Department of Printing and Media Engineering

The Department of Printing and Media Engineering has the distinction of being the one among the only few institutes across India offering bachelor’s degree since 1992. Department has been growing ever since to reach the present status of having international standard infrastructure and state-of-the-art facilities. Some of the department highlights are mentioned below:

Department highlights

- MOU with Chemnitz University of Technology, Germany for joint R&D projects, faculty and student exchange
- DAAD Scholarship for student exchange programme with Chemnitz University of Technology, Germany.
- Equipped with the state of the art laboratories with the most sophisticated equipments.
- Ample opportunities for placement (Nearly 100%) in both India and Abroad
- Long term relationship with leading industries to develop a good industry-institute interaction
- Hands on training in Manipal Technologies Ltd., one of the leading Printing and Media Organizations in Asia
- Regularly conducting National / International Conferences, Workshops, and Seminars.

A Memorandum of Understanding has also been signed with the Chemnitz University of Technology, Germany for a Joint Double Degree Masters program. Students admitted in Manipal, who opt this Joint Double Degree Masters program will be awarded M.Sc. degree in “Print and Media Technology” by Chemnitz University of Technology and M.Tech degree in “Printing and Media Technology” by Manipal University. Students selecting this program, study one year in India and one year in Germany.

Academic Programmes Offered

- B.Tech. in Print and Media Technology (since 1992)
- M.Tech. in Printing and Media Technology (since 2008)
- Joint Double Degree Masters Program in collaboration with Chemnitz University of Technology, Germany

Facilities and Resources

Faculty of the department are actively involved in research activities in the areas of Color Science, Production Management, and Print Applied Research. Department also provides consultancy services to the printing and packaging industry in the area of quality testing of paper, board, ink, packages and color measurement & management.

Department has professionally qualified faculty both with Academic and Industry background. It has ten fulltime faculty members including one Professor, one Assistant Professor Selection Grade and three Assistant Professor Senior Scale. Three Adjunct Professors and more than ten faculty from other departments are also associated with the program.

The department is equipped with the most latest and modern equipment like: Esko Graphics Packaging Software, Cape Pack Packaging Software, Epson Stylus Pro 7900, TechNovaPolirip, Navigator RIP software, Epson A3 Scanner 20000, Liquid Photopolymer Plate Maker, Emulsification Tester, Viscosity Tester, Oil absorbance Tester, Air Knife Coater, IGT Printability Tester, Mini Carton Compression Tester, Ink Rub Resistance Tester, Ring Crush Tester, Crown size Offset machine (AUTO PRINT), Semiautomatic Screen Printing Machine, Flexo-cum-RotoGraveur Hybrid Printing Machine, X-rite Plate Scope, Konica Minolta SpectroDensitometer, X-rite ColorMunki Photo, X-rite i1iO Extreme, X-rite i1 Basic, ProfileMaker 5 Platinum, DSLR Nikon D7000 18-105mm, Paper Brightness-Opacity Tester, KPP Flexo Proofer, Combo Thermal and Adhesive Laminating Machine, UV varnishing... are a few to mention.

In addition to Central Library, department has a separate well stocked Department Library.

Proximity to Manipal Power Press Limited, one of the leading printing organizations in Asia, gives an added advantage in having hands on training to students on each and every aspect of a print house which helps them to gain thorough practical knowledge about the subjects during the course of study.

