

Kurukshetra University, Kurukshetra

(Established by the State Legislature Act-XII of 1956)

("A++" Grade, NAAC Accredited)



Scheme of Examination for Post Graduate Programme

M.Sc. Printing, Graphics & Packaging Technology

as per NEP 2020

Curriculum and Credit Frame work for Postgraduate Programme

With Multiple Entry-Exit, Internship and CBCS-LOCF

With effect from the session 2024-25 (in phased manner)

Institute of Mass Communication and Media Technology
Faculty of Commerce and Management
KURUKSHETRA UNIVERSITY, KURUKSHETRA-136119
HARYANA, INDIA

**Programme Learning Outcomes (PLOs) of M. Sc. Printing, Graphics & Packaging Technology
as per NEP-2020**

PLOs	M.Sc. Printing, Graphics & Packaging Technology
	After the completion of Master degree in Printing, Graphics & Packaging Technology the student will be able to:
PLO-1: Knowledge and Understanding	Demonstrate the fundamental and Advanced knowledge of the subject and understanding of recent developments and issues, including methods and Techniques, related to Printing, Graphics & Packaging Technology.
PLO-2: General Skills	Acquire the general skills required for performing and accomplishing the Tasks as expected to be done by as killed professional in the fields of Printing, Graphics & Packaging Technology.
PLO-3: Technical/Professional Skills	Demonstrate the learning of advanced cognitive technical/professional skills required for completing the specialized tasks related to the Profession and for conducting and analyzing the Relevant research tasks in different domains of Printing, Graphics & Packaging Technology.
PLO-4: Communication Skills	Effectively communicate the attained skills of Printing, Graphics & Packaging Technology in well-structure and productive manner of the society at large.
PLO-5: Application of Knowledge and Skills	Apply the acquired knowledge and skills to the problems in the subject area, and to identify and analyze the issues where the attained knowledge and skills can be applied by carrying out research investigations to formulate evidence-based solutions to complex and unpredictable problems associated with the field of Printing, Graphics & Packaging Technology or otherwise.
PLO-6: Critical thinking and Research Aptitude	Attain the capability of critical thinking in intra/inter-disciplinary areas of Printing, Graphics & Packaging Technology, enabling to formulate, synthesize, and articulate issues for designing of research proposals, testing, hypotheses, and drawing inferences based on the analysis.
PLO-7: Constitutional, Humanistic, Moral Values and Ethics	Know constitutional, humanistic, moral and ethical values, and intellectual property rights to become a scholar/professional within grained values in expanding knowledge for the society, and to avoid unethical practices such as fabrication, falsification or misrepresentation of data or committing plagiarism.
PLO-8: Capabilities/qualities and mindset	To exercise personal responsibility for the outputs of own work as well as of group/team and for managing complex and challenging work(s) that requires new/strategic approaches.
PLO-9: Employability and job-ready skills	Attain the knowledge and skills required for increasing employment potential, adapting to the future work and responding to the rapidly changing demands of the employers/industry/society with time.

Kurukshetra University, Kurukshetra
Scheme of Examination for Post-graduate Programme
M.Sc. Printing, Graphics & Packaging Technology
As per NEP2020 Curriculum and Credit Framework for
Postgraduate Programme (CBCS LOCF) with effect from the
session 2024-25 (in phased manner)
Framework -1
Scheme-P

Semester	Course Type	Course Code	Nomenclature of course	Theory (T)/ Practical (P)	Credits		Contact hours per week L:Lecture P:Practical T:Tutorial				Internal Assessment Marks	End Term Examination Marks	Total Marks	Examination hours
					Total	L	T	P	Total					
1	CC-1	M24-PGP-101	Advanced Printing Technology	T	4	22	4	0	0	4	30	70	100	3
	CC-2	M24-PGP-102	Offset Technology	T	4		4	0	0	4	30	70	100	3
	CC-3	M24-PGP-103	Industrial Packaging	T	4		4	0	0	4	30	70	100	3
	PC-1	M24-PGP-104	Quality Control in Printing and Packaging	P	4		0	0	8	8	30	70	100	4
	PC-2	M24-PGP-105	Graphic Design and Publishing	P	4		0	0	8	8	30	70	100	4
	SEMINAR	M24-PGP-106	Seminar	S	2		0	0	0	2	0	50	50	1
2	CC-4	M24-PGP-201	Pre-Press Technology	T	4	22	4	0	0	4	30	70	100	3
	CC-5	M24-PGP-202	Printing & Packaging Materials	T	4		4	0	0	4	30	70	100	3
	CC-6	M24-PGP-203	Package Design and Development	T	4		4	0	0	4	30	70	100	3
	PC-3	M24-PGP-204	Printing Image Generation	P	4		0	0	8	8	30	70	100	4
	PC-4	M24-PGP-205	Paper and Ink Technology	P	4		0	0	8	8	30	70	100	4

