DIPLOMA IN ENGINEERING AND TECHNOLOGY

BRANCH CODE: 1202

DEPARTMENT OF PRINTING TECHNOLOGY

SEMESTER PATTERN

N – SCHEME

IMPLEMENTED FROM 2020 - 2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING AND TECHNOLOGY SYLLABUS (II & III YEAR)

N-SCHEME

(To be implemented for the students from the year 2020-21 onwards)

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DIPLOMA IN PRINTING TECHNOLOGY (1202)

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Diploma in Printing Technology

N – Scheme Syllabus

Technology is developing at a rapid pace and changing many established methods of accomplishing tasks and completing projects. In the presence of computer technology and electronics: machines, methods and processes have changed drastically. Printing Technology has put emphasis on the combination of managerial, administrative and technological aspects of modern printing. These include printing in the field of advertising, publishing, packaging, distributing, marketing and developing technologies. The print and design industries are excellent examples of areas seeing these changes and innovations. To remain competitive and profitable, the Diploma Engineers are encouraged to update themselves on the latest developments in printing technology, particularly in software and machine features. Some recent print technology innovations worth noting include high-speed digital printing viz., Inetrnet of Things, Artificial Intelligence Technology and Cloud Printing. In order to produce printing diploma engineers to cater to the needs of the printing industry, students must adapt equally to existing and continually developing new technologies and opportunities in today's information society. In keeping this in mind, we have framed the N scheme syllabus by considering the following aspects.

- The needs, wants, interests of the students.
- The learners' learning styles.
- Suggestions from Alumnus of printing students
- Latest technological developments in print and media industry
- Suggestions from leading industrial personnel and academicians
- Print media industry requirements
- Inclusion of new topics on latest trends in all subjects
- Entry level and knowledge of diploma students

Towards framing the N scheme syllabus lot of suggestions were received from leading industrialists and academicians including alumnus. Among them we found the above mentioned aspects worth considering for framing the N scheme syllabus. While framing new topics covering latest technological developments, we carefully framed

the contents of the subjects to suit the needs and levels of the diploma students. We hope the new syllabus will prepare the students as job ready candidates. Taking into consideration the areas where the existing syllabus was modified with few changes to meet the latest developments in the field of printing technology.

Breakup of Categories of Subjects in 'N' Scheme

S.No	Subjects Category	Breakup %
1.	Program Core Subjects (Branch Specific)	57%
2.	Basic Science Subjects	23%
3.	Engineering Science Subjects	20%

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY

(SEMESTER SYSTEM)

(Implemented from 2020 - 2021)

N – SCHEME

R E G U L A T I O N S*

**Applicable to the Diploma Courses other than Diploma in Hotel Management & Catering Technology.*

1. Description of the Course:

a. Full Time (3 years)

The Course for the Full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters* and the First Year is common to all Engineering Branches.

b. Sandwich (3½ years)

The Course for the Sandwich Diploma in Engineering shall extend over a period of three and half academic years, consisting of 7 semesters* and the First Year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience.

During 4^{th} and/or during 7^{th} semester the students undergo industrial training for six months / one year. Industrial training examination will be conducted after completion of every 6 months of industrial training.

c. Part Time (4 years)

The course for the Part Time Diploma in Engineering shall extend over a period of 4 academic years containing of 8 semesters*, the subjects of 3 year full time diploma courses being regrouped for academic convenience.

* ***Each Semester will have 16 weeks duration of study with 35 hrs. / Week for Regular Diploma Courses and 18 hrs. / Week for Part-Time Diploma Courses.***

The Curriculum for all the 6 Semesters of Diploma courses (Engineering & Special Diploma Courses viz. Textile Technology, Leather Technology, Printing Technology, Chemical Technology etc.) have been revised and revised curriculum is applicable for the candidates admitted from 2020 – 2021 academic year onwards.

2. Condition for Admission:

Condition for admission to the Diploma courses shall be required to have passed in The S.S.L.C Examination of the Board of Secondary Education, Tamil Nadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in Tamil Nadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board of Secondary Education, Tamil Nadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

3. Admission to Second year (Lateral Entry):

A pass in HSC (academic) or (vocational) courses mentioned in the Higher Secondary Schools in Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination & Should have studied the following subjects.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational		Industrial Training Institutes Courses
		Subjects Studied	Subjects Studied		
			Related subjects	Vocational subjects	
1.	All the Regular and Sandwich Diploma Courses	Physics and Chemistry as compulsory along with Mathematics / Biology	Maths / Physics / Chemistry	Related Vocational Subjects Theory& Practical	2 years course to be passed with appropriate Trade
2.	Diploma Course in Commercial Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretaryship.	-

- For the Diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practicals may also be taken for arriving the eligibility.
- Branch will be allotted according to merit through counseling by the respective Principal as per communal reservation.
- For admission to the Textile Technology, Leather Technology, Printing Technology, Chemical Technology and Commercial Practice Diploma courses the candidates studied the related subjects will be given first preference.

- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*

4. Age Limit: **No Age limit.**

5. Medium of Instruction: **English**

6. Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, Tamil Nadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Courses are as given below:

Diploma Course	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Part Time	4 Years	7 Years

This will come into effect from N Scheme onwards i.e. from the academic year 2020-2021.

7. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical subjects.

The curriculum outline is given in Annexure – I.

8. Examinations:

Board Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment. Board Examinations are conducted for 100 marks and reduced to 75.

The total marks for result are 75 + 25 = 100 Marks.

9. Continuous Internal Assessment:

A. <u>For Theory Subjects:</u>

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) Subject Attendance **5 Marks**

(Award of marks for subject attendance to each subject Theory/Practical will be as per the range given below)

80%	-	83%	1 Mark
84%	-	87%	2 Marks
88%	-	91%	3 Marks
92%	-	95%	4 Marks
96%	-	100%	5 Marks

ii) Test # **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Average of the these two test marks will be taken and the marks to be reduced to: 05 Marks

The Test – III is to be the Model Examination covering all the five units and the marks obtained will be reduced to : 05 Marks

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs

Test III	**Model Examination:** Covering all the 5 Units. (Board Examinations-question paper-pattern).	End of 16th week	100	3 Hrs

From the Academic Year 2020 – 2021 onwards.

Question Paper Pattern for the Test - I and Test – II is as follows. The tests should be conducted by proper schedule. Retest marks should not be considered for internal assessment.

Without Choice:

Part A Type questions:	6 Questions × 1 mark	06 marks
Part B Type questions:	7 Questions × 2 marks	14 marks
Part C Type questions:	2 Questions × 15 marks	30 marks
	Total	**50 marks**

iii) Assignment **5 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 5 marks.

iv) Seminar Presentation **5 Marks**

The students have to select the topics either from their subjects or general subjects which will help to improve their grasping capacity as well as their capacity to express the subject in hand. The students will be allowed to prepare the material for the given topic using the library hour and they will be permitted to present seminar (For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and each member of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all theory subjects and carries 5 marks for each theory subject. The respective subject faculty may suggest topics to the students and will evaluate the submitted

materials and seminar presentation. (2 ½ marks for the material submitted in writing and 2 ½ marks for the seminar presentation). For each subject minimum of two seminars are to be given and the average marks scored should be reduced to 5 marks.

All Test Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one semester after publication of Board Exam results and produced to the flying squad and the inspection team at the time of inspection/verification.

B. <u>For Practical Subjects:</u>

The Internal Assessment mark for a total of 25 marks which are to be distributed as follows:-

a) Attendance : **5 Marks**

(Award of marks same as theory subjects)

b) Procedure/ observation and tabulation/
Other Practical related Work : **10 Marks**

c) Record writing : **10 Marks**

TOTAL : **25 Marks**

- *All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Board examinations.*
- The observation note book / manual should be maintained for 10 marks. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical subject during practical classes should be evaluated properly during the practical class hours with date.
- The Record work for every completed exercise should be submitted in the subsequent practical classes and marks should be awarded for 10 marks for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks (including Observation and Record writing) and the marks

awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)

- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory subject.

The marks awarded for Observation, Record work and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical subject.

10. Communication Skill Practical, Computer Application Practical and Physical Education:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much Stress is given to increase the Communication skill and ICT skill of students.

As per the recommendation of MHRD and under Fit India scheme, the Physical education is introduced to encourage students to remain healthy and fit by including physical activities and sports.

11. Project Work and Internship:

The students of all the Diploma Courses have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

a) Internal assessment mark for Project Work & Internship:

Project Review I	…	**10 marks**
Project Review II	…	**10 marks**
Attendance	…	**05 marks** (Award of marks same as theory subject pattern)
Total	…	**25 marks**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in Board Examinations:

Demonstration/Presentation	25 marks
Report	25 marks
Viva Voce	30 marks
Internship Report	20 marks
Total	**100* marks**

*Examination will be conducted for 100 marks and will be converted to 75 marks.

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year “Project Work & Internship” for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Board examination.

12. Scheme of Examinations:

The Scheme of examinations for subjects is given in Annexure - II.

13.Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the subjects prescribed in the curriculum.