Faculty List

Professor and Head
Prof Dr Prakash Shetty, Ph.D (Mangalore University)

Assistant Professor - Selection Grade:
Ms Asha S Pai, BE, MBA

Assistant Professor Senior - Scale
Mr Nagaraj Kamath, M.Tech
Mr Ramakrishna Nayak, M.Tech, MBA
Mr Vinod T Kamath, M.Tech, MBA
Mr Ramnath Shenoy, M.Tech, MBA

Assistant Professors
Ms Soujanya S Shenoy, BE, MBA
Mr Sandeep Nayak Pangal, MBA, M.Tech
Ms Bhagya R S, BE, M.Tech
Mr Devicharan R, BE, M.Tech
Mr Nithesh Kumar K S, BFA, MVA (on contract)
### B. Tech in PRINT AND MEDIA TECHNOLOGY

#### THIRD SEMESTER

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Minor Specialisations

I. Packaging Technology
1. PMT 4001: Packaging Applications
2. PMT 4002: Packaging Materials
3. PMT 4003: Packaging Techniques and Processes
4. PMT 4004: Smart Packaging

II. Business Management
1. HUM 4011: Financial Management
2. HUM 4012: Human Resource Management
3. HUM 4013: Marketing Management
4. HUM 4014: Operations and Systems Management

Other Programme Electives
1. PMT 4005: Advertising Theory and Practice
2. PMT 4006: Communication Systems
3. PMT 4007: Continuous Stationery & Specialty Printing
4. PMT 4008: Digital Photography
5. PMT 4009: E-Publishing
6. PMT 4010: Green Printing
7. PMT 4011: Media Accounting and Management
8. PMT 4012: Media Entrepreneurship
9. PMT 4013: Packaging Management
10. PMT 4014: Print Maintenance Engineering
11. PMT 4015: Printronics
12. PMT 4016: Quality Management for Graphic Arts
13. PMT 4017: Radio Technology
14. PMT 4018: Television Technology
15. MCA 4001: Graphics and Web Design

Open Electives
1. PMT 3281: Fundamentals of Advertising
2. PMT 3282: Global Media and Entertainment
3. PMT 3283: Graphic Designing
4. PMT 3284: Newspaper Technology
5. PMT 3285: Packaging Design and Development
6. PMT 3286: Publishing Science

THIRD SEMESTER

MAT 2106: ENGINEERING MATHEMATICS - III [3 0 0 3]

References:

PMT 2101: BASICS OF MEDIA TECHNOLOGY [3 0 0 3]

References:

PMT 2102: IMAGING TECHNIQUES [4 0 0 4]
References:

PMT 2103: ELECTRONIC COMPOSITION [4 0 0 4]

References:

PMT 2104: PRINTING MATERIAL SCIENCE - I [3 0 0 3]

References:

PMT 2105: FUNDAMENTALS OF ELECTRONIC MEDIA [3 0 0 3]
Analog and digital radio &TV, cable TV, camera and consols, Internet radio and TV, digital media production, web based social interaction, TV transmission standards, receiving systems, mobile phone media production and delivery, video on demand, Satellite distribution, satellite links, earth stations, broadcasting vehicle and mobile control room, Information technology: Computer storage, Computer networks, Internet streaming, Web Streaming, Audio and video streaming, Flash streaming, MP3 streaming (radio), Peer to Peer distribution Digital video broadcasting via satellite services to handhelds (DVB-SH) Technology. Geo-spatial technology, Wi-fi and Wi-Max, podcasting, i-Pod, Information superhighways, Interactive portals.

References:

PMT 2111: IMAGING TECHNIQUES LAB [0 0 3 1]
List of experiments:
1. Impression methods for book work and folders
2. Preparation of conventional layout.
4. Digital impressions
5. Familiarization of RIP software, workflow and parameter control
7. Page layout and imposition using RIP software for CTF.
8. Preparation of linearized masters for small offset press
10. Conventional processing and automatic processing for presensitized (PS) plate making under standard conditions.
11. Photopolymer plate making for flexographic process.