	CHM	M24-CHM-201	Constitutional Human and Moral Values and IPR	T	2		2	0	0	2	15	35	50	3
	Internship	M24-INT - 200	An internship course of 4 Credits of 4-6 weeks duration during summer vacation after IInd semester is to be completed by every student. Internship can be either for enhancing the employability or for developing the research aptitude.								50	50	100	
3	CC-7	M24-PGP-301	Modern Gravure Technology	T	4	22	4	0	0	4	30	70	100	3
	CC-8	M24-PGP-302	Paperboard Packaging	T	4		4	0	0	4	30	70	100	3
	DEC-1(Choose any one)	M24-PGP-303	Industrial Safety	T	4		4	0	0	4	30	70	100	3
		M24-PGP-304	Environmental Considerations for Printing and Packaging	T	4		4	0	0	4	30	70	100	3
		M24-PGP-305	Automation and Robotics In Printing and Packaging	T	4		4	0	0	4	30	70	100	3
		M24-PGP-306	MOOC course from Swayam Portal or other approved Portals	T	4		4	0	0	4	30	70	100	3
	PC-5	M24-PGP-307	Food Packaging	P	4		0	0	8	8	30	70	100	4
	PC-6	M24-PGP-308	Print Finishing	P	4		0	0	8	8	30	70	100	4
	OEC	M24-OEC-328	Packaging Technology (For students of other departments)	T	2		2	0	0	2	15	35	50	3
4	CC-9	M24-PGP-401	Research Methodology	T	4	4	0	0	4	30	70	100	3	
	CC-10	M24-PGP-402	Digital Printing	T	4	4	0	0	4	30	70	100	3	
	DEC-2 (Choose anyone)	M24-PGP-403	Book Publishing	T	4	22	4	0	0	4	30	70	100	3

	M24-PGP-404	Newspaper Publishing	T	4		4	0	0	4	30	70	100	3
	M24-PGP-405	Digital Marketing	T	4		4	0	0	4	30	70	100	3
	M24-PGP-406	MOOC course from Swayam Portal or other approved portals											
PC-7	M24-PGP-407	Computer Graphics	P	4		0	0	8	8	30	70	100	4
PC-8	M24-PGP-408	Advanced Security Printing	P	4		0	0	8	8	30	70	100	4
EEC	M24-PGP-409	Print Management and Entrepreneurship	T	2		2	0	0	2	15	35	50	3
OR DISSERTATION/PROJECT WORK													
NOTE:IF A CANDIDATE OPTS FOR DISSERTATION/PROJECT WORK@12 CREDITS IN 4TH SEMESTER, HE/SHE WILL STUDY CC-9, DEC-2 AND EEC COURSES ALONGWITH DISSERTATION/PROJECT WORK													
CC-9	M24-PGP-401	Research Methodology	T	4		4	0	0	4	30	70	100	3
DEC-2 (Choose anyone)	M24-PGP-403	Book Publishing	T	4		4	0	0	4	30	70	100	3
	M24-PGP-404	Newspaper Publishing	T	4		4	0	0	4	30	70	100	3
	M24-PGP-405	Digital Marketing	T	4		4	0	0	4	30	70	100	3
	M24-PGP-406	MOOC course from Swayam Portal or other approved portals											
EEC	M24-PGP-409	Print Management and Entrepreneurship	T	2		2	0	0	2	15	35	50	3
Dissertation/ Project Work	M24-PGP-410	Dissertation/ Project Work	D	12		0	0	0	0	0	300	300	

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Syllabus

for

Post Graduate Programme

M.Sc. Printing, Graphics & Packaging Technology

as per NEP 2020

Curriculum and Credit Frame work for Postgraduate Programme

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HARYANA, INDIA

Session: 2024-25**Part A - Introduction**

Name of Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	I		
Name of the Course	Advanced Printing Technology		
Course Code	M24-PGP-101		
Course Type	CC-1		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	101.1: know about the Prepress, Press and Post-press section of printing organization. 101. 2: Study about the various printing technologies. 101. 3: Enhance knowledge about printing operations in. press section 101. 4: Know about the troubleshooting in printing presses.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions; selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Printing Industry – Recent Trends and Scenarios for the Future, scope of printing, Impact of Globalization on printing Industry, Environmental considerations in the printing industry, Organizational structure in a printing press, Production of commercial jobs, packaging jobs and newspaper.	15
II	Pre-Press Techniques- Basic color theory, additive and subtractive colors, color controls, Color control devices, Image setter Technology-Type, Working, Principal, Advantages, Limitation & applications, CTP Machines- Type, Working, Principal, Advantages, Limitation & applications. Scanner-Types, Techniques, Advantages, Limitation & applications.	15
III	Printing Techniques-Computer aided offset presses, Automatic plate mounting and automatic blanket cleaning systems for offset presses, Driography process and Hybrid systems such as Gravure – Flexo, Offset, and Gravure etc., Procurement material for printing, Store-keeping, stock room conditions.	15
IV	Production room condition and planning - production planning, Study of job and its work flow, Trouble shooting in printing presses, printing defects associated with paper and paperboard, printing defects associated with ink, Proofing Techniques and devices, Operational care and maintenance.	15
Total Contact Hours		60