2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subjects* out of the total prescribed maximum marks including both the Internal Assessment and the Board Examinations marks put together, subject to the condition that he/she secures at least a minimum of 4*0 marks out of 100 marks in the Board Theory Examinations and a minimum of 50 marks out of 100 marks in the Board Practical Examinations.*

14. **Classification of successful candidates:**

Classification of candidates who will pass out the final examinations from April 2023 onwards (Joined first year in 2020 -2021) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he/she secures not less than 75% of the marks in all the subjects and passes all the semesters in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate marks in all the semesters put together and passes all the semesters except the **I** and **II** semester in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all the semesters put together and passes all the subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class.**

The above classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2023 /April 2024 onwards (both joined First Year in 2020 -2021)

15. Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

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ANNEXURE I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

BRANCH CODE: DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

CURRICULUM OUTLINE

THIRD SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
48231	Printing Processes	5	--	--	5
48232	Visual Design and DTP	5	--	--	5
48233	Digital Prepress	6	--	--	6
48234	Printing Primer Practical	--	--	4	4
48235	Design Studio Practical	--	--	4	4
48236	Digital Pre-press Practical	--	--	4	4
48237	Print Production Practical	--	--	4	4
Library		1	--	--	1
Physical Education		2	--	--	2
TOTAL		19	--	16	**35**

FOURTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
48241	Offset Printing Technology	5	--	--	5
48242	Gravure, Flexography and Screen Printing	5	--	--	5
48243	Print Finishing and Converting	5	--	--	5
48244	Printing Materials	5	--	--	5
48245	Offset Machines Practical	--	--	4	4
48246	Desk Top Publishing for Print Production Practical	--	--	4	4
48247	Print Finishing Practical	--	--	4	4
Library		1	--	--	1
Physical Education		2	--	--	2
Internship – 1 (2 Weeks)		During Summer Vacation			
TOTAL		23	--	12	**35**

FIFTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
48251	E-Publishing	5	--	--	5
48252	Advanced Printing Technologies	6	--	--	6
48253	Packaging Technology	5	--	--	5
48254	Entrepreneurship & Start-up	-	--	4	4
48255	E-Publishing Practical		--	4	4
48256	Digital Printing Practical	--	--	4	4
48257	Packaging Practical	--	--	4	4
Library		1	--	--	1
Physical Education		2	--	--	2
Internship – 2 (2 Weeks)		During Winter Vacation			
TOTAL		19	--	16	**35**

SIXTH SEMESTER

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
48261	Total Quality Management	6	--	--	6
48262	Printing Press Management	6	--	--	6
48263	Printing Machinery Maintenance	6	--	--	6
48264	Print Quality Assurance Practical	--	--	5	5
48265	Machinery Maintenance Practical	--	--	5	5
48266	Project Work and Internship	--	--	4	4
Library		1	--	--	1
Physical Education		2	--	--	2
TOTAL		21	--	14	**35**

ANNEXURE II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

BRANCH CODE: DIPLOMA IN PRINTING TECHNOLOGYSYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

SCHEME OF EXAMINATION

THIRD SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam. Marks	Total Mark		
48231	Printing Processes	25	100*	100	40	3
48232	Visual Design and DTP	25	100*	100	40	3
48233	Digital Prepress	25	100*	100	40	3
48234	Printing Primer Practical	25	100*	100	50	3
48235	Design Studio Practical	25	100*	100	50	3
48236	Digital Pre-press Practical	25	100*	100	50	3
48237	Print Production Practical	25	100*	100	50	3
TOTAL		**175**	**700***	**700**		

FOURTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam Marks	Total Mark		
48241	Offset Printing Technology	25	100*	100	40	3
48242	Gravure, Flexography and Screen Printing	25	100*	100	40	3
48243	Print Finishing and Converting	25	100*	100	40	3
48244	Printing Materials	25	100*	100	40	3
48245	Offset Machines Practical	25	100*	100	50	3
48246	Desk Top Publishing for Print Production Practical	25	100*	100	50	3
48247	Print Finishing Practical	25	100*	100	50	3
TOTAL		**175**	**700***	**700**		

FIFTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam. Marks	Total Mark		
48251	E-Publishing	25	100*	100	40	3
48252	Advanced Printing Technologies	25	100*	100	40	3
48253	Packaging Technology	25	100*	100	40	3
48254	Entrepreneurship & Start-up	25	100*	100	50	3
48255	E-Publishing Practical	25	100*	100	50	3
48256	Digital Printing Practical	25	100*	100	50	3
48257	Packaging Practical	25	100*	100	50	3
TOTAL		**175**	**700***	**700**		

SIXTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam Marks	Total Mark		
48261	Total Quality Management	25	100*	100	40	3
48262	Printing Press Management	25	100*	100	40	3
48263	Printing Machinery Maintenance	25	100*	100	40	3
48264	Print Quality Assurance Practical	25	100*	100	50	3
48265	Machinery Maintenance Practical	25	100*	100	50	3
48266	Project Work and Internship	25	100*	100	50	3
TOTAL		**150**	**600***	**600**		

* Board Exam for 100 marks converted to 75 marks

List of Equivalent Subjects for M - Scheme to N – Scheme

The following are the alternative subjects for the 'L' SCHEME (Subject), 'M' SCHEME (subject) to the 'N' scheme (subject).

III SEMESTER

Code No.	'L' SCHEME	Code No.	'M' SCHEME	Code No.	'N' SCHEME
28231	Printing Processes	38231	Printing Processes	48231	Printing Processes
28232	Visual Design and DTP	38232	Visual Design and DTP	48232	Visual Design and DTP
28233	Image Processing	38233	Image Processing	48233	Digital Prepress
28234	Design Studio Practical.	38234	Design Studio Practical.	48235	Design Studio Practical
28235	Image Processing Practical.	38235	Image Processing Practical.	48236	Digital Pre-press Practical
28236	Printing Primer Practical.	38236	Printing Primer Practical.	48234	Printing Primer Practical
20001	Computer Application Practical**.	30001	Computer Application Practical**.	40002	Computer Application Practical**.

IV SEMESTER

Code No.	'L' SCHEME	Code No.	'M' SCHEME	Code No.	'N' SCHEME
28241	Offset Printing Technology	38241	Offset Printing Technology	48241	Offset Printing Technology
28242	Gravure, Flexography and Screen Printing	38242	Gravure, Flexography and Screen Printing	48242	Gravure, Flexography and Screen Printing
28243	Print Finishing and Converting	38243	Print Finishing and Converting	48243	Print Finishing and Converting
28244	Printing Materials	38244	Printing Materials	48244	Printing Materials
28245	Desk Top Publishing for Print Production Practical.	38245	Desk Top Publishing for Print Production Practical.	48246	Desk Top Publishing for Print Production Practical
28246	Offset Machines Practical.	38246	Offset Machines Practical.	48245	Offset Machines Practical
28247	Print Finishing Practical.	38247	Print Finishing Practical.	48247	Print Finishing Practical

V SEMESTER

Code No.	'L' SCHEME	Code No.	'M' SCHEME	Code No.	'N' SCHEME
28251	Digital Prepress	38251	Digital Prepress	48233	Digital Prepress
28252	E-Publishing	38252	E-Publishing	48251	E-Publishing
28253	Advanced Printing Technologies	38253	Advanced Printing Technologies	48252	Advanced Printing Technologies
28254	Packaging Technology	38254	Packaging Technology	48253	Packaging Technology
28255	Digital Pre-Press Practical	38255	Digital Pre-Press Practical.	48236	Digital Pre-press Practical
28256	Packaging Practical	38256	Packaging Practical	48257	Packaging Practical
20002	Communication and Life Skills Practical**	30002	Life and Employability Skills Practical**	40001	Communication Skill Practical**

VI SEMESTER

Code No.	'L' SCHEME	Code No.	'M' SCHEME	Code No.	'N' SCHEME
28261	Total Quality Management	38261	Total Quality Management	48261	Total Quality Management
28262	Printing Press Management	38262	Printing Press Management	48262	Printing Press Management
28263	Printing Machinery Maintenance	38263	Printing Machinery Maintenance	48263	Printing Machinery Maintenance
28264	Print Quality Assurance Practical.	38264	Print Quality Assurance Practical.	48264	Print Quality Assurance Practical
28265	Machinery Maintenance Practical.	38265	Machinery Maintenance Practical.	48265	Machinery Maintenance Practical
28266	Internship and Report	38266	Industrial Exposure and Report	48254	Entrepreneurship & Start-up
28267	Project Work	38267	Project Work	-	-

***common subject for all Diploma in Engineering and Technology courses*

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : Diploma in Printing Technology

Subject Code : 48231

Semester : III Semester

Subject Title : PRINTING PROCESSES

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
PRINTING PROCESSES	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours

UNIT	Topic	Hours
I	Introduction to Printing Processes	15
II	Principles of Printing Processes	15
III	Classifications of Offset Printing Machines	15
IV	Classifications of Flexography Printing	14
V	Classifications of Gravure & Screen Printing	14
Test & Model Exam		7
Total		**80**

RATIONALE:

This subject informs about all the printing processes like letterpress, offset, gravure, flexography and screen printing. The students can able to know the inventions of all the processes and how printing was developed. They can also able to know the job suitably of each printing processes. This subject tells the types, structures and configurations and working of all the printing machines used in each printing processes. This subject is the base for all the printing processes.

OBJECTIVES:

At the end of the study of III Semester the student will be able to:

- Know the Historical background and evolution.
- Study the Structure of Printing Industry.
- Understand the Principles of Printing Processes.
- Learn the Applications of Printing Processes.
- Know the Classifications of Offset Printing Machines.
- Know the Classifications of Gravure Printing Machines.
- Know the Classifications of Flexography Printing Machines.
- Know the Classifications of Screen Printing Machines.
- Study the type of Printing Machines.

PRINITNG PROCESSES

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Introduction to Printing Processes** 1.1 - Evolution of Printing – Invention of Movable wooden and metal type printing – Lithography – Offset Printing – Intaglio – Gravure –Flexography, Screen Printing – Digital Printing. 1.2 - Structure of Printing Industry - Prepress, Press and Postpress. 1.3 - Applications of Printing Processes – Offset, Intaglio, Gravure, Flexography, Screen printing and Digital printing.	15
II	**Principles of Printing Processes** 2.1 - Basic Principles of Letterpress, Offset, Flexography, Gravure, Screen Printing and Digital Printing. 2.2 - Print recognition of Printing Processes – Letterpress, Offset, Flexography, Gravure and Screen Printing. 2.3 - Advantages and Limitations of Printing Processes – Letterpress, Offset, Flexography, Gravure and Screen Printing.	15
III	**Classifications of Offset Printing Machines** 3.1 - Classification of Offset Machines – Sheet fed and Web fed offset machines, Basic configuration of Sheet fed offset machine. 3.2 - Single color sheet-fed offset press, Multi color sheet-fed press, Offset perfecting press and Small offset press. 3.3 - Classification of Web offset Machines – In-line web offset press, Blanket – to – blanket web offset press and Satellite type web offset press.	15
IV	**Classifications of Flexography Printing** 4.1 - Basic configuration of flexography machine. 4.2 - Types of flexography machine - In-line type flexography press, Stack type flexography press and Satellite type flexography press. 4.3 - Special application of flexography in Food Packaging.	14

V	**Classifications of Gravure & Screen Printing** 5.1 - Classification and types of Gravure machine – Gravure printing unit, printing cylinder, Doctor blade and Impression cylinder. 5.2 - Screen printing machine – Parts of screen printing press. 5.3 - Types of screen printing machines – Flat-bed hinged frame machines, Flat-bed vertical lift machines, Cylinder-bed machines, Container printing machines and Rotary screen machines.	**14**

Reference Books

1. Modern Lithography – Ian Faux – SITA Limited.
2. Printing Materials – Science and Technology – Thompson, Bob – PIRA Publication.
3. The Print Production Manual – J. Peacock, C. Berril and M. Barnard - PIRA.
4. The Printing Ink Manual – R.H. Leach and R.J. Pierce.
5. Flexography Primer – J. Page Cronnch – GATF Press.
6. Gravure Primer – Cheryk L Kasunich – GATF Press.
7. Hand Book of Print Media – Helmut Kipphan – Springer.
8. Introduction to Printing and Finishing – Hugh M Speirs – PIRA.
9. Screen Printing Primer – GATF Press.
10. Sheetfed Offset Press Operating – Lloyd P Dejidas and Thomas M Destree – GATFPress.