References:

PMT 2112: ELECTRONIC COMPOSITION LAB [0 0 3 1]
List of Experiments:
1. Review of Electronic Composition, Microsoft Word - Table work, Tabular work, fonts and type styles, word-art, column works.
2. Microsoft Power Point - Working with tools, Making good presentations and Seminars
3. Adobe Photo Shop - Familiarizing and practice with the PhotoShop tool-bar

References:

PMT 2202: PRINTING MATERIAL SCIENCE - II [4 0 0 4]

References:

ECE 2231: AUDIO AND VIDEO SIGNALS [4 0 0 4]

References:

PMT 2211: PRINTING MATERIAL TESTING LAB [0 0 3 1]

List of experiments:

Paper Testing:
1. GSM & Ash content
2. Bursting strength
3. Cobb sizing & Moisture content
4. Folding endurance
5. Tearing strength
6. Tensile strength
7. Porosity, Softness and smoothness
8. Brightness, Opacity and gloss
9. Stiffness
10. pH

Ink Testing:
11. Fineness of grind
12. Wet ink film thickness and Ink length

References:

ECE 2251: AUDIO AND VIDEO SIGNALS LAB [0 0 3 1]

List of experiments:
1. Introduction to MATLAB Programming
2. Signal generation (periodic, non-periodic, discrete time and continuous time signals)
3. Sampling and reconstruction of signals ( aliasing, Nyqist rate)
4. Audio & Video signal generation and manipulation
5. Video signal generation and manipulation
6. Experiments on Multimedia systems
7. Experiments on Multimedia communication.

References:

PMT 3101: FLEXOGRAPHY, GRAVURE AND SCREEN PRINTING [4 0 0 4]


References:

PMT 3102: DIGITAL AND SECURITY PRINTING [4 0 0 4]

Music mix down, Spatial manipulation of sound, Stereo multiplexing, reproduction, amplifying systems, Processing of audio signal, Dubbing, Recording speech stereo recording systems, Optical recording, techniques, Miking speech in radio, Miking speech for picture, Acoustics, Disc recording, distortion and noise reduction, Stereo pickup 

Ergonomics, The sound chain Microphones and Loud Speakers, control room, Frequency balance, Power and grounding guidelines, Fundamentals of sound, primary factors governing studio and control room acoustics, Ceilings, windows and doors, Noise isolation within the control room, Frequency balance, Power and grounding guidelines, Ergonomics, The sound chain Microphones and Loud Speakers, Acoustics, Disc recording, distortion and noise reduction, Stereo pickup techniques, Miking speech in radio, Miking speech for picture, Recording speech stereo recording systems, Optical recording, reproduction, amplifying systems, Processing of audio signal, Dubbing, Music mix down, Spatial manipulation of sound, Stereo multiplexing, Equalizers and Mixers, electronic music synthesizers, Theatre sound system, AM/ FM tuners, audio system, Anatomy of Hi-Fi system.

References:

PMT 3103: COLOR ANALYSIS AND REPRODUCTION [4 0 0 4]
Visual system, structure and functioning of human eye, modern theory of light and color, Basic attributes of color, additive and subtractive synthesis and their practical interpretation. Munsell color system, device dependent and independent color systems, Principles of color management, Color management systems, Color management for display devices, Input devices and output devices, ICC profiles V2 and V4, Densitometer, colorimeter and spectrophotometer, screen angles and juxtaposition of dots, digital halftones, color correction, Press color control, factors in color printing, dot area measurement, Murray Davis equation and Yule Neilson correction, UCR and GCR, additivity and proportionality failure, Standard Charts, Electronic scanning, Neugebauer three color and four color equations, modified Neugebauer equation for scanner.

References:

PMT 3104: SOUND ENGINEERING [4 0 0 4]
Fundamentals of sound, primary factors governing studio and control room acoustics, Ceilings, windows and doors, Noise isolation within the control room, Frequency balance, Power and grounding guidelines, Ergonomics, The sound chain Microphones and Loud Speakers, Acoustics, Disc recording, distortion and noise reduction, Stereo pickup techniques, Miking speech in radio, Miking speech for picture, Recording speech stereo recording systems, Optical recording, reproduction, amplifying systems, Processing of audio signal, Dubbing, Music mix down, Spatial manipulation of sound, Stereo multiplexing, Equalizers and Mixers, electronic music synthesizers, Theatre sound system, AM/ FM tuners, audio system, Anatomy of Hi-Fi system.