Suggested Evaluation Methods

Internal Assessment: 30		End Term Examination: 70	
➤ Theory	30	➤ Theory:	70
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		
Part C-Learning Resources			
Recommended Books/e-resources/LMS:			
<ul style="list-style-type: none"> • Lithographers Manual Lithographic Technology - Erwin A Dennis, Olusegun Odesina • Printing Technology By Adams, Faux, Rieber • Art & Production by N.N. Sarkar 			

Session: 2024-25**Part A - Introduction**

Name of Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	I		
Name of the Course	Offset Technology		
Course Code	M24-PGP-102		
Course Type	CC-2		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	102.1: Acquire information about various activities in the offset press section 102. 2: study about the advance offset printing technology 102.3: Enhance knowledge about offset printing operations in press section 102. 4: components of offset printing presses.		
Credits	Theory	Tutorial	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction of Offset Printing Process -Lithography and Offset Printing Process, History, Principle, advantages, limitations, types and their uses. Press configurations, Development and growth of offset press, Dry-offset, Various Required and auxiliary elements, Factors to be considered for selecting the offset press, Requirements and Needs of production room,	15
II	Infeed unit – Function of feeding unit, Sheet fed offset feeding unit parts- pile table, air blast nozzles, Sucker, separator brushes & fingers. Sheet control devices-conveyor assemblies, conveyor tape, hold down rods, Sheet register- Front lay & Side lay, Sheet and web detectors, Sheet and web feeding system, Web fed offset feeding unit parts, web tension control, pre-conditioners, splicer, PIV gear mechanism, dancer roller.	15
III	Printing unit-Plate Cylinder- parts of plate cylinder, plate punching & mounting Blanket cylinder- Types of blanket cylinder, Care of blanket, blanket cleaning device, Impression cylinder, Inking system - introduction, types of inking system, Causes and correction of ink-related problems, Properties and requirements of offset inks. Dampening system, Types of dampening system, Ingredients of fountain solution, Ph& Conductivity of dampening system,	15

IV	Delivery unit- Control panels of the offset machines, Gripper, Types of gripper, Sheet transfer, Delivery unit components, Anti set-off spray equipment. Extended pile delivery, Continuous pile delivery. Pre make ready, make ready, Sheet control devices. Folders, folding principles, types of folder, parts of folder.	15
Total Contact Hours		60
Suggested Evaluation Methods		
Internal Assessment: 30		End Term Examination: 70
➤ Theory	30	➤ Theory: 70
• Class Participation:	5	Written Examination
• Seminar/presentation/assignment/quiz/class test etc.:	10	
• Mid-Term Exam:	15	
Part C-Learning Resources		
Recommended Books/e-resources/LMS:		
<ul style="list-style-type: none"> • Lithographers Manual Lithographic Technology - Erwin A Dennis, Olusegun Odesina • Web offset press operating- David B. Crouse Offset M/c II - C. S. Mishra Manual for Lithography Press Operation - A. S. Porter • Printing Technology By Adams, Faux, Rieber • Art & Production by N.N. Sarkar 		

Session: 2024-25

Part A - Introduction

Name of Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	I		
Name of the Course	Industrial Packaging		
Course Code	M24-PGP-103		
Course Type	CC-3		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	<p>103. 1: Preparation of industrial package in production section.</p> <p>103. 2: Study about the package waste management system technologies.</p> <p>103. 3: Enhance knowledge about package converting. Operations.</p> <p>103. 4: Know about the handling and storage packaging organization.</p>		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction-Packaging Industry, scope of packaging industry, Automotive packaging industry and various departments of packaging organization – Planning, Marketing, Pre-press, Press, Post-press, Quality, electrical, mechanical, warehousing, management practices- supply chain management, components of supply chain management systems and features of effective supply chain management.	15
II	UNIT II Package converting operations-Lamination- Laminating process, Laminating machinery and laminating types, Different Types Of Lamination Films, Importance of lamination, Coating process, Types Of Varnish Coating-aqueous (water-based) and ultraviolet coatings, Importance of coating, Embossing/De-embossing process, Die-cutting process, Liner process, Hot and Cold Foil stamping process, Folding and Gluing.	15
III	UNIT III	15