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Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : Diploma in Printing Technology

Subject Code : 48232

Semester : III Semester

Subject Title : VISUAL DESIGN AND DTP

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
VISUAL DESIGN AND DTP	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours

UNIT	Topic	Hours
I	Introduction to Design and Layout	15
II	Typography	15
III	Colour Dynamics	15
IV	Page Layout	14
V	Print Publishing	14
Test & Model Exam		7
Total		**80**

RATIONALE:

Visual design focuses on the aesthetics of a design and its related materials by strategically implementing images, colours, fonts, and other elements. A successful visual design does not take away from the content on the page or function. Instead, it enhances it by engaging users and helping to build trust and interest in the brand. Graphic design helps clarify meaning and ease communication from one person (persons) to another, and it does so in a few ways.

OBJECTIVES:

At the end of the study of III Semester the student will be able to:

- Know the history of Visual Communications.
- Acquire basic graphic skills in visual communication.
- Learn basics of Design and Layout.
- Understand Typography.
- Learn to organize content as per hierarchy.
- Use the types effectively with emphasis on readability and legibility.
- Understand the world of colour and its impact on readers.
- Learn layout principles for various printed products.
- Understand software used in the Graphic Arts industry.

VISUAL DESIGN AND DTP

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Introduction to Design and Layout** 1.1 - Design, Introduction to graphic design – goal, audience, venue and budget. 1.2 - Design elements - line, shape, value, format, texture-visual and tactile, type, color, and space-negative and positive. 1.3 - Design Principles, Balance - Symmetrical and asymmetrical - Optical Centre, Unity, Emphasis, Contrast, rhythm, proportion and harmony. 1.4 - Layout, definition, stages of layout - Visualization, Thumbnails, Rough layout and Comprehensive/final layout.	15
II	**Typography** 2.1 - Measurements followed in typography – Point and Pica. 2.2 - Anatomy of types –- X height, Ascender and descender, baseline and body width. Parts of type face - arm, stroke, bracket, bowl, terminal, serif, hairline, count, stem and spine. 2.3 - Type groups – sanserif, serif, novelty/decorative, black letter and roman old style, type face, type font, type family, type style, modern typefaces, display types, true type and open type. 2.4 - Initials - raised and dropped. 2.5 - Importance of Legibility and Readability, Vector fonts and bitmapped fonts, Logos and trademarks.	15
III	**Colour Dynamics** 3.1 - Fundamentals of Colour, visible spectrum, primary, secondary and tertiary colours, subtractive colour and additive colour theory, process colour, spot colour/pantone, tint, shade and tones. 3.2 - Colour wheel - purpose and diagram, monochromatic,	15

Unit	Name of the Topic	Hours
	analogue, complimentary, split complementary and triad colors. 3.3 - Psychological effects of colours – warm and cool colours. 3.4 - Setting the environment for Colour works - Color Temperature.	
IV	**Page Layout** 4.1 - Style of house, grids, guides and columns, templates, master page, style sheet, caption, quotes, headers and footers, folio, headlines, sub headlines and margins. 4.2 - Handling originals/photo - cropping, scaling and skewing. 4.3 - Layout format for Magazine, Newspaper, and Bookwork. 4.4 - Minimalism – Minimalistic approach in design.	**14**
V	**Print Publishing** 5.1 - Dummy preparation, proof reading, proof reading marks, printers mark - crop, trim, bleed and registration, considerations for print production. 5.2 - Designing of other printed products – brochure, leaf let, visiting card, invitation, booklet and folders. 5.3 - Tools and applications of Photoshop, Illustrator, CorelDraw, Adobe In-design, Quark Xpress . 5.4 - Understanding file formats - TIFF, JPEG, PDF, GIF, EPS and PNG.	**14**

Reference Books

1. Fundamentals of copy and layout (third edition): National text book company, Illinois,USA
2. Exploring Publication design: by Poppy Evans – Publisher: Thomson – Delmar learning;UK
3. Exploring Typography: by Tova Rabinowitz – Publisher: Thomson – Delmar learning; UK
4. Typography and typesetting- van Nostrand Reinhold,Newyork
5. Magazine Design-Stacey king-Rockport Publishers.

.Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks.A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48233

Semester : III Semester

Subject Title : DIGITAL PREPRESS

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
DIGITAL PREPRESS	6	96	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Digital Prepress – Introduction	17
II	Digital Photography & Digital Proofing	18
III	Digital Image Assembly and Data Formats	18
IV	Colour Management	18
V	Computer to Plate systems	18
Test & Model Exam		7
Total		**96**

RATIONALE:

With the advert of computers and its integration with the prepress systems made the CTP work flow and the way for digital imposition of pages with more advanced facilities. The colour management applications ensure for better colour reproduction with consistency in printing. CIE lab colour space and the colour measurement by spectrodensitometer are becoming important and being implemented by all the printers. The PDF and JDF workflows used in print production for better management of files and CIP3&CIP4 integration helps the organization in optimizing the task in digital prepress.

OBJECTIVE:

At the end of the study of III Semester the student will be able to :

- Know the Fundamentals of Digital Prepress Techniques.
- Understand the Importance of Input and Output Resolution.
- Learn the Digital Photography and Flatbed Scanner.
- Learn the Image Capturing and Scanning Process.
- Understand the Sheet Assembly, Imposition and Raster Image Processing.
- Understand Imposition Software and their Workflow.
- Study the Colour Management Concepts and Colour Measuring Devices.
- Learn the Digital Proofing and Press Proofing Process.
- Understand the Computer to Plate Technology.
- Provide basic understanding CTP plates and lasers.
- Learn the Preflight Technology and Workflows.

DIGITAL PREPRESS

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Digital Prepress – Introduction** 1.1 - Digital Description of the Printed page - Elements of Digital Page – Integration of Text, Images, Graphics, Layout and Prepress checklist. 1.2 - Dot Shapes – Round, square, elliptical and composite shapes, Amplitude Modulation /Frequency Modulation Screening - Difference between AM and FM screening and Benefits of FM screening. 1.3 - Input and Output Resolution, Image - dependent Effects and Corrections – Spreads and Chokes, Trapping, Moire and interference of dot pattern, Under Colour Removal, Gray Component Replacement, and Unsharp Masking Techniques. 1.4 - Desktop Publishing – Introduction to DTP, Components of DTP – Software – Pagination Software – Designing software – Image correction and editing software.	17
II	**Digital Photography & Digital Proofing** 2.1 - Image capturing with Digital camera – Special features of Digital Camera – Tone Value Quantization, Focal length of lens and Aspect Ratio and Link up to a Computer. 2.2 - Charge Coupled Device and Complementary Metal Oxide Semiconductor - Definition and difference between CCD and CMOS. 2.3 - Scanner designs and models, Flat bed Scanners - Diagram, functions of scanners and advantages of flatbed scanner. 2.4 - Digitizing and Redigitizing - Various Redigitizing Techniques - Copy dot, Descreening and mixed mode. Digital Proofs and Press Proofs.	18

III	**Digital Image Assembly and Data Formats** 3.1 - Page Assembly and Imposition - Digital assembly techniques of CTF and CTP. Imposition - Image register and alignment, Imposition plans - Sheet wise, Work and turn and Work and tumble. 3.2 - Raster Image Processor (RIP) - Workflow diagram – Interpreter, Renderer, Rasterizer and Bitmap. 3.3 - Data Formats - Bitmap & Vector, Applications of storage media - Data distribution, Archiving and Backup or transport.	**18**
IV	**Colour Management** 4.1 - Definition of Colour, Colour Management and Needs - Targets of Print Colour Management. 4.2 - CIE Chromaticity Diagram - CIE Lab Values. Colour perception and colorimetric description of colour. 4.3 - Image Reproduction Process using Colour Management - Implementing Colour Management, 4.4 - Diagram for Colour perception and the colorimetric description of colour and 3cs' of colour management.	**18**
V	**Computer to Plate systems** 5.1 - Computer to Plate Systems – Advantage of CTP, Components of Computer to Plate system. 5.2 - Workflows - PDF and JDF - Portable Document Format, Job Definition Format and their advantages. Preflighting - Preflighting techniques, the process and preflighting checks. 5.3 - Lasers in CTP – UV, Violet, Thermal and Computer to plate technology for flexography, gravure and screen printing processes. 5.4 - Printing plates for Digital Imaging - Plates used in CTP - Silver halide plates, Photopolymer plates, Thermal plates, Inkjet plates - Automatic plate processor diagram and its functions.	**18**

Text Book / Reference Book :

1. The Art of Colour - by Johannes Ittem.
2. Digital Colour Printing Technology - by Biswanath Chakkaravarthy.
3. Colour and its Reproduction - by Gray and Field.
4. Colour and Quality - by Heidelberg
5. Computer to Plate Primer - by Richard M Adams and Frank J Romano.
6. Desk Top Publishing - by Ron Strutt and Kirty Wilson Davis.
7. Digital Image - by A Practical Guide – by Adele Drobler, Greenberg and Seth.
8. Electronic Colour Separation – by Dr. R. K. Molla.
9. Introduction to Prepress – by Hugh M. Speirs.
10. Pocket Guide to Colour with Digital Application - by Thaomas E Schildgen, Frank Beah.
11. The PDF Print Production Guide - by Joseph Marin and Julie Sheffo.
12. Understanding Digital Colour – by Phol Green.
13. Understanding Digital Imposition – by Hal Hinderliter.