References:

PMT 3111: COLOR ANALYSIS AND REPRODUCTION LAB [0 0 3 1]
List of Experiments:
1. FM Hue Test
2. Impact of Illumination on color perception
3. Characterization of Monitor
4. Characterization of Scanner
5. Characterization of Projector
6. Measuring Hue error, Contrast & Grayness
7. Measurement of printed ink density and trapping (additivity failure)
8. Measuring Dot gain from CIELab values
9. Dot area measurement (Murray Davis equation & Yule Neilson correction)
10. Characterization of Printer
11. Effect of screen angles and dot shape on color (Lab readings) and comparing with standard
12. Gray Balance using G7

References:

PMT 3112: PRINTING MACHINE LAB [0 0 6 2]
List of experiments:
1. Setting sheet control devices, inking and the dampening unit, Plate and blanket mounting and demounting
2. Single color printing and evaluating plate Vs print quality of single color print on coated and uncoated substrates.
3. Linearization of the image carrier
4. Four color printing and Print quality evaluation and profile generation for offset machine
5. Web feeding, tensioning and settings for single and both side printing and relative gear profile.
6. Plate mounting, Single color flexo printing and trouble shooting
7. Plate mounting, Two color flexo printing and trouble shooting

References:
1. List of Experiments:
2. List of Experiments:
3. List of Experiments:
4. List of Experiments:
5. List of Experiments:
6. List of Experiments:
7. List of Experiments:
8. Multicolor gravure printing and trouble shooting
9. Single color screen printing
10. Multicolor screen printing.
11. Half tone screen printing
12. Screen printing using semiautomatic machine
13. Press visit.

References:

PMT 3113: SOUND ENGINEERING LAB [0 0 3 1]
List of experiments:
1. Setting up the sound Studio.
2. Determining the characteristics and frequencies using Mixer.
3. Characteristics of different types of Microphones (3 experiments)
4. Measurements of performance parameters of different types of speakers (4 experiments)
5. Experiments using DAW (Digital Audio Workstation) (3 experiments)

References:

SIXTH SEMESTER

HUM 4001: ESSENTIALS OF MANAGEMENT [2 1 0 3]

References:

PMT 3201: PRINT FINISHING AND CONVERTING [4 0 0 4]

References:

PMT 3202: VIDEO PROCESSING [4 0 0 4]

References:
2. Yao Wang, Jorn Ostermann, Ya-Qin Zhang, “Video Processing and...
PMT 3211: PRINT FINISHING AND CONVERTING LAB [0 0 3 1]

List of experiments:
3. Tape Sewing - Preparation of Tape sewn full bound hard case book.
4. Preparing books by Sewing two sections on method. Preparation of following type of Mechanical binding - Spiral wire binding, Wire ‘O’ binding.
5. Preparation of End papers - Single End paper, Double or Inserted End paper, Made end paper, Cloth joint end paper, Zig-Zag end paper, Cloth joint Zig-Zag end paper.
6. Preparation of Receipt books with numbers in duplicate and triplicate.
7. Preparation of telephone directory with Indexes and Tabs.
10. Carrying out Special effect Print finishing operations Embossing, Gold blocking, Thermography.
12. Film Laminating: Thermal/ cold lamination. Preparation of pouch laminated samples.

References:

PMT 3212: VIDEO PROCESSING LAB [0 0 3 1]

List of experiments:
1. Image generation, editing and enhancement
2. Audio and Video recording and editing
3. Audio and video Mastering
4. Video encoding.