	Package handling and storage-Paperboard folding cartons, Flexible cartons, filling machine, packaging defect, shrink machine, stretch wrapping machine, Labeling and numbering - Label tracking and recognition system. Warehousing handling-pallets pick and place of product package equipment, fragile materials, receipt and dispatch, stock condition assessment, control package, preservation, delivery system.	
IV	<p style="text-align: center;">UNIT IV</p> Corrosion protection & package waste management system -Corrosion in packaging causes of corrosion, corrosion prevention, Corrosion inhibitors, Packaging hazards –Mechanical hazards, climatic hazards and biological hazards. Package recycling and reuse- Recycling process, Reuse, Bio compatible packaging materials- dry grass, banana bark, natural fibres composites.	15
Total Contact Hours		60
Suggested Evaluation Methods		
Internal Assessment: 30		End Term Examination: 70
➤ Theory	30	➤ Theory: 70
• Class Participation:	5	Written Examination
• Seminar/presentation/assignment/quiz/class test etc.:	10	
• Mid-Term Exam:	15	
Part C-Learning Resources		
Recommended Books/e-resources/LMS:		
<ul style="list-style-type: none"> • Printing Technology By Adams, Faux, Rieber • Art & Production by N.N. Sarkar • Packaging Technology - Volume I, II, III 		

Session: 2024-25			
Part A - Introduction			
Name of the Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	I		
Name of the Course	Quality Control in Printing and Packaging		
Course Code	M24-PGP-104		
Course Type	PC-1		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	104.1. Know about paper and ink quality 104. 2: study about the various test applied on paper to improve quality of print 104. 3: Enhance knowledge about ink testing in quality control section. 104. 4: Know about the quality check operations.		
Credits	Theory	Practical	Total
	0	4	4
Teaching Hours per week	0	8	8
Internal Assessment Marks	0	30	30
End Term Exam Marks	0	70	70
Max. Marks	0	100	100
Examination Time	4 hours		
Part B-Contents of the Course			
Practicals			Contact Hours
LIST OF EXPERIMENTS: <ol style="list-style-type: none"> 1. Paper testing checking grain direction. 2. Tensile strength of paper, burst strength of paper. 3. Substance, caliper, porosity test, cob sizing value test. 4. Tearing testing of paper, brightness test of paper. 5. Operating test, 6. Gloss test, 7. Lighting color filter sensor. 8. G.S.M. testing, 9. Folding endurance. 10. Moisture contents test, ash contents test. 11. Hot air oven tester, absorbing test. 12. Pick strength, 13. humidity control test, 14. Room temp testing. 15. Ink film thickness test. 16. Investigation of pigment properties. 17. Investigation of solvent properties. 18. Measurement of viscosity, tack measurement. 19. Test a printed sheet – proof printing and measurement of color using spectrophotometer, resistance testing of prints. 20. Measurement of ink film thickness. 			120
Suggested Evaluation Methods			
Internal Assessment: 30		End Term Examination: 70	
➤ Practicum	30	➤ Practicum	70
• Class Participation:	5	Lab record, Viva-Voce, write-up and execution of the practical	
• Seminar/Demonstration/Viva-voce/Lab records etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Printing materials science & technology - Bob Thompson-PIRA
- Advances in printing science & technology Vol.24 - J. Anthony Bristow
- Hand book of Print & Production - Micheal Barnard, John Peacock
- Introduction to Printing Technology - Hugh M.Speirs. SIGPA – 1987
- W.H. Banks, Inks, Plates and Print Quality, Pergamon Press
- Quality Control for quality printing, Graphic Arts, Technical Foundation

Session: 2024-25			
Part A - Introduction			
Name of the Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	I		
Name of the Course	Graphic Design and Publishing		
Course Code	M24-PGP-105		
Course Type	PC-2		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	105.1 : Understand about various designing software in prepress sections. 105.2: Study about the various tools and elements of graphic designing. 105.3: Enhance knowledge about Various Publications 105. 4: Know about the regulations for publishing.		
Credits	Theory	Practical	Total
	0	4	4
Teaching Hours per week	0	8	8
Internal Assessment Marks	0	30	30
End Term Exam Marks	0	70	70
Max. Marks	0	100	100
Examination Time	4 hours		
Part B-Contents of the Course			
Practicals			Contact Hours
LIST OF EXPERIMENTS 1. Tools of Graphic Design Software. 2. Designing of Newspaper Pages. 3. Designing of Magazine cover page. 4. Designing of Book cover 5. E-Publishing of Advertisements and Periodicals 6. Print Advertisement Design 7. Product Designing. 8. Package Designing. 9.Books for Children, dictionary 10.dictionary, Scientific Technical and Medical Books 11.Textbooks, Journals and Manuals 12.Bar-coding 13.E-Publishing 14.Logo Designing 15.Label Designing 16.Banner Designing 17.Flexboard Designing 18.Poster Designing 19.Leaflets Designing 20.Security Documents Designing			120
Suggested Evaluation Methods			
Internal Assessment: 30		End Term Examination: 70	
➤ Practicum	30	➤ Practicum	70
• Class Participation:	5	Lab record, Viva-Voce, write-up and execution of the practical	
• Seminar/Demonstration/Viva-voce/Lab records etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Sandra E Eddy, Complete Reference Adobe Illustrator 10, McGraw-Hill/Osborne, 2002.
- David Karlins, Illustrator – CS a beginners guide, Adobe, 2003.
- Dinesh Maidasani, Adobe Illustrator CS2, Fire Wall Media, 2006.
- Robert W Gill, Basic Rendering Effective Drawing Effective Drawing for Designers Artists, Thames and Hudson, 1991.