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48234

Semester : III Semester

Subject Title : PRINTING PRIMER PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PRINTING PRIMER PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

In this laboratory the students get practical knowledge in sheet-fed offset machines, flexography machines, gravure machines and screen printing machines. They will do practical exercises in all these machines from which they can know how to run a job in each machines. They can also know the types of inks, substrates to be used for each printing processes. From the lab they know the basic practical knowledge and how to run printing processes.

OBJECTIVES:

At the end of the study of III Semester the student will be able to:

1. Perform plate & blanket mounting operations in sheet-fed offset machine.
2. Perform make ready operations and perform single colour printing in sheet-fed offset machine.
3. Perform plate mounting in flexography printing machine.
4. Perform make ready operations and perform single colour printing in flexography machine.
5. Perform setting & changing of doctor blade in gravure printing machine.
6. Perform plate cylinder mounting & impression setting in gravure printing machine.
7. Print single colour in gravure printing machine.
8. Prepare screen stencil by direct method.
9. Prepare screen stencil by direct / indirect method.
10. Print on various substrates using screen printing.

PRINTING PRIMER PRACTICAL

Contents: Practical

List of Exercises

1. Plate & Blanket mounting in sheet-fed offset machine.
2. Preparation of Dampening unit
3. Make ready operations and single color printing in sheet-fed offset machine.
4. Plate mounting in flexography printing machine.
5. Make ready operations in flexography machine.
6. Plate cylinder mounting in gravure printing machine.
7. Direct method of stencil preparation for screen printing.
8. Direct / Indirect method of stencil preparation for screen printing.
9. Printing on various substrates in screen printing.
10. Substrates/print recognition of various printing processes.

List of Equipments

- Single color sheet-fed offset / Mini offset printing machine - 1No.
- Flexography printing machine - 1 No.
- Gravure printing machine / Gravure Cylinder - 1 No.
- Screen-printing table (Manual) - 1 No.
- Exposing Frame - 1 No.

Materials required:

- Paper, board & various substrates.
- Various printed samples.
- Photo polymer plates.
- Double sided adhesive tapes.
- Doctor blade.
- Offset, flexography, gravure & screen printing inks.
- Offset blanket.
- Plastic films / Paper (Roll to Roll).
- Screen mesh.
- Thinner.

- Screen frame, squeegee.
- Stencil and preparation materials.
- Cleaning agents and cloth.

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

MODEL QUESTION PAPER

1. Plate & Blanket mounting in sheet-fed offset machine and write the procedure for the same.
2. Preparation of Dampening unit and write the procedure for the same
3. Make ready operations and single color printing in sheet-fed offset machine and write the procedure for the same.
4. Plate mounting in flexography printing machine and write the procedure for the same.
5. Make ready operations in flexography machine and write the procedure for the same.
6. Plate cylinder mounting in gravure printing machine and write the procedure for the same.
7. Direct method of stencil preparation for screen printing and write the procedure for the same.
8. Direct / Indirect method of stencil preparation for screen printing and write the procedure for the same.
9. Printing on various substrates in screen printing and write the procedure for the same.
10. Substrates/print recognition of various printing processes and write the procedure for the same.

The college authority should ensure the safety to all the students during the lab practical.

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STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : Diploma in Printing Technology

Subject Code : 48235

Semester : III Semester

Subject Title : DESIGN STUDIO PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
DESIGN STUDIO PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

Within the printing technology, it's important to have a good understanding of graphics and what types are acceptable for different printing methods. This practical provides the students with a general background in the types of graphics, files, fonts and color formats that may be used within the printing industry. Students may cover everything from CMYK and RGB color graphics to setting print margins and transferring font files.

OBJECTIVES:

At the end of the study of III Semester the student will be able to:

1. Design 2D/3D shapes: Table / chair / cupboard / speaker box / gift box using lines,shapes.
2. Create and apply texture to the given 2D/3D object.
3. Create initials like dropped, raised.
4. Design parts of type face (serif, apex, bowl, etc.) with ascender & descender
5. Modify typefaces for display types by using options like type style, skew, rotate, distort,fill and stroke.
6. Create illusion using lines/colors.
7. Create a logo for an organization using words, symbols, initials, combinations.
8. Design additive and subtractive color wheels.
9. Create duotone image and monochrome image from a color original.
10. Design a visiting card using design elements.

DESIGN STUDIO PRACTICAL

Contents: Practical

List of Exercises

1. Design 2D/3D shapes: Table / chair / cupboard / speaker box / gift box using lines,shapes.
2. Create and apply texture to the given 2D/3D object.
3. Creating initials like dropped, raised.
4. Design parts of type face (serif, apex, bowl, etc.) with ascender & descender
5. Modify type faces for display types by using options like type style, skew, rotate, distort,fill and stroke.
6. Create illusion using lines/colors.
7. Creating a logo for an organization using words / symbols / initials / combinations.
8. Design additive and subtractive color wheels.
9. Create duotone image and monochrome image from a color original.
10. Design a visiting card/invitation/Greeting Card using design elements.

LIST OF EQUIPMENTS

System Requirements

Hardware: minimum 1 GB RAM,

80 GB HDD Operating System:

Linux/Windows XP and Above

Software: Free Open Source Software (FOSS) or Proprietary Software.

Free Open Source Software (FOSS):

For Vector Drawing – Inkscape

For Image Editing – Gimpshop/Photo Plus6.

Proprietary Software:

For Vector Drawing - Corel Draw/Adobe Illustrator

For Image Editing - Adobe Photoshop/Indesign.

BOARD PRACTICAL EXAMINATIONS

Note:

- The student should be given proper training in all the exercises. All the exercises should be completed before the examinations.
- The student should maintain observation note book / manual and record notebook. The record note book should be submitted during the Board Practical Examinations. Common printout for the record note book should not be allowed. Individual student output for every exercise should be kept in the record note book.
- All exercises should be given in the question paper and student is allowed to select any one by lot. All exercises with the hard copy of the template related to the exercise should be provided by the external examiner for the examination. Template can be varied for every batch.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output Printout / Handout ^	20
4.	Viva Voce	10
	Total	**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48236

Semester : III Semester

Subject Title : DIGITAL PREPRESS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
DIGITAL PREPRESS PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

This subject is aimed at providing basic understanding of the fundamentals of practical sections; mainly designing logo, brochure, carton, image editing and pre-flighting technique.

The topics covered are based on the syllabus for Diploma in Printing Technology. The subject is planned to include sufficient practices which would help the student to understand the principles of Digital Prepress.

OBJECTIVES:

At the end of the study of III Semester the student will be able to:

1. Create a logo using FOSS software.
2. Redraw a logo using vector drawing software.
3. Draw a tray/tube style carton using vector drawing software.
4. Redesign a given tray/tube carton using vector drawing software
5. Apply UCR, GCR and colour separate the scanned Image using image editing software.
6. Create a multicolour invitation/certificate using image editing software
7. Performing the pagination and imposition for printing the job using imposing software
8. Check the page setup for a given file.
9. Perform an image clipping path in FOSS software
10. Create a 4 page folder using FOSS software.

DIGITAL PREPRESS PRACTICAL

Contents: Practical

List of Exercises

1. Create a logo using FOSS software.
2. Redraw a logo using vector drawing software.
3. Draw a tray/tube style carton using vector drawing software.
4. Redesign a given tray/tube carton using vector drawing software
5. Apply UCR, GCR and colour separate the scanned Image using image editing software.
6. Create a multicolour invitation/certificate using image editing software
7. Performing the pagination and imposition for printing the job using imposing software
8. Check the page setup for a given file.
9. Perform an image clipping path in FOSS software
10. Create a 4 page folder using FOSS software.

System Requirements

Hardware: Minimum 2 GB RAM, 320 GB HDD

Operating System: Windows XP / 7 and Above

Software: FOSS or Proprietary

FOSS: Inkscape, Scribus - Vector Drawing

FOSS: Gimpshop, Photo Plus6 - Image Editing

Proprietary: CorelDraw, Photoshop, Illustrator, Quark Xpress and Indesign.

List of Equipment / Software

- Digital Camera - 1 No.
- Colour Ink jet Printer - 1 No.
- Black Colour Laser Printer - 1 No.
- Software
- Computer systems

Materials Required

- Paper
- Color toner cartridges

- Black toner cartridge for laser printer
- CDs/DVDs/USB flash drive/memory cards.

BOARD PRACTICAL EXAMINATIONS

Note:

- The student should be given proper training in all the exercises. All the exercises should be completed before the examinations.
- The student should maintain observation note book / manual and record notebook. The record note book should be submitted during the Board Practical Examinations. Common printout for the record note book should not be allowed. Individual student output for every exercise should be kept in the record note book.
- All exercises should be given in the question paper and student is allowed to select any one by lot. All exercises with the hard copy of the template related to the exercise should be provided by the external examiner for the examination. Template can be varied for every batch.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output Printout / Handout ^	20
4.	Viva Voce	10
	Total	**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48237

Semester : III Semester

Subject Title : PRINT PRODUCTION PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PRINT PRODUCTION PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

The designing of this laboratory at III semester covering the content of print production stages is to make the students to get the feel of the materials used in printing. The exercises designed in the laboratory also make the students to learn the concepts at the early stages of their studies in order to have wider knowledge in the forthcoming semesters.

OBJECTIVES:

- The incoming students of III semester can learn and feel the printed samples by doing the exercises one by one and to learn the step by step operations involved in the making of a printed product.
- Familiarization with the printing materials used in the print making process right from prepress and post press.
- To learn the operations involved in various stages of print production.
- Understand the software's used in designing of printed products
- Lean the various printing process involved and their job suitability
- Acquiring knowledge on the selection of materials for various printed products
- Studying the properties of paper, Board, Inks and other printing materials involved in the print production laboratory.