References:

SEVENTH SEMESTER

HUM 4002: ENGINEERING ECONOMICS AND FINANCIAL MANAGEMENT [2 1 0 3]


References:

PMT 4101: PACKAGING DESIGN AND TESTING [3 0 0 3]


259
References:

PMT 4102: MEDIA PRODUCTION [2 0 6 4]

References:

PMT 4103: ANIMATION TECHNOLOGY [3 1 0 4]

References:

PME 4111: PACKAGING DESIGN AND TESTING LAB [0 0 3 1]
List of Experiments:
1. Designing Straight Tuck End (STE) and Reverse Tuck End (RTE) style cartons.
2. Designing Full Seal End (FSE), Tray and Tube style cartons.
3. Die Cutting machine.
4. Compression Strength of various cartons using Mini Carton Compression tester.
5. Abrasion resistance of ink on various packaging paper and board materials using Ink Rub Tester.
6. Designing and preparation of various types of paper bags.
7. Evaluating the resistance offered by package against rough handling by using Drop Tester.
10. Co-efficient of friction of various flexible packaging materials.
11. Working with Package Designing Software.

References:
PACKAGING TECHNOLOGY

PMT 4001: PACKAGING APPLICATIONS [3 0 0 3]


References:

PMT 4002: PACKAGING MATERIALS [3 0 0 3]


References:

PMT 4003: PACKAGING TECHNIQUES AND PROCESSES [3 0 0 3]

equipment, Other ancillary equipment tube/bag sealing, sitting, winding, taping and strapping.

References:

PMT 4004: SMART PACKAGING [3 0 0 3]

References:

II. BUSINESS MANAGEMENT

HUM 4011: FINANCIAL MANAGEMENT [2 1 0 3]
Introduction to financial management, Principle of accountancy, Sources of long term finance, Valuation of securities, Leverages, Working capital management, Capital budgeting, Cost of capital, Cash management, and Dividend decisions.

References:

HUM 4012: HUMAN RESOURCE MANAGEMENT [2 1 0 3]

References:

HUM 4013: MARKETING MANAGEMENT [2 1 0 3]

References:

HUM 4014: OPERATIONS AND SYSTEMS MANAGEMENT [2 1 0 3]
Types of production activities, Production consumption cycle, Functions of production and operations management, Importance and uses of forecasting, Product development and design: Product life cycle, Process design, Process charts, Flow diagrams and Man machine charts, Capacity planning, Aggregate planning, Scheduling, Operations strategy, Operation performance Frontier and productivity, Systems thinking, Systems engineering and its management, Systems decision process. Systems thinking, structure, classification, boundaries,
References:

OTHER PROGRAMME ELECTIVES

PMT 4005: ADVERTISING THEORY AND PRACTICE [3 0 0 3]
Advertising in India, socio-economic effects, advertising as a tool of communication, Need for advertising, Functions of advertising, Benefits of advertising: To Seller, Buyer & Media, role of advertising in the marketing mix, Negative and Positive effect of advertising, Kinds of advertising. Advertising Agency, structure & types of advertising agencies, agency selection criteria’s, agency accreditation and client turn-over, compensations for agencies, creativity in advertising, appeals & execution styles, planning & development, creative process & tactics, media planning, market analysis, implementation, evaluation and follow-up. Overview of media- television networks, magazines, newspapers, radio, selection and buying media time & space, Support media internet, interactive media, out-door, in-store, direct mail, miscellaneous and transit advertising, advertising campaign, corporate advertising. Advertising Ethics first amendment of advertising, National Advertising Review Council (NARC), regulations for advertisers, agencies, and media. Case studies.

References:

PMT 4006: COMMUNICATION SYSTEMS [3 0 0 3]

References:

PMT 4007: CONTINUOUS STATIONERY AND SPECIALTY PRINTING [3 0 0 3]

References:
1. EIRI Board of Consultants and Engineers, “Hand Book of Printing Technology”, Engineers India Research Institute, New Delhi.