Session: 2024-25

Name of the Programme	M.Sc. Printing, Graphics & Packaging Technology
Semester	I
Name of the Course	Seminar
Course Code	M24-PGP-106
Course Type: (CC/DEC/PC/Seminar/CHM/OEC/EEC)	Seminar
Level of the course	400-499
Course Learning Outcomes(CLO) After completing this course, the learner will be able to:	Communicate, improve communication skills, and Increase self confidence, interact with people.
Credits	Seminar
	2
Teaching Hours per week	2
Max. Marks	50
Internal Assessment Marks	0
End Term Exam Marks	50
Examination Time	1 hour
Instructions for Examiner: Evaluation of the seminar will be done by the internal examiner(s) on the parameters as decided by staff council of the department. There will be no external examination/viva-voce examination.	

Session: 2024-25**Part A - Introduction**

Name of Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	II		
Name of the Course	Pre-Press Technology		
Course Code	M24-PGP-201		
Course Type	CC-4		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	201.1: Development in Pre-press section. 201.2: Know about colour reproduction process 201.3: methods of color separation 201.4: Know about press proofing		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Pre-press- Processes in pre –press, Basic colour theory, colour scheme, Additive and Subtractive colours, Process colours, Application of the colour theory to colour reproduction, Exposure, Colour balance, Memory colours, Contrast, Film transparency.	15
II	Colour Reproduction - Process cameras-Vertical process camera and Horizontal process camera, Parts of process camera, Image setter-Drum and Flatbed Image setter, Ctp (Computer to plate) operations, Ctp types, Colour control - Gray scale, Colour patches, Colour bar, Densitometer.	15
III	Colour Separating methods -Direct separation method and Indirect colour separation method, Methods and procedures followed for making the black printer negative, Objectives of colour correction, Hand correction, Tools used for hand correction, Masking, Types of mask, Electronic colour separation and correction.	15
IV	Press proofing- Proofing methods, Purpose of proofing and importance, Types of proofing press, Photographic film, Scanner, Types of scanner, Quality control in Pre-press, Overview of colour reproduction from original to printing.	15
Total Contact Hours		60

Suggested Evaluation Methods

Internal Assessment: 30		End Term Examination: 70	
➤ Theory	30	➤ Theory:	70
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

PartC-Learning Resources**Recommended Books/e-resources/LMS:**

- Lithographers Manual Lithographic Technology - Erwin A Dennis, Olusegun Odesina
- Printing Technology By Adams, Faux, Rieber
- Art & Production by N.N. Sarkar
- Dr. R.W.G. Hont :- The reproduction of colour. Fountain Press, 4th edition.
- Miles Southworth & Donna Southworth :- Colour Reproduction. Graphic Arts Publishing.
- Gary G. Field :- Tone & Colour correction (GATF).

Session: 2024-25

Part A - Introduction

Name of Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	II		
Name of the Course	Printing & Packaging Materials		
Course Code	M24-PGP-202		
Course Type	CC-5		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	202.1: Learn about types of glass, wood and metal material used in packaging. 202.2: Enhance the knowledge about light sensitive and miscellaneous materials 202.3: packaging materials techniques. 202.4: know about the material handling		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Metals -Type of metals and characteristics of metals used for type alloys for foundry types, hot metal composition and steels, Physical and chemical properties of aluminum, zinc, copper, nickel, chromium, magnesium in relation to printing applications. Photographic Materials -Main kinds of films and photographic papers used in graphic origination Films positives, main base, stripping, thickness, right and wrong reading, negatives; paper positive materials. Developers, Reducers, Intensifiers.	15
II	Light Sensitive Materials -Various sensitized materials, used and relationship with processes Silver halide emulsions-classification according to speed, contrast and spectral sensitivity. Paper and Ink-Fibrous and Non-fibrous materials used in paper and board manufacturing. General characteristics and requirements of printing inks formulations pigments, vehicles, varnishes, solvents, agents.	15
III	Adhesives-Classes and characteristics of adhesives used in binding and warehouse work and their range of applications selection for specific purpose. Miscellaneous Materials -Book binding materials Different types of rubber used in printing. Use of leather, cloth, rexine, threads, tapes, stitching wire, metal foils and covering materials used for binding and print finishing.	15
IV	Materials Handling -A brief Survey of materials handling and storage, Handling and storage of paper, printing surfaces, films, chemicals and other printing materials. Systems and methods of storage. Precautions in handling, storage, use and care of various printing substrates, materials and chemicals. wastage reduction. Receiving, storage and delivery of raw, semi finished and finished products.	15
Total Contact Hours		60

Suggested Evaluation Methods

Internal Assessment: 30		End Term Examination: 70	
➤ Theory	30	➤ Theory:	70
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources**Recommended Books/e-resources/LMS:**

- 1. Handbook on Modern Packaging Industries by National institute of industrial research & Asian Pacific Business press.1978.
 - Joseph F. Hanlon, Robert J. Kelsey, and Hallie Forcinio, “Handbook of Package Engineering”, Third Edition, CRC press, 1998.
 - L. Brody, K. S. Marsh, “The Wiley Encyclopedia of Packaging Technology”, 2nd Edition, Wiley, 2002.
 4. Walter Soroka, “Fundamentals of packaging technology”, 3rd Edition, Institute of Packaging professionals, Naperville, Illinois, USA, 2002

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PartA - Introduction

Name of Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	II		
Name of the Course	Package Design and Development		
Course Code	M24-PGP-203		
Course Type	CC-6		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	203.1: know about package graphic technology. 203.2: understand about basics of packaging designing 203.3: know about the package development process. 203.4: know about the package closure.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction to Package Designing basics: Role, scope product package cycle, Design considerations – structural development, packaging coordination, graphics, packaging line engineering, cost of development; Package design Economic considerations- package cost vs. product cost, Environmental Considerations, Life cycle Assessment, Legal issues, Recent trends in package graphics	15
II	Fundamental of Typography, Color Technology, Illustrations, Graphic Design Basics, and Package Design Marketing concept, Package Aesthetics, Decoration Aspects, Layout and Feature Selection, Introduction to graphic design software's, The Retail Environment of various packaging.	15
III	Packaging Graphics Function, Project Scope, Consumer Research, Behavioural Measures, Features of a package, Optimizing flexible and rigid Package Design, Package Design stages, Specifications, Package Designer's Checklist an Evaluation,	15
IV	Structural Design – folding cartons, cans, glass containers, plastic containers, bags and pouches; Container Dimensioning; Die-making, Drawing, Moulds, Prototypes, Samples. Hand Hole Design, Package Optimization, Predicting & Assessment of the package performance; Introduction to Package structural design software. Function, Types, Selection considerations, Closure dimensioning, Metal closures, Closure seals, Plastic closures, Injection moulds and Closure design, Tamper evident closures, Child resistant closures. Special closures and functions, Case study and Mini Project for package design.	15
Total Contact Hours		60

Suggested Evaluation Methods

Internal Assessment: 30		End Term Examination: 70	
➤ Theory	30	➤ Theory:	70
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		
Part C-Learning Resources			
Recommended Books/e-resources/LMS:			
<ul style="list-style-type: none"> • Aaron L. Brody and Kenneth S. Marsh, “The Wiley Encyclopedia of Packaging Technology”, 1997 Walter Soroka, “Fundamentals of packaging technology”, 3rd Edition, Institute of packaging professionals, Naperville, Illinois, USA, 2002 • Giles Calver, “What is Packaging Design?: Essential design handbook”, Rotovision,2004 Marianne R. Klimchuk and Sandra A. Krasovec, “Packaging Design: Successful Product Branding from Concept to Shelf”, Wiley, 2006, • Steven DuPuis, John Silva,” Package Design Workbook: The Art and Science of Successful Packaging”, Rockport Publishers, 2008 			

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Part A - Introduction			
Name of the Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	II		
Name of the Course	Printing Image Generation.		
Course Code	M24-PGP-204		
Course Type	PC-3		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	204.1: Know about the processing chemicals used for plate preparation. 204.2: Understand the PS Plate preparing Procedure. 204.3: Enhance the knowledge about layout preparation. 204.4: Understand the imposition schemes used for page preparation on plates.		
Credits	Theory	Practical	Total
	0	4	4
Teaching Hours per week	0	8	8
Internal Assessment Marks	0	30	30
End Term Exam Marks	0	70	70
Max. Marks	0	100	100
Examination Time	4 hours		
Part B-Contents of the Course			
Practicals			Contact Hours
LIST OF EXPERIMENTS <ol style="list-style-type: none"> 1. Comparative study of various materials and equipments used in Image Generation Department. 2. Preparation of wipe-on plates, Albumin plates. 3. Preparing deep-etch plates. 4. Pre-sensitized plate. 5. Thermal plate preparation. 6. Flexographic Rubber plate preparation 7. Preparation of letter set plates. 8. Study of gripper margin 9. Registration processes. 10. Positioning of images for plate making. 11. Page makeup -folders, Pamphlets. 12. journals/magazines, newspaper. 13. Book work Imposition. 14. Layout preparation - Single page layout, 2 page layout, 4 page layout. 15. 8 page layout, 16 page layout, 32 page layout, 64 page layout 16. work & turn. 17. work & tumble. 18. work & twist. 19. Gravure Cylinder Preparation. 20. Stencil preparation for screen printing. 			120
Suggested Evaluation Methods			
Internal Assessment: 30		End Term Examination: 70	
➤ Practicum	30	➤ Practicum	70
• Class Participation:	5	Lab record, Viva-Voce, write-up and execution of the practical	
• Seminar/Demonstration/Viva-voce/Lab records etc.:	10		
• Mid-Term Exam:	15		
Part C-Learning Resources			

Recommended Books/e-resources/LMS:

- Heidelberg DI Press- Manual Chemistry for Graphic Arts - Dr. Nelson R. Eldred.
- Offset Plate Making - Robert F. Reed.
- Printing Technology 3rd Edition. - Adams, Fax & Rieber.
- Screen Process Printing - John Stephens.
- Sheet fed Offset Press Operating - Lloyd P. Dejidas.
- Flexography Premier - Donna C. Mulvihill.
- Stripping - Harold L. Peck.
- Gravure Process And Technology –GAA.

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Part A - Introduction

Name of the Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	II		
Name of the Course	Paper and Ink Technology		
Course Code	M24-PGP-205		
Course Type	PC-4		
Level of the course	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	205.1: Enhance knowledge about various paper and ink samples. 205.2: Understand the properties and ingredient of ink . 205.3: Enhance the knowledge about specification of various ink and paper testing equipments. 205.4: Understand various printing defects and their remedies.		
Credits	Theory	Practical	Total
	0	4	4
Teaching Hours per week	0	8	8
Internal Assessment Marks	0	30	30
End Term Exam Marks	0	70	70
Max. Marks	0	100	100
Examination Time	4 hours		

Part B-Contents of the Course

Practical		Contact Hours
LIST OF EXPERIMENTS 1. Different samples of Papers and their study. 2. Effect of Humidity and Temperature on paper. 3. GSM Test. 4. Different samples of Paperboard and their study 5. Printed samples of different printing processes and their study.. 6. Introduction to various chemicals used in Paper and Paperboard. 7. Study of different printing defects associated with paper. 8. Different samples of Offset Inks and their study. 9. Study of Tensile strength of paper. 10. Study of burst strength of paper. 11. Study of caliper 12. Study of cob sizing value test. 13. Study of Tearing testing of paper. 14. Study of brightness test of paper. 15. Different samples of Flexography and gravure Inks and their study. 16. Different samples of Letterpress and Screen Inks and their study 17. Different samples of Digital Inks and their study 18. Study of various component of ink. 19. Ink tackiness Test. 20. Ink Viscosity Test.		120

Suggested Evaluation Methods

Internal Assessment: 30		End Term Examination: 70	
➤ Practicum	30	➤ Practicum	70
• Class Participation:	5	Lab record, Viva-Voce, write-up and execution of the practical	
• Seminar/Demonstration/Viva-voce/Lab records etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS: <ul style="list-style-type: none"> • Printing materials science & technology - Bob Thompson-PIRA • Advances in printing science & technology Vol.24 - J. Anthony Bristow • Hand book of Print & Production - Micheal Barnard, John Peacock • Introduction to Printing Technology - Hugh M.Speirs. SIGPA - 1987
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Part A - Introduction

Name of the Programme	M.Sc. Printing, Graphics & Packaging Technology		
Semester	II		
Name of the Course	Constitutional Human and Moral Values, and IPR		
Course Code	M24-CHM-201		
Course Type	CHM		
Level of the course (As per Annexure-I)	400-499		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	201.1: Learn the different Constitutional Values, Fundamental rights and duties enshrined in the India Constitution. 201.2: Understand humanism, human virtues and values, and idea of international peace. 201.3: Grasp the basic concepts of Moral Values and Professional Conduct which are required to become a part of the civil society and for developing professionalism. 201.4: Understand concepts of Intellectual Property Rights, Copyright, Patent, Trademark etc., and about threats of Plagiarism.		
Credits	Theory	Practical	Total
	2	0	2
Teaching Hours per week	2	0	2
Internal Assessment Marks	15	0	15
End Term Exam Marks	35	0	35
Max. Marks	50	0	50
Examination Time	3 hours		

Part B-Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	Constitutional Values-Historical Perspective of Indian Constitution; Basic Values enshrined in the Preamble of the Indian Constitution; Concept of Constitutional Morality; Patriotic Values and Ingredients Nation Building; Fundamental Rights and Duties; Directive Principles of the State Policy.	8
II	Humanistic Values-Humanism, Human Virtues and Civic Sense; Social Responsibilities of Human Beings; Ethical ways to deal with human aspirations; Harmony with society and nature; Idea of International Peace and Brotherhood (Vasudhaiv Kutumbkam).	7
III	Moral Values and Professional Conduct - Understanding Morality and Moral Values; Moral Education and Character Building; Ethics of Relations: Personal, Social and Professional; Introduction to Gender Sensitization; Affirmative approach towards Weaker Sections (SCs, STs, OBCs, EWS& DAs); Ethical Conduct in Higher Education Institutions; Professional Ethics.	8
IV	Intellectual Property Rights- Meaning, Origins and Nature of Intellectual Property Rights (IPRs); Different Kinds of IPRs – Copyright, Patent,	7