PRINT PRODUCTION PRACTICAL

Contents: Practical

List of Exercises

1. Prepare a dummy for promotional leaflet or 4 pages/8 pages folder
2. Prepare a layout for leaflet or 4 pages/8 pages folder incorporating Images, Text and Graphics
3. Prepare a general estimate for promotional leaflet or 4 pages/8 pages folder
4. Scan an original using flat bed scanner or insert an image from Digital Camera / Mobile
5. Design single page invitation using template
6. Prepare Cover page and contents page for newsletter
7. Design a promotional leaflet or 4 pages/8 pages folder
8. Do the proof reading and mark corrections using proofreading symbols
9. Print the leaflet or 4 pages/8 pages folder in the chosen printing method
10. Do the cutting, folding and finishing operations on printed the leaflet

System Requirements

Hardware: Minimum 2 GB RAM, 320 GB HDD

Operating System: Windows XP / 7 and Above

Software: FOSS or Proprietary

FOSS: WPS Office – Office Suite

FOSS: Inkscape, Scribus - Vector Drawing

FOSS: Gimpshop, Photo Plus6 - Image Editing

Proprietary: Microsoft Office, CorelDraw, Photoshop, Illustrator, Quark Xpress and Indesign.

Hardware:

- Computer systems – 15 Nos.
- Digital Camera/Mobile – 1 No.
- Flatbed scanner – 1 No.
- Cutting Machine – 1 No.

Materials:

- Maplitho papers – 70 gsm/80gsm – 2 Reams

- Art Paper – 135 gsm – 1 Ream
- Pulp Board & Art Board – 200 gsm – Each 100 Nos.
- Offset Process Ink set – 2 Nos.
- Screen Printing Color Ink – 2 Nos.
- Binding and finishing Materials
- Image carriers for Offset and Screen Printing

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

IV SEMESTER

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48241

Semester : IV Semester

Subject Title : OFFSET PRINTING TECHNOLOGY

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
OFFSET PRINTING TECHNOLOGY	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Feeding Unit in Sheetfed Offset Press	14
II	Printing Unit in Sheetfed Offset Press	15
III	Delivery Unit in Sheetfed Offset Press	14
IV	Webfed Offset Press – Infeed and Web Guiding Devices	15
V	Webfed Offset Press – Delivery Unit	15
Test & Model Exam		7
Total		**80**

RATIONALE:

This subject gives the detailed study about the types of offset printing. Nowadays offset printing is most commonly used in the printing industry. This subject covers about the sheet-fed and web-fed offset printing techniques. This subject helps to know about all the units, working principles and auxiliary operations performed in sheet-fed and web-fed machines. The thorough knowledge in offset machines helps the students to have easy employment opportunities in India or in Abroad.

OBJECTIVES:

At the end of the study of IV Semester the student will be aware of:

- Basic principles of offset printing process.
- Structure and type of offset printing presses.
- Various cylinders in offset printing unit.
- Inking and dampening systems of offset press.
- Feeding unit of offset press.
- Print unit of offset press.
- Delivery unit of offset press.
- In feed unit of a web fed offset press
- Web control and delivery unit of web offset press.
- Types of dryers, chill rollers and folders in web offset presses.
- Auxiliary equipments used in web offset press.

OFFSET PRINTING TECHNOLOGY

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Feeding Unit in Sheetfed Offset Press** 1.1 - Introduction to Sheet Control Devices 2.2 - Types of Feeders – Friction feeders and Suction feeders, Types of Suction Feeders – Single sheet feeder and Stream Feeder. 2.3 - Feeder Head Components – Feeder Head, Air blast Nozzle, Rear Pickup Suckers, Forwarding Pickup Suckers, Sheet Steadiers, Separator Brushes and Fingers. Feed board elements – metal wheel, rubber tyred wheel, brush wheels, tapes and ball smoothener. 2.4 - Sheet Registering Devices – Front lay and Sidelay, Types of Front lay and Side lay. Sheet detectors – double sheet, no sheet and cross sheet detectors. 2.5 - Sheet Insertions Devices – Swing Arm, Rotary, Tumbler and Overfeed Grippers.	14
II	**Printing Unit in Sheetfed Offset Press** 2.1 - Construction and functions of Plate Cylinder, Blanket Cylinder, Impression Cylinder, Transfer Cylinder and Delivery Cylinder. 2.2 - Types of Blankets: Conventional blanket and Compressible blanket. 2.3 - Inking System – Construction, Roller setting methods: Form Roller to Oscillator and Form Roller to Plate cylinder. 2.4 - Inking System Problems - Roller Streaks and Glazed Rollers. 2.5 - Dampening System – Construction, Composition of Dampening Solution - pH, Conductivity, Dampening system and Roller setting. Types of Dampening System: Conventional or Intermittent, Continuous dampening system and Dahlgren dampening system.	15
III	**Delivery Unit in Sheetfed Offset Press** 3.1 - Delivery Section – Delivery Assist Devices: Suction Slow Down Rollers, Blow Downs, Wedges, Skeleton Wheels, Star Wheels and	14

	Anti set-off devices. 3.2 - Make ready operations in offset printing machines: Pre-makeready operations, Makeready operations, Cleaning and maintenance of inking and dampening rollers 3.3 - Safety precautions in press room: Safety Switches, safety guards. and Crawling/inching while cleaning/plate fixing. 3.4 - Press room safety: Housekeeping – cleaning of floor and Cleaning of press areas.	
IV	**Webfed Offset Press – Infeed and Web Guiding Devices** 4.1 - Types of Reel Stands – Single reel stands, Double reel stands and Three reel stands. 4.2 - Automatic Splicers – Zero Speed Paster, Working Principle and function of Zero Speed Paster, Purpose of Festoon. Flying Paster – Working Principle and Function of Flying Paster. 4.3 - Web Control – Dancer Roller, Metering Roller, Box Tilt, Web Break Detectors and Bustle Wheel. 4.4 - Turner bars, reel inspection and safety in web offset machine.	**15**
V	**Webfed Offset Press – Delivery Unit** 5.1 - Web Offset Dryers – High Velocity Hot Air and Infrared Dryer and purpose of dryers. 5.2 - Chill Rollers –Jacketed Chill rolls and applications and purpose of chill roller. 5.3 - Types of Folders – Former Folder, Double Former Folder, Jaw Folder, Chopper Folder, Combination Folder and Ribbon Folder. 5.4- Auxiliary Equipments – Stackers, Bundlers, Sheeter, Perforators and Imprinters.	**15**

Text Book / Reference Book:

1. A Manual for Lithographic Press Operations – A.S. Porter
2. Handbook of Print Media – Dr. Helmut Kipphan.
3. Sheetfed Offset Press Operating – Lloyd P. Dejidas and Thomas M. Destree, GATF.
4. Offset Lithography – S. Jaganathan, K.T. Chary.
5. Web Offset Press Operating – Danial G Wilson, GATF.
6. Modern Lithography Printing – Ian Faux

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48242

Semester : IV Semester

Subject Title : GRAVURE, FLEXOGRAPHY AND SCREEN PRINTING

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
GRAVURE, FLEXOGRAPHY AND SCREEN PRINTING	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Image Carriers Preparation	14
II	Flexography Inking Systems	14
III	Flexography Plates and Substrates	15
IV	Gravure Printing	15
V	Screen Printing	15
Test & Model Exam		7
Total		**80**

RATIONALE:

The industry is dominated by three separate and distinct processes - flexography, gravure, and screen printing. The five major printing processes are distinguished by the method of image transfer and by the general type of image carrier employed. Depending upon the process, the printed image is transferred to the substrate either directly or indirectly. In direct printing the image is transferred directly from the image carrier to the substrate, examples of direct printing are gravure, flexography, screen printing.

Each of the printing processes has particular properties, characteristics and associated costs which make it more suitable for certain classes of work than others.

It has to be acknowledged, however, that there is a considerable amount of common ground where two or more printing processes may regularly be used to produce a certain printed product - eg - books printed by offset litho, flexography and letterpress, newspapers by offset litho (cold-set) and flexography, reel-fed labels by flexography and letterpress, periodicals printed by sheet-fed, heat-and cold-set web offset, also web-fed gravure.

OBJECTIVE:

At the end of the study of IV Semester the student will be able to:

- Learn the Basic Principles of Gravure, Flexography and Screen Printing Process.
- Understand the Main Sections of Gravure, Flexography and Screen Printing Process.
- Know the Image Carrier Preparation Methods of Gravure, Flexography and Screen Printing Process.
- Understand the best applicable Method of Image Carrier Preparation.
- Study the Flexography Press Operations in detail.
- Understand the substrates used for Flexography Printing.
- Learn in detail about the Gravure Press Operations.
- Know about the inks used for Gravure Printing.
- Understand the Screen Printing Operations.
- Learn the Screen Printing Press, their types and applications.

GRAVURE, FLEXOGRAPHY AND SCREEN PRINTING

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Image Carriers Preparation** 1.1 - Flexography Image Carrier Preparation: Structure of Flexographic Plate, Plate Preparation Methods, Sheet Photopolymer Plates preparation and Liquid Photopolymer Plates Preparation. 1.2 - Gravure Image Carrier Preparation: Gravure Cylinder manufacture, Copper plating method, Gravure Cylinder Preparation Methods - Electromechanical Engraving method of Gravure cylinder preparation and Laser Engraving method of Gravure cylinder preparation. 1.3 - Screen Printing Image Carrier Preparation: Screen Fabrics, Screen preparation by Direct Method, Screen preparation by Indirect / Transfer method and Screen preparation by Direct / Indirect method.	14
II	**Flexography Inking Systems** 2.1 - Flexography Inking Systems: Ink Metering, Anilox Roller, Types of Flexography Inking systems 2.2 - Types of Anilox Roll Cells, Anilox Roll specifications - Cell count, Cell depth, Cell volume, Types of Anilox roll based on cell shapes Inverted Pyramid shape cells, Quadrangular shapes cell and Trihelical shape cells. 2.3 - Types of Anilox Rolls based on roller surfaces Laser engraved ceramic anilox rolls and Conventional or mechanically engraved chrome anilox rolls, Different types of Anilox Roll Cleaning Systems. 2.4 - Selection of Suitable Anilox Roller: Factors to be considered in selection of anilox roller.	14
III	**Flexography Plates and Substrates** 3.1 - Flexography Plates - Structure and Mounting	15