PMT 4008: DIGITAL PHOTOGRAPHY [3 0 0 3]
Lighting for Media, Selection of light sources, Luminaire for media applications, Photographic layout and workflow, Working principle & construction of photographic cameras, types of cameras, accessories & their functions, geometry & photometry of image formation, advantages of digital photography, B/W Photography, Photographic Optics, Digital workflow, Digital image processing & manipulations, photography for professionals, Photographic materials and output, Choosing Lenses, Alternative image sensor technologies, lighting control, Tone control, RAW editing and conversion, Digital image corrections, reproduction and archiving, Digital File management, Color in photography, Photography tips & tricks, Tackling photographic subjects people, animals, sports, nature, landscapes, and travel destinations, Colour and black & white photography, Cinematography and Video Photography.

References:

PMT 4009: E-PUBLISHING [3 0 0 3]

References:

PMT 4010: GREEN PRINTING [3 0 0 3]

References:

PMT 4011: MEDIA ACCOUNTING AND MANAGEMENT [3 0 0 3]

References:

PMT 4012: MEDIA ENTREPRENEURSHIP [3 0 0 3]

References:
5. Brigitt Berger, “The Culture of Entrepreneurship”.
6. Peter F. Drucker, “Innovation and Entrepreneurship”.
7. Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd, “Entrepreneurship”.
PMT 4013: PACKAGING MANAGEMENT [3 0 0 3]


References:

PMT 4014: PRINT MAINTENANCE ENGINEERING [3 0 0 3]


References:

PMT 4015: PRINTRONICS [3 0 0 3]


References:
References:

PMT 4017: RADIO TECHNOLOGY [3 0 0 3]
AM & FM Transmitter principle, Block diagram and principles of amplitude modulated and frequency modulated transmitters, Broadcast transmitters, master oscillators, frequency multiplier, high and low level modulation system, antennas, Studio equipment and control room apparatus, OB equipment and receiving center's facilities. Radio Wave Propagation Communication receiver, super heterodyne receiver, Intermediate frequency, image frequency rejection. Receiver characteristics and measurement. Design considerations of modern broadcast receivers, antennas. FM transmitters and receivers, Basics of Satellite and mobile communication systems.

References:

PMT 4018: TELEVISION TECHNOLOGY [3 0 0 3]

References:

MCA 4001: GRAPHICS AND WEB DESIGNING [3 0 0 3]

References:

OPEN ELECTIVES

PMT 3281: FUNDAMENTALS OF ADVERTISING [3 0 0 3]
Advertising Theory, Growth of advertising in India, advertising as a tool of communication, Functions of advertising, Benefits of advertising, Advertising as a Marketing Tool, Advertising as a PR Tool, Advertising Theories, Relevance to Indian Advertising, Role of advertising in National Economy, Types of Advertising Agency and types of services offered, structure of ad agencies, creativity in advertising, appeals & execution styles, planning & development, creative process & tactics, media planning, Advertising Medias - television networks, magazines, newspapers, radio, selection and buying media time & space, Support media internet, interactive medias, out-door, in-store, direct mail, miscellaneous and transit advertising, advertising campaign, corporate advertising, case studies.

References:

PMT 3282: GLOBAL MEDIA AND ENTERTAINMENT [3 0 0 3]

Sound Recording Industry, Telephography and wireless, Development of Radio in India, Television in India, Television Concept, production workflow, production people and equipment, television and mounting equipment, camera operation and picture composition, techniques of television lighting, audio sound pickup and sound control, video recording and storage systems, post-production, Motion Pictures, alternate cinema, contemporary Indian cinema, business of films today, Digital Film Making, Script writing, Screenplay writing, story board, Scheduling, Digital video components, HD and SD video, Choosing a camera, Planning the shoot, Production sound, Shooting and Directing, Sound editing and color correction, Title and effects, finishing.

References:

PMT 3283: GRAPHIC DESIGNING [3 0 0 3]


References:
PMT 3286: PUBLISHING SCIENCE [3 0 0 3]

References: