation and Entrepreneurship; Small business—Concepts Government policy for promotion of small and tiny enterprises; Process of business opportunity identification; Detailed business plan preparation; Managing small enterprises; Planning for growth; Sickness in Small Enterprises; Rehabilitation of sick enterprises; Intrapreneurship (organisational entrepreneurship).

(IV) PHYSICS

1. **Mathematical Physics :**

Linear vector space; matrices; vector calculus; linear differential equations; elements of complex analysis; Laplace transforms, Fourier analysis, elementary ideas about Tensors.

2. **Classical Mechanics :**

Conservation laws; central forces, Kepler problem and planetary motion; collisions and scattering in laboratory and centre of mass frames; mechanics of system of particles; rigid body dynamics; moment of inertia tensor; non inertial frames and pseudo forces, Lagrange's and Hamilton's formalisms; equation of motion, cyclic coordinates, Poisson bracket; periodic motion, small oscillations, normal modes; wave equation and wave propagation; Lorentz transformations, relativistic kinematics, mass-energy equivalence.

3. **Electromagnetic Theory :**

Solution of electrostatic and magnetostatic problems Laplace and Poisson equations; conductors and dielectrics; boundary value problems; Ampere's and Biot-Savart's laws; Faraday's law; Maxwell's equations, Electromagnetic waves and their reflection, refraction, interference, diffraction and polarization, dispersion relations in plasma; Lorentz invariance of Maxwell's

equations; Transmission lines and wave guides; Dynamics of charged particles in static and uniform electromagnetic fields; radiation from moving charges, Poynting vector, Poynting theorem, energy and momentum of electromagnetic waves. Special theory of relativity; Lorentz transformations, relativistic kinematics, mass-energy equivalence.

4. **Quantum Mechanics :**

Physical basis of quantum mechanics; Wave-particle duality; uncertainty principle; Schrodinger equation; one, two and three dimensional potential problems; particle in a box, harmonic oscillator, hydrogen atom; linear vectors and operators in Hilbert space; angular momentum and spin; addition of angular momenta, Time-independent perturbation theory and applications; variational method; WKB approximation; Time dependent perturbation theory and Fermi's Golden Rule; Selection rules; Semi-classical theory of radiation; elementary scattering theory, phase shifts, partial waves, Born approximation; Identical particles, Pauli's exclusion principle, spin-statistics connection, Relativistic quantum mechanics: Klein Gordon and Dirac equations.

5. **Atomic and Molecular Physics :**

Spectra of one- and many-electron atoms; Stern-Gerlach experiment, LS and JJ coupling; hyperfine structure; Zeeman and Stark effects; electric dipole transitions and selection rules; rotational and vibrational spectra of diatomic molecules; electronic transition in diatomic molecules, Franck-Condon principle; Raman effect; NMR and ESR; Lasers-spontaneous and stimulated emission, optical pumping, population inversion, coherence (temporal and spatial) simple description of Ruby laser, CO_2 and He-Ne Lasers, optical fibers.

6. **Thermodynamics and Statistical Physics :**

Laws of thermodynamics and their consequences; macrostates and microstates; phase space; probability ensembles; partition function, free energy, calculation of thermodynamic quantities; classical and quantum statistics; degenerate Fermi gas; black body radiation and Planck’s distribution law; Bose-Einstein condensation; first and second order phase transitions, critical point, Random walk and Brownian motion; Introduction to non-equilibrium processes; Diffusion equation.

7. **Condensed Matter Physics:**

Crystal classes and systems, 2d & 3d lattices, Bonding of common crystal structures, unit cells, Miller indices, reciprocal lattice, diffraction methods for structure determination; concept of amorphous, single and polycrystalline structures and their effect on properties of materials. crystal growth techniques, elastic properties of solids; defects in crystals; lattice vibrations and thermal properties of solids; free electron theory; band theory of solids; metals, semiconductors and insulators; transport properties; optical, dielectric and magnetic properties of solids; elements of superconductivity, meissner effect, Type – 1 and Type – 2 super conductions, BCS, paining mechanism, nanomaterials.

Dielectric properties - dielectrics ; polarization mechanisms, Clauslus – equation, plezo, pyto and ferro – electricity.

Magnetism in materials - dia and para magnetism; exchange interactions, magnetic order, ferro, anti – ferro and ferrimagnetism.

8. **Nuclear and Particle Physics:**

Basic nuclear properties: size, shape, charge distribution, spin and parity; Binding energy, semi-empirical mass formula; Liquid drop model; Fission and fusion; nature of the nuclear force, form of nucleon-nucleon potential; charge-independence and charge-symmetry of nuclear forces; Isospin; deuteron problem; evidence of shell structure, single-particle shell model, its validity and limitations; rotational spectra; elementary ideas of alpha, beta and gamma decays and their selection rules; nuclear reactions, reaction mechanisms, compound nuclei and direct reactions; classification of fundamental forces; elementary particles (quarks, baryons, mesons, leptons); Spin and parity assignments, iso-spin, strangeness; Gell-Mann-Nishijima formula; C, P, and T invariance and applications of symmetry arguments to particle reactions, parity non-conservation in weak interaction; Relativistic kinematics.

9. **Electronics:**

Semiconductor devices, including diodes, junctions, transistors, field effect devices, homo and hetero junction devices, device structure, device characteristics, frequency dependence and applications; optoelectronic devices, including solar cells, photo detectors, and LEDs; high-frequency devices, including generators and detectors; operational amplifiers and their applications; digital techniques and applications (flip-flops, registers, counters, comparators and similar circuits); basic digital logic circuits, A/D and D/A converters; microprocessor and microcontroller basics.

10. **Characterization techniques** :

X-ray diffraction, scanning electron microscopy, differential scanning calorimetry.

(VI) SYLLABUS FOR ELECTRICAL/ELECTRONICS ENGINEERING

GROUP-I : POWER SYSTEM

Transmission line parameters: Representation of short, medium, and long transmission lines-ABCD Parameters , Circle Diagram, per Unit representation,3-Φ system, Short Circuit Studies, Sequence Network, Load- Flow Studies-Gauss Seidel method, Newton- Raphson Method, Automatic Generation Control, Load- Frequency Control, Automatic Voltage Regulator, Power system Stability- Equal area criteria, Swing Equation, Optimal Load Dispatch in Power System. Protection Schemes for Transformer, Generators and Transmission Lines.

GROUP-II. POWER ELECTRONICS AND DRIVES

Characteristics and ratings of different thyristor family devices, their turn on and off methods with their protection, series and parallel connection of SCRs and their derating.

controlled single phase and three phase rectifiers for different types of load viz R,R-L,R-L-E, single phase and three phase voltage source and current source inverter, cycloconverter, choppers, PWM techniques, Characteristics and principle of AC and DC Machines, Methods of conventional controls and application of static controls and microprocessor based controls for AC and DC machines.

GROUPIII. CONTROL AND INSTRUMENTION

Mathematical Molding of physical systems, Transfer function of linear systems. Steady state errors and error constants , static coefficients Time domain analysis. Stability of control system. Routh- Hurwitz's stability criterion. Root locus plots , analysis of control system by root loci. Relationship between time and frequency response, Polar plot, Bode's Plot. Nyquist plot and Nyquist stability criterion. Relative Stability. Phase and Gain Margins. Constant M and N circle. Design of Feedback Controllers. Design of proportional, integral, Derivative, PI, PID controllers of first, second order systems. Control loop with auxiliary feedback. Feed forward control, Practical Controller tuning tips. Ziegler-Nichol's tuning methods. Compensation design using Bode Diagram and Root Locus technique. Reshaping the Root Locus. Cascade Lag, Lead and Lag-Lead compensators. State Variable concepts. State model , State transition matrix, conversion of starte - variable modes to transfer functions, conversion of transfer function to canonical state- variable models, solution of state equation, concepts of controllability and absorbability ,stability improvement by state feedback, Necessary and sufficient conditions for arbitrary pole placement, State regulator theory, design of state observer Servo Design. Introduction of reference input by feed forward control. Recent advances in control system design technologies.

Classification of Instruments, Moving Iron, Moving Coil, Permanent magnet and Dynamometer types. Thermal, Electrostatic Rectifier Instruments, transforms, CT, PT, Power measuring instruments, power factor, frequency meters and synchroscope.

Measurement of low, medium and high resistances AC and DC measuring bridges, Magnetic measurement . General Transducers voltage, current phase angle, optical Hall effect and industrial transducers Electronic voltmeters, Vacuum tube Voltmeter (VTVM) data acquisition system. Spectrum analyses, sensors measuring or sensing devising in different application, Generalized performance characteristics of the measuring instruments. Physical and chemical sensors, principle of working of physical and chemical sensors , interface electronics circuits for instruments/ sensor for data manipulation , transmission and recording computer aided measurement of voltage current power energy frequency phase angle. High voltage measurement.

GROUP-IV. ELECTRONICS AND COMMUNICATION

Biasing and bias stability of transistor and FET amplifiers single –and multistage. Differential and operational feedback , and power frequency response of amplifiers. Simple op-amp circuits. Filters Function generators and wave shaping circuits.555 Timers .Power supplies. Logic gates, digital IC families (DTL, TTL, ECL, MOS, CMOS) Combinatorial circuits. Arithmetic circuits, code converters, multiplexers, decoders . PROMs and PLAs Sequential circuits. latches and flip-flops, counters and shift-registers. Sample and hold circuits, ADCs, DACs. Operational Amplifiers and other analog ICs. Semiconductor memories. Microprocessor(8085) architecture, programming and I/O Interfacing.

Amplitude and angle modulation and demodulation systems, spectral analysis of these operations. Super heterodyne receivers. Signal to-noise ratio (SNR) calculations for amplitude modulation (AM) and frequency modulation (FM) for low noise conditions. Fundamentals of information theory and channel capacity theorem. Digital communication systems/ Pulse code modulation (PCM) differential pulse code modulation (DPCM), digital modulation schemes. Amplitude, phase and frequency shift keying schemes.(ASK,PSK,FSK) matched filter receivers, bandwidth consideration and probability of error calculations for these schemes. Basics of TDMA, FDMA AND CDMA. and GSM.

Anti Ragging Guidelines

As the students are aware, Govt. of India and State Govt. of Haryana have already banned the ragging of newly admitted students in all the Professional Institutions. As per instructions of the State Govt. stern disciplinary action is to be taken against the students indulging in ragging of the students, including expulsion from the University and hostels/mess or fine with a public apology or withholding of scholarships or other benefits, debarring from representation in events, withholding results, and debarring from campus recruitment/industrial training in view of involvement of some seniors students in ragging of 1st year students in some of the Institutions in the previous years. Hon'ble Supreme Court of India has directed the concerned Institutions/Universities to take immediate steps for the prevention of ragging in future. The violation of this law (ban on ragging) is not only punishable by a sum of Rs.25, 000/- but also by rigorous imprisonment of 3 years. In order to curb the ragging, the University takes various steps such as helping the local administration for keeping vigilance in the University, senior students are advised individually and group to keep a watch on students indulging in ragging and cooperation of their parents is also sought explaining the aspects of punishment for violation of law of ban on ragging, by deputing faculty members at different places in the University to check the ragging during day and also up to midnight.

The following will be treated as the act of ragging “any disorderly conduct whether by words, spoken or written or by an act which has the effect of teasing or handling with rudeness any other student(s), indulging in roudy or undisciplined activities which causes or is likely to cause annoyance, hardship or psychological harm or raise fear or apprehension thereof in fresher or junior student(s) or asking the student(s) to do any act or perform something, which such student(s) will not do in the ordinary course and which has the effect of causing or generating a sense of shame or embarrassment so as to adversely effect the physique or psyche of a fresher or a junior student.

Anti Ragging Flying Squad

The chief hostel warden along with other hostel wardens arrange meeting with senior students in respective hostels and apprise them of the Supreme Court's views & decision in regard to ragging and of the seriousness we attach to this menace.

A team especially formed under the supervision of Dean Students Welfare carries out anti-ragging campaign inside university campus through banners. Posters in the campus and by organizing awareness programmes in academic premises.

A special team consisting of Chairperson of various Department and Workshop Supdt. carries out anti-ragging campaign in their Department.

A proctorial team consisting of faculty from different departments remains vigilant in various teaching blocks with two fold objectives – to prevent any kind of ragging and interact with the senior students to help curb ragging and report the matter to the Proctor.

Further an Advisory Committee on Ragging is in place. It consists of senior faculty members of the University, representative of stakeholders and district administration (Civil & Police).

Date of Receipt_____ Form No._____

YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY

Sector 6, Faridabad

Affix a Passport size Photograph (attested).

Four Passport size photographs will also be required at the time of admission.

APPLICATION FORM FOR ADMISSION TO Ph.D.2012-13

IN MECHANICAL/ELECTRICAL, ELECTRONICS & COMMUNICATION ENGG /COMPUTER ENGINEERING/ MBA/PHYSICS.

1. Ph.D. (Part time) Certificate from employer(Y/ N) …….

(Attach attested sponsorship certificate for Part time)

1.1 Tick the relevant discipline for admission to Ph.D Programme

I) COMPUTER ENGINEERING

II) MECHANICAL ENGINEERING

III) ELECTRICAL/ ELECTRONICS ENGG.

IV)PHYSICS

V) MBA

2.(i) CATEGORY: General /(SC/ST,BC,PH) :_____

(attach attested certificates for SC/ST,BC,PH)

(ii) **Exempted from ENTRANCE TEST Yes OR No (Attach proof ,If Yes as per prospectus):** …….

3. Name of Full(in block letters) :_____

4. Father's Name(in block letters) :_____

5. Mother's Name(in block letters) :_____

6. Date of Birth(Attested copy of Matric Certificate) :_____

7. Address for correspondence :_____

……..……..……..…..

……..……..……..…..

Tel……. Mobile……

E-Mail……..

8. Details of Qualifying Examination passed (B.Tech/B.E/Bachelor/MCA.and M.Tech/M.E./M.Sc./MBA attach attested copy):-

Examination with discipline	Year	Marks Obtained	Maximum Marks	%age of Marks	Name of College/ University

9. Number of Research publication in Refereed Journal (Attach photocopy) ……..

10. Employment Record (Attach experience certificate, Exp with Master's degree will be considered only):

Name of Employer's	Period of Employment	Designation & Salary	Nature of Duties

11**. To be produced at the time of Ph.D. interview**: Area, Topic, List of Projects/Publications/Inventions/Patents and a paragraph comprising of maximum 500 words.

Signature of the Applicant

DECLARATION BY THE CANDIDATE

I hereby solemnly affirm that all the entries made in this form are correct. I further declare that I fulfill the minimum eligibility conditions laid down for admission. In case of detection of any false entry, especially in respect of degree examination / experience / sponsoring certificate, my admission may be treated as cancelled any time during the course of my study and I will no claim what-so-ever.

I have noted carefully that in case my candidature is not registered by this University on any ground what-so-ever, my admission will be treated as cancelled automatically and I would have no claim for admission in my Ph.D. Course.

Signature of Applicant

DECLARATION BY THE FATHER / GUARDIAN

I hereby certify that my son / daughter / ward_____

submits the application for admission to Ph.D with my knowledge and consent and I hold myself responsible for his good conduct and for his maintenance and payment of fees during the period he/she is on the University Rolls.

Date:_____ Signature of Father / Guardian

FOR OFFICE USE ONLY

All the particulars of the below mentioned candidate have been checked and found to be correct.

Dealing Asstt. **Dy.Supdt.(Acd)**

Name of Candidate :_____

S/o / D/o Shri :_____

Ph.D. Merit No. :_____

has deposited a sum of Rs._____

vide University Receipt No._____Dated_____

Cashier

SPONSORSHIP CERTIFICATE FOR Ph.D. Part Time Candidates

Certified that Mr./Ms._____ S/o / D/o Shri_____ working as _____in the department of_____ from(date)_____is a regular employee of this department/organization. His/her name is hereby sponsored for Ph.D. Degree Course(part time). He/She fulfils the minimum eligibility conditions laid down for admission to this course. He/She will be relieved to join the Ph.D. Degree course.

Date_____ Signature of the sponsoring

No._____ Authority with Stamp

List of documents, which should be attached to the Application Form.

a) Attested photo copy of certificate showing date of birth.

b) Attested photocopies of Marks Sheets of qualifying degree examination.

c) Attested photocopies of qualifying Degree certificate/provisional certificate (B.Tech & M.Tech.)

d) Attested photo copy of SC/ST Certificate BC/PH (if applicable).

e) No Objection Certificate / Sponsorship Certificate

f) Proof of Exemption from test (if applicable)

g) Character Certificate from Head of Institution last attended.

h) Medical Fitness Certificate from a Govt. Medical Officer.

YMCA UNIVERSITY OF SCIENCE & TECHNOLOGY

NH- 2, SECTOR-6, MATHURA ROAD, FARIDABAD

HARYANA-121006

List of Graduate and Post-graduate programs

4-year B.Tech. Degree courses:

- **C**OMPUTER ENGINEERING **(60 Seats)**
- INFORMATION TECHNOLOGY**(60 Seats)**
- ELECTRONICS & INSTRUMENTATION CONTROL**(60 Seats)**
- ELECTRONICS & COMMUNICATION ENGINEERING**(60 Seats)**
- MECHANICAL ENGINEERING **(120 Seats)**
- ELECTRICAL ENGINEERING**(60 Seats)**.
- B.Tech.(II year lateral entry)**(20% of intake of B.Tech. courses)**

Post Graduate Programs:

- M.TECH. IN COMPUTER ENGINEERING**(18 Seats)**
- M.TECH. IN MECHANICAL(MANUFACTURING&AUTOMATION TECHNOLOGY) **(18 Seats)**
- M.TECH. IN ELECTRICAL ENGG.(POWER SYSTEM AND DRIVES) **(18 Seats)**
- M.TECH. IN ELECTRONICS &INSTRUMENTATION ENGINEERING**(18 Seats)**
- M.TECH. IN INFORMATION TECHNOLOGY**(18 Seats)**
- M.TECH. IN NETWORKING**(18 Seats)**
- M.TECH. IN VLSI TECHNOLOGY**(18 Seats)**
- M.TECH. in ELECTRONICS &COMMUNICATION ENGG. **(18 Seats)**
- MASTERS OF COMPUTER APPLICATIONS**(30 Seats)**
- MASTERS OF BUSINESS ADMINISTRATION**(60 Seats)**
- M.Sc.(PHYSICS) **(30 Seats)**
- M.Sc. (MATHS) **(30 Seats)**
- Ph.D.PROGRAMMES (Number of seats for 2012-13 are in Ph.D. Prospectus available on www.ymcaust.ac.in).

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