	Techniques, Flexography plates: Metal backed plates, Magnetic plates, Flexographic Plate Mounting: Plate Mounting Fundamentals, Sticky back plate mounting. 3.2 - Types of Flexography Plate cylinders - Sleeve Technology, Direct laser engraving Laser engraving on Rubber Rollers. 3.3 - Corona Treatment, Flexo Substrates - Paper and Paperboard stocks, Corrugated stocks, Plastic Films, Foils and Laminates.	
IV	**Gravure Printing** 4.1 - Gravure Drying System - Drying Chamber - Solvent Recovery Systems - Environmental Friendly Solvent Removal Systems. 4.2 - Doctor Blade - Structure, Types and Mechanisms of doctor blade. 4.3 - Impression Roller - Structure, Types and Mechanisms of Impression Roller. 4.4 - Gravure Presses - Gravure Packaging Presses, Gravure Label Presses and Gravure Publication Presses. 4.5 - Gravure Solvent based inks, Gravure Water based inks, Gravure UV and Gravure EB inks.	**15**
V	**Screen Printing** 5.1 - Mesh, Squeegee Selection, Mesh / Woven Screen Printing Fabric: Materials used for Screen Printing Fabrics, Squeegee selection: The squeegee, Squeegee selection - Shapes of squeegee blades, Squeegee hardness and Squeegee materials. 5.2 - Screen Pretreatment, Screen Tensioning / Stretching: Basic steps in Screen Tensioning, Stretching the Screen Printing Fabric - Manual Stretching and Machine Stretching. 5.3 - Screen Printing Inks - Types, Properties, Types of Screen Printing Inks for specific Application 5.4 - Screen Printing Applications: Screen Printing on Flat surfaces and Screen Printing on Curved Surfaces.	**15**

Text Book / Reference Book:

1. Flexographic Principles and Practice - by Flexographic Technical Associations, Inc. New York, 1980.
2. Rotogravure and Flexographic Printing Presses - by Herbert L. Weiss,
3. Modern Gravure Technology - by Harry B Smith, Pira International, U. K.
4. Screen Process Printing - by John Stephens, Blue Print, An Imprint of hapman and Hall, London.
5. Flexography Primer - by GATF.
6. Hand book of Printmedia - by Helmut kipphan
7. Flexography Primer - by Donna C. Muvihill, GATF
8. Gravure Primer - by Cheryl L. Kasumich, GATF
9. Screen Printing Primer - by Samuel Ingram, GATF

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : Diploma in Printing Technology

Subject Code : 48243

Semester : IV Semester

Subject Title : PRINT FINISHING AND CONVERTING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
PRINT FINISHING AND CONVERTING	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours

UNIT	Topic	Hours
I	Binding, Finishing and Enhancement– Introduction	15
II	Materials used in Binding	15
III	Forwarding Operations	15
IV	Binding Operations	14
V	Automation in Binding	14
Test & Model Exam		7
Total		**80**

RATIONALE:

Binding and finishing are those activities performed on printed material after printing. Binding involves the fastening of individual sheets together, while finishing involves additional decorative actions, such as die-stamping, embossing, etc. This subject gives a comprehensive knowledge to the students and offers placement opportunities to work in print finishing houses.

OBJECTIVES:

At the end of the study of IV Semester the student will be aware of:

- The various printed products and binding materials used for binding.
- The various end papers and securing methods.
- The various binding and finishing machines.
- The various binding and finishing tools and their uses.
- The various binding operations.
- The various binding styles.
- The sewing methods and edge decoration.
- The various finishing operations.
- The various automation processes in binding.

PRINT FINISHING AND CONVERTING

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Binding, Finishing and Enhancement– Introduction** 1.1 - Brief Introduction to Print Finishing. Classification of Book Binding – Quarter bound book, Half bound book – old style and new style and Full bound book. 1.2 - End Paper – Types and its uses - Single End Paper, Made End Paper, Reinforced End Paper, Cloth Joint End Paper and Zig Zag End Paper. 1.3 - Binding and Finishing Tools - Folder, Glue Brush, Paste Brush, Spring Divider, Needle, Tennon Saw, Hammer, Foot Rule, Knife, Bodkin, Piercer/Awl, Eyelet punch, Scissors, Carpenter's L –Square, Center Tool, Round Roll, Fillet and Type Holder. 1.4 - Lamination Machine - Different types of lamination machines - Dry Lamination, Wet lamination, Thermal Lamination 1.5 - Varnishing, Full varnishing and Spot Varnishing. Types of varnish - matt and gloss varnishing - water (Aqua) based, solvent based - UV and special effect varnish.	15
II	**Materials used in Binding** 2.1 - Ware House, Types of Ware House – White paper Ware House and Printed paper Ware House. 2.2 - Covering Materials – Binding cloth, Buckram cloth, Rexene, Leather, Paper fabric and PVC. 2.3 - Reinforcing Materials – Mull Cloth, Calico Cloth, Tapes and Cords. 2.4 - Securing Materials – Thread, Wire, Metal and Plastic Units. 2.5 - Adhesives – Paste, Glue, Synthetic Adhesive, Hot-melt and Gum. 2.6 - Book Finishing Materials – Gold leaf and Blocking foil.	15

III	**Forwarding Operations** 3.1 - Cutting, Trimming, Difference between Cutting and Trimming, Folding – Types of Folding – Folding-to-paper, Folding-to-Print and Lump Folding. 3.2 - Creasing, Gathering, Collating, Binder's/Collating mark, Inserting and Attaching of Plates and Maps. 3.3 - Perforating – Types of Perforation, Punching and Drilling, Numbering – Horizontal Numbering and Vertical Numbering. 3.4 - Die cutting and Slitting Operations. 3.5 – Head bands Edge Decoration, Types of Edges, Decoration – Coloring the Edge, Marbling and Edge guiding.	**15**
IV	**Binding Operations** 4.1 - Stitching – Side Stitching and Saddle Stitching. 4.2 - Sewing, Types of Sewing – French Sewing, Tape Sewing or Sewing on Tapes, Raised Cord Sewing or Flexible Sewing, Recessed Cord Sewing or Sawn-in Sewing, Two on & All along Sewing and Overcast Sewing. 4.3 - Loose Leaf Binding – Spiral Binding and Comb Binding. 4.4 - Perfect Binding – clamping station, milling station, gluing station, nipping station and delivery station. 4.5 - Case Binding – preparation of case and casing-in.	**14**
V	**Automation in Binding** 5.1 - Programmable Cutting Machine and its operations – machine bed, clamp, back gauge, knife and safety mechanisms. 5.2 - Folding Machine and its operations – buckle folding, knife folding and combination folding stations. 5.3 - Wire Stitching Machine and its operations – wire unwind, wire straightener, cutter block, saddle and wire clenchers. 5.4 - Rounding and Backing Machine and its operations – hopper, rounding station, backing station and delivery station. 5.5 - Gathering Machine and its operations.	**14**

Reference Books

1. Folding in Practice - by Alfred Furler.
2. Modern Book Binding - by Alex J. Vaughan.
3. Printing and Die Cutting - by Vanessa Bailey
4. Hand Book of Print Media - by Helmut Kippan Ed., Heidelberg.
5. Introduction to Printing and Finishing - by Hugh M. Spiers.
6. What the Printer should know about Paper - by Lawrence A. Wilson.
7. Printing Technology - by Michael Adams J. and Penny Ann Dohn.

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Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks.A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48244

Semester : IV Semester

Subject Title : PRINTING MATERIALS

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PRINTING MATERIALS	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Composition of Paper and Pulping Process	15
II	Manufacturing of Paper and Board	15
III	Paper, Board - Types, Sizes and Properties	15
IV	Printing Inks - Composition and Manufacturing	15
V	Ink Drying and Ink Problems	13
Test & Model Exam		7
Total		**80**

RATIONALE:

Paper plays an important role in the modern world. For many years, it has been the chief medium for the communication of knowledge and ideas in a permanent form, so essential to the development of commerce, industry and education. There has been an increasing demand as a medium for protection and display of goods in the packaging industry. Without paper it is hard to imagine a printing industry for its present stage of development. Although, there is a growing amount of printing being carried out on plastic and metal substrates, paper is likely to be the printer most important basic material.

OBJECTIVE:

At the end of the study of IV Semester the student will be able to:

- Study the composition of paper.
- Learn manufacturing process of paper.
- Study the operations in paper making machine.
- Study quality of paper for different printing process.
- Understand the paper and board sizes.
- Study the properties of paper and board.
- Understand the raw materials of printing inks.
- Learn the properties of inks.
- Know about the various ink drying methods.
- Study about the various ink problems.

PRINTING MATERIALS

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Composition of Paper and Pulping Process** 1.1 - Paper: Description, Composition of paper: Raw materials for manufacturing of paper. 1.2 - Fibrous materials: Common paper making fibres - categories of fibres: characteristics of softwood pulps and hardwood pulps. 1.3 - Manufacture of paper: Pulping Process – Three basic methods of pulping process: Mechanical pulping, Mechanical / Chemical pulping and chemical pulping process. 1.4 - Bleaching process, Stock preparation - Description - Breaking: Sizing agents, Loadings, Fillers, coloring materials and Chemical additives.	15
II	**Manufacturing of Paper and Board** 2.1 - Operations in paper making machine: Wet end, Head box, Slice, Dandy roll, Press section and Drying section. 2.2 - Paper finishing: Super calendaring, Coating: Types of coating methods. 2.3 - Board making: Raw materials for manufacturing of Board. 2.4 - Packing and Delivery - Precautions taken during packing and delivery.	15
III	**Paper, Board - Types, Sizes and Properties** 3.1 - Classifications of paper for printing - printing paper, writing paper, wrapping paper and specialty papers. Different types of Board - Pulp board, Straw board, Carton board, Art board, Chromo board and Corrugated board. 3.2 - Paper and Board sizes: - Crown, Double Crown, Demy,	15