Trademark, Trade Secret/Dress, Design, Traditional Knowledge; Infringement and Offences Of IPRs–Remedies and Penalties; Basics of Plagiarism policy of UGC.			
Total Contact Hours			30
Suggested Evaluation Methods			
Internal Assessment: 15		End Term Examination: 35	
➤ Theory	15	➤ Theory	35
• Class Participation:	4	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	4		
• Mid-Term Exam:	7		
Part C-Learning Resources			
Recommended Books/e-resources/LMS:			
<ol style="list-style-type: none"> 1. Ahuja, V K. (2017). <i>Law relating to Intellectual Property Rights</i>, India, IN: Lexis Nexis. Bajpai, B.L., <i>Indian Ethos and Modern Management</i>, New Royal Book Co., Lucknow, 2004. 2. Basu, D.D., <i>Introduction to the Constitution of India</i> (Students Edition) Prentice Hall of India Pvt.Ltd., New Delhi, 20th ed., 2008. 3. Dhar, P.L. & R.R. Gaur, <i>Science and Humanism</i>, Commonwealth Publishers, New Delhi, 1990. George, Sussan, <i>How the Other Half Dies</i>, Penguin Press, 1976. 4. Govindarajan, M., S. Natarajan, V.S. Sendilkumar (eds.), <i>Engineering Ethics (Including Human Values)</i>, Prentice Hall of India Private Ltd, New Delhi, 2004. 5. Harries, Charles E., Michael S. Pritchard & Michael J. Robins, <i>Engineering Ethics</i>, Thompson Asia, New Delhi, 2003. 6. Illich, Ivan, <i>Energy & Equity</i>, Trinity Press, Worcester, 1974. 7. Meadows, Donella H., Dennis L. Meadows, Jorgen Randers & William W. Behrens, <i>Limits to Growth: Club of Rome's Report</i>, Universe Books, 1972. 8. Myneni, S.R, <i>Law of Intellectual Property</i>, Asian Law House. Narayanan, P, <i>IPRs</i>. 9. Neeraj, P., & Khusdeep, D. (2014). <i>Intellectual Property Rights</i>, India, IN: PHI Learning Private Limited. 10. Nithyananda, K.V. (2019). <i>Intellectual Property Rights: Protection and Management</i>. India, IN: Cengage Learning India Private Limited. 11. Palekar, Subhas, <i>How to practice Natural Farming</i>, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati, 2000. 12. Phaneesh, K.R., <i>Constitution of India and Professional Ethics</i>, New Delhi. 13. Pylee, M.V., <i>An Introduction to Constitution of India</i>, Vikas Publishing, New Delhi, 2002. Raman, B.S., <i>Constitution of India</i>, New Delhi, 2002. 14. Reddy, B., <i>Intellectual Property Rights and the Law</i>, Gogia Law Agency. 15. Reddy, N.H., Santosh Ajmera, <i>Ethics, Integrity and Aptitude</i>, McGraw Hill, New Delhi. Sharma, Brij Kishore, <i>Introduction to the Constitution of India</i>, New Delhi, 16. Schumacher, E.F., <i>Small is Beautiful: A Study of Economics as if People Mattered</i>, Blond & Briggs, Britain, 1973. 17. Singles, Shubham et al., <i>Constitution of India and Professional Ethics</i>, Cengage Learning India Pvt.Ltd., Latest Edition, New Delhi, 2018. 18. Tripathy, A.N., <i>Human Values</i>, New Age International Publishers, New Delhi, 2003. 19. Wadehra, B.L., <i>Law relating to Intellectual Property</i>, Universal Law Publishing Co. 			
20. Relevant Websites, Movies and Documentaries:			
21. <i>Value Education Websites</i> , http://uhv.ac.in , http://www.uptu.ac.in .			
22. <i>Story of Stuff</i> , http://www.storyofstuff.com			
23. Cell for IPR Promotion and Management : http://cipam.gov.in/ .			
24. World Intellectual Property Organization: https://www.wipo.int/about-ip/en/			
Office of the Controller General of Patents, Designs & Trademarks: http://www.ipindia.nic.in/			
AI Gore, <i>An Inconvenient Truth</i>, Paramount Classics, USA.			
Charlie Chaplin, <i>Modern Times</i> , United Artists, USA.			
<i>Modern Technology–The Untold Story</i> , IIT, Delhi.			
A. Gandhi, <i>Right Here Right Now</i> , Cyclewala Productions.			