	Double Demy, Royal and Imperial. 3.3 - Definition - Runnability Properties and Printability properties of paper and board. 3.4 - Paper problems - Powdering and Pilling Problem, Linting, Dusting, and Picking problem.	
IV	**Printing Inks - Composition and Manufacturing** 4.1 - Raw materials used for manufacturing of printing inks - Pigments, Dyes, Vehicles, Driers, Solvents, Ink and Additives. 4.2 - Manufacturing of Offset printing inks using three roll dispersion mill. 4.3 - Inks requirements for different printing processes - Letter press inks, Flexo inks, Gravure inks, Offset inks and Screen inks. 4.4 - Ink properties - Color properties – opaque and transparent ink, Flow properties and working properties of inks.	**15**
V	**Ink Drying and Ink Problems** 5.1 - Drying methods - Drying by Penetration/Absorption, Oxidation, Polymerization, Evaporation, Gellation, Solidification and Precipitation. 5.2 - Ink problems - Mottle, Chalking, Chemical ghosting, mechanical ghosting problems, trapping, hickeys, picking, piling, set-off, tinting, scumming, strike through and show through. 5.3 - Causes and remedies for the above Ink problems.	**13**

Text Book / Reference Book:

1. Printing Paper and Ink - Charles Finley.
2. The Print Production Manual - J. Peacock, C. Berril and M. Barnard - PIRA.
3. The Printing Ink Manual - R.H. Leach and R.J. Pierce.
4. What the Printer should know about Ink - Dr. Nelson Ra Eldred - GATF Press.
5. What the Printer should know about Paper - Lawrence A Wilson - GATF Press.
6. Flexography Primer - J. Page Cronnch - GATF Press.
7. Gravure Primer - Cheryk L Kasunich - GATF Press.
8. Hand Book of Print Media - Helmut Kipphan - Springer.
9. Introduction to Printing and Finishing - Hugh M Speirs - PIRA.
10. Sheetfed Offset Press Operating - Lloyd P Dejidas and Thomas M Destree - GATF Press.
11. Web Offset Press Operating - Daniel G Wilson and PIA / GATF staff.

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48245

Semester : IV Semester

Subject Title : OFFSET MACHINES PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
OFFSET MACHINES PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

In this lab the students can have the detailed knowledge about the sheet-fed offset printing. They can know the how to set the sheet handling, forwarding, insertion devices of the offset machines. They can able to set the feeder mechanisms, delivery mechanisms, inking units rollers and dampening unit rollers. This lab ensures the students about how to print single colour offset machines. From this lab the students could how the dampening solution preparation ink mixing, trapping printing ink problems, etc. This laboratory for working in latest technology offset machines later.

OBJECTIVES:

At the end of the study of IV Semester the student will be able to:

1. Perform feeder setting in single colour sheet-fed offset printing machines.
2. Perform delivery setting in single colour sheet-fed offset printing machines.
3. Set of sheet registering devices.
4. Perform roller setting in dampening system.
5. Perform roller setting in inking system.
6. Prepare fountain solution and dampening system.
7. Prepare the inking system.
8. Perform make ready procedures for single colour printing.
9. Perform two colour printing in single colour sheet-fed offset printing machine.
10. Learn cleaning of dampening and inking systems.

OFFSET MACHINES PRACTICAL

Contents: Practical

List of Exercises

1. Feeder setting in single color sheet-fed offset printing machines.
2. Delivery setting in single color sheet-fed offset printing machines.
3. Setting sheet registering devices.
4. Roller setting in dampening system.
5. Roller setting in inking system.
6. Preparation of fountain solution and dampening system.
7. Preparation of inking system.
8. Make ready procedures for single color printing.
9. Single color printing in sheet-fed offset printing machine.
10. Cleaning of dampening and inking systems.

List of Equipment

- Single color sheet-fed offset printing machine - 1 No.

List of Instrument

- Micrometer - 1 No.
- Durometer - 1 No.
- pH Meter - 1 No.
- Densitometer - 1 No.
- Conductivity Meter - 1 No.
- Packing Gauge - 1 No.
- Magnifier - 1 No.

List of Materials

- Offset Plates.
- Inks.
- Papers.
- Press work chemicals.
- Molleton cloth.
- Waste cloth.
- Packing sheets.

- Blanket.
- Anti-setoff powder.
- Ink knife.

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name **:** DIPLOMA IN PRINTING TECHNOLOGY

Subject Code **:** 48246

Semester **:** IV Semester

Subject Title **:** DESKTOP PUBLISHING FOR PRINT PRODUCTION PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
DESKTOP PUBLISHING FOR PRINT PRODUCTION PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

This subject is aimed at providing basic understanding of the fundamentals of practical sections; mainly designing a posters, flyers, brochures, Letter head, Bills / Vouchers and Invitation card / greeting card.

The topics covered are based on the syllabus for Diploma in Printing Technology. The subject is planned to include sufficient practices which would help the student to understand the principles of desktop publishing for print production.

OBJECTIVES:

At the end of the study of IV Semester the student will be able to:

1. Creating master page for the given layout (setting grid, margin and columns)
2. Print, proof and correct the saved page.
3. Creating Cover and Title page
4. Creating style sheets and Table of Content
5. Designing Letter head
6. Designing Pamphlet
7. Designing Envelop & greeting card
8. Designing Bills / Vouchers
9. Designing an Advertisement
10. Designing Labels in multiple steps

DESKTOP PUBLISHING FOR PRINT PRODUCTION PRACTICAL

Contents: Practical

List of Exercises

1. Creating master page for a book.
2. Creating Cover and Title page
3. Creating style sheets and Table of Content
4. Designing Letter head
5. Designing Pamphlet/brochure
6. Designing Envelop & greeting card
7. Designing a Certificate
8. Designing Bills / Vouchers
9. Designing an Advertisement
10. Designing Labels in multiple steps

System Requirements

Hardware: Minimum 2 GB RAM, 500 GB HDD

Operating System: Windows XP and Above

Software: FOSS or Proprietary

FOSS: Scribus, Inkscape

Proprietary: Adobe Indesign, QuarkXpress

BOARD PRACTICAL EXAMINATIONS

Note:

- The student should be given proper training in all the exercises. All the exercises should be completed before the examinations.
- The student should maintain observation note book / manual and record notebook. The record note book should be submitted during the Board Practical Examinations. Common printout for the record note book should not be allowed. Individual student output for every exercise should be kept in the record note book.
- All exercises should be given in the question paper and student is allowed to select any one by lot. All exercises with the hard copy of the template related to the exercise should be provided by the external examiner for the examination. Template can be varied for every batch.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output Printout / Handout ^	20
4.	Viva Voce	10
	Total	**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : Diploma in Printing Technology

Subject Code : 48247

Semester : IV Semester

Subject Title : PRINT FINISHING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
PRINT FINISHING PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

Binding and finishing are those activities performed on printed material after printing. Binding involves the fastening of individual sheets together, while finishing involves additional decorative actions, such as die-stamping, embossing, etc. This subject gives a comprehensive knowledge to the students and offers placement opportunities to work in print finishing houses.

OBJECTIVES:

At the end of the study of IV Semester the student will be able to:

1. Prepare an End Papers.
2. Bind a book by saddle and side stitching method.
3. Perform perforation and numbering.
4. Prepare a quarter bound cut flush book using French sewing.
5. Prepare of quarter bound turned-in book using tape sewing.
6. Prepare a half bound old style book using recessed cord sewing.
7. Prepare of half bound new style book using recessed cord sewing.
8. Prepare of full bound book using raised cord sewing.
9. Prepare a case bound book.
10. Perform edge decoration operations.

PRINT FINISHING PRACTICAL

Contents: Practical

List of Exercises

1. Preparation of End Papers.
2. Binding a book by saddle and side stitching method.
3. Performing perforation and numbering.
4. Preparing a quarter bound cut flush book using French sewing.
5. Preparation of quarter bound turned-in book using tape sewing.
6. Preparing a half bound old style book using recessed cord sewing.
7. Preparation of half bound new style book using recessed cord sewing.
8. Preparation of full bound book using raised cord sewing.
9. Preparing a case bound book.
10. Performing edge decoration operations.

List of Tools and Equipment:

- Cutting Machine
- Wire Stitching Machine
- Perforating Machine
- Hard Press
- Needle
- Bodkin
- Scissors
- Binding Knife
- Scale

Materials required:

- Paper
- Calico
- Straw Board
- Thread, Tapes
- Cords
- Paste
- Fevicol

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

V SEMESTER

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48251

Semester : V Semester

Subject Title : E-PUBLISHING

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
E-PUBLISHING	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Introduction - Electronic Publishing	15
II	PDF Production, Copy Editing and Proof Reading	15
III	HTML	14
IV	XML	14
V	Web to Print	15
Test & Model Exam		7
Total		**80**

RATIONALE:

E publishing gives authors the opportunity to reach a global audience in a cost effective manner. Also, E publishing is the happening phenomenon in the present day knowledge economy. This has mainly been due to the phenomenal success of the devices upon which we read e-books—digital, e-readers, tablet computers, smartphones, etc.—which bring with them the advantages of being convenient, portable, cost-effective and easy-to-use.

The digital publishing industry and e-books are bound to grow in importance in the coming years, especially with diminishing paper stocks, rising production costs and the advancement of technologies used to create feature-rich e-books.

Due to the comprehensive topics covered under this subject students can acquire an enormous amount of knowledge. Students attain scope to be placed in E-Publishing industries installed with sophisticated machineries.

OBJECTIVE:

At the end of the study of V Semester the student will be able to :

- Provide a basic understanding of E-Publishing
- Learn the steps involved in E-publishing
- Introduce Various applications for PDF production
- Study the Proof Reading Marks and Copy Editing techniques
- Learn basic tags and syntax in HTML and XML
- Understand purpose of CSS and templates
- Learn to create a XML document
- Learn concepts of web to print
- Study types of networking and interfaces
- Learn the digital workflow and production management/monitoring system

E-PUBLISHING

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Introduction - Electronic Publishing** 1.1 - Introduction about E-publishing, Advantages and disadvantages of E-Publishing. 1.2 - Basic principles of E-book, List of various manufactures of E-book and Application of E-book. 1.3 - Steps involved for creation of e-book – Editing - Types of E-book editing – HTML compiler, PDF compiler, other compiler, Cover page design, E-book design, ISBN registration - Barcode, Copyright certification and Marketing. 1.4 - Marketing strategies - Ezines, Joint ventures, Pay-per-click search engines, Search engines and Press releases and news.	15
II	**PDF Production, Copy Editing and Proof Reading** 2.1 - Introduction about PDF, Application of PDF, PDF production using Adobe Indesign, PDF predefined presets. 2.2 - Steps involved in PDF production using Quark Xpress, Introduction about Adobe distiller and Steps involved PDF production using Adobe distiller. 2.3 - Copy editing, Qualification and duties of copy editor. 2.4 - Proof reading – Proof reading symbols and meaning and Methods of Proof reading.	15
III	**HTML** 3.1 - Introduction about HTML, Meaning for HTML, tools required to create HTML document, Steps for creation of HTML document. 3.2 - Basic tags of HTML: <HTML> tag, <HEAD> tag, <TITLE> tag and <BODY> tag. Font formatting tags: <B> tag, <I> tag, <U> tag, <P> tag, tag, <HR> tag, <EM> tag ,	14

	<TT> tag, <STRIKE> tag, <FONT> tag, <PRE> tag, <META> tag, <MARQUEE> tag, Header tags. 3.3 - <IMG> tag, <TABLE> tag, Anchor tag, List tags, <FORM> tag, <FRAME> tag – Image maps. 3.4 - Introduction about Cascading Style Sheet: Features of CSS – Types of CSS (External, Internal, Inline and Multiple style sheets)	
IV	**XML** 4.1 - Introduction about XML, Advantages of XML, XML data, Design of XML, Features of XML and Difference between XML and HTML. 4.2 - Basic XML tags and syntax and Examples of XML declaration method. 4.3 - Steps for creation of XML document and Rules and regulations of XML document. 4.4 - Advance XML Coding, C data, Encoding, Encoding errors, Name spaces, Declaring name space.	**14**
V	**Web to Print** 5.1 - Introduction about Web to print – Prepress process and Merits and demerits of web to print. 5.2 - Network concepts and Interfaces - network protocols TCP/IP, Client/Server concept, and three typical forms of network connectivity – Standalone networks, Internal networking and External networking. 5.3 - Classification of Network – Internet, Intranet, Extranet and Broad Band Networks. 5.4 - Production Management/Monitoring Systems - Purpose, Application, and Optimizing print production by automating manufacturing operation.	**15**

Text Book / Reference Book :

1. Handbook of Print Media - Helmut kipphan, Springer.
2. Electronic Publishing Guide to Selection · Volume 13- By Lynne S. Rosenthal
3. Electronic Publishing, Artistic Imaging, and Digital Typography - Roger Hersch Jacques André Heather Brown, Roger Hersch, Jacques Andre - Springer
4. PDF Explained - John Whitington - O'Reilly Media
5. McGraw-Hill's Proofreading Handbook - Laura Killen Anderson · 2005
6. Copyediting and Proofreading For Dummies- Suzanne Gilad · 2011- Wiley
7. The Pocket Book of Proofreading A Guide to Freelance Proofreading and Copy-Editing By William Critchley · 2006
8. HTML and CSS Design and Build Websites By Jon Duckett · 2011, Wiley
9. Learning XML By Erik T. Ray · 2009 – Publisher : O'Reilly Media
10. Xml: The Complete Reference By Williamson · 2001- Osborne McGraw-Hill
11. Computer Networks A Systems Approach By Larry L. Peterson, Bruce S. Davie · 2011

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48252

Semester : V Semester

Subject Title : ADVANCED PRINTING TECHNOLOGIES

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
ADVANCED PRINTING TECHNOLOGIES	6	96	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Digital Printing Technologies	17
II	Non-Impact Printing Technologies	18
III	Security Printing Features and Materials	18
IV	Special Printing Technologies	18
V	Advanced Printing Techniques	18
Test & Model Exam		7
Total		**96**

RATIONALE:

Advanced Printing technologies cover a wide range of latest technologies in the field of printing technology. Due to the comprehensive topics covered under this subject, students can acquire an enormous amount of knowledge on latest printing technologies. Students gain knowledge on latest printing technologies and have wide scope to be placed in printing presses installed with sophisticated machineries.

OBJECTIVE:

At the end of the study of V Semester the student will be aware of:

- Digital printing technologies and their processes.
- Direct imaging process & Computer to print process.
- Principles of Non–impact printing technologies.
- Types of NIP technologies.
- Design features of security printing process.
- Security inks and papers.
- Knowledge on Intaglio, Hybrid printing and Hologram printing process.
- Lenticular, Waterless printing and 3D printing.
- Knowledge on web to print and cloud printing
- IoT and AI concepts
- Remote Printing and its applications.

ADVANCED PRINTING TECHNOLOGIES

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Digital Printing Technologies** 1.1 - Digital printing – Definition, Scope and job suitability of Digital printing process. 1.2 - Basic principle of Computer-to-Film, Computer-to-Plate, Computer-to-Press and Computer-to-Print. 1.3 - Computer-to-Press – Working principle of Direct Imaging with once imageable master and Working principle of Direct Imaging with re- imageable master. 1.4 - Computer-to-Print – Working principle.	17
II	**Non-Impact Printing Technologies** 2.1 - Basic principle of Non-impact printing technology, Flow chart of NIP technology and Applications of NIP technology. 2.2 - Basic principle of Electrophotography – Imaging, Inking, Toner transfer, Toner fixing and Cleaning. 2.3 - Basic principle of Ionography – Imaging, Developing, Toner transfer, Toner fixing, Cleaning and Erasing. 2.4 - Basic principle of Thermography – Direct thermography, Transfer thermography, Working principle of thermal transfer and thermal sublimation printing systems and Properties of ink tonner for Thermography. 2.5 - Basic principle of Ink jet printing - Continuous ink jet and Drop on demand ink jet, Working principles of continuous ink jet and drop on demand ink jet and Properties of ink tonner for ink jet printing.	18
III	**Security Printing Features and Materials** 3.1 - Security design features - Pantograph screens, Void pantograph Screen, ODT - optical deterrent technology, Guilloches, Warning bands, Code safe, High resolution graphics and Padlock icon - Application of security printing. 3.2 - Security papers – Safety paper, Chemical reactive paper, Special papers, Water mark paper and Copy evident paper. 3.3 - Security threads - Metalized thread, Windowed thread, Holographic windowed thread, Micro text, Clear text and Thermo text. 3.4 - Watermark, Classification of watermark - Line drawing watermark, shaded watermark and Digital watermark. 3.5 - Security inks – Trademark colors, Color changing ink, Magnetic ink, Copy protection ink, Erasable ink, Fugitive ink, Pen reactive ink, Heat reactive ink, Coin reactive inks, Migrating ink, Bleeding inks, Florescent ink, Metallic ink and UV ink.	18

IV	**Special Printing Technologies** 4.1 - Basic principles of hybrid printing system and Application of Hybrid printing systems. 4.2 - Basic principles of holograms making process, Components of hologram making system - laser, lenses, beam splitter, mirrors, holographic film and Process steps of hologram making system. 4.3 - Basic principles of lenticular printing process. 4.4 - Basic principles of waterless offset printing, Plate structure of waterless offset printing, Merits and Demerits of waterless offset printing. 4.5 - Introduction about 3D printing, Types of 3D printing - direct and binder 3D printing, Steps involved in 3D printing process and Application of 3D printing.	**18**
V	**Advanced Printing Techniques** 5.1 - Introduction to web to print: Concept of Web to print, web to print end to end solution and its applications in printing. 5.2 - Introduction to cloud printing: Concept and applications of cloud printing, benefits of cloud printing. 5.3 - Introduction to IOT, Concept of IOT and its applications in printing. 5.4 - Introduction to AI, Concept of Ai, Artificial Intelligence and its applications in printing 5.5 - Remote Printing, Concept of Remote printing, benefits of Remote printing and its application in printing.	**18**

Text Book / Reference Book:

1. Handbook of Print Media - Helmut kipphan, Springer.
2. Handbook of Printing and Packaging Technology - Bishwanath Chakkaravarthy.
3. Digital colour Printing Technology - Bishwanath Chakkaravarthy
4. Printing in a digital world - David Bergsland.
5. On demand Digital Printing Primer - Howard M. Fentan – GATF.
6. Printing Materials – Science and Technology – Thompson, Bob – PIRA.
7. Pocket Guide to Digital Printing – Frank Cost.
8. Introduction to Printing and Finishing – Hugh M Speirs – PIRA.

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48253

Semester : V Semester

Subject Title : PACKAGING TECHNOLOGY

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PACKAGING TECHNOLOGY	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Basics of Packaging Process	15
II	Packaging Materials	15
III	Packaging Machinery & Finishing	15
IV	Ancillary Packaging	15
V	Specialty Packages	13
Test & Model Exam		7
Total		**80**

RATIONALE:

Packaging is powerful because it tells consumers why product and brand are different. With the increased importance placed on self-service marketing, the role of packaging is becoming quite significant. Thus, the only way to get some consumers to notice the product is through displays, shelf hangers, tear-off coupon blocks, other point-of-purchase devices, and, last but not least, effective packages.

OBJECTIVE:

At the end of the study of V Semester the student will be able to :

- Study about the Folding Cartons.
- Know about Diemaking.
- Learn about plastics and metals in packaging.
- Know about food packaging.
- Study about the Corrugated Boards & Boxes.
- Know about Rigid Boxes and Glass.
- Learn Closures and Dispensing devices.
- Study about Cushioning materials
- Know about Thermoforming Packages.
- Learn about Radio Frequency Identification Tags.

PACKAGING TECHNOLOGY

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Basics of Packaging Process** 1.1 - Classification of Packaging – Flexible, Semi Rigid and Rigid Packaging. 1.2 - Functions/Objectives of a Packaging – physical, barrier, Agglomeration, information, marketing, security and convenience. 1.3 - Folding Carton - Tube Styles: Glue end carton, Tuck in flap carton, Lock end carton, and Auto lock bottom carton. Tray Style: One piece & Two piece and Window carton. 1.4 - Die Making process – Design preparation and manual/laser cutting, rule bending and fixing.	15
II	**Packaging Materials** 2.1 - Types of boards used in packaging – Solid bleached, solid unbleached board, Folding Box Board and White lined Chip board. 2.2 - Types of Corrugated boards - Single face corrugated board, Double face corrugated board and Triple face (or) Double walled corrugated board. Flutes and its types. 2.3 - Plastic packaging materials - BOPP, HDPE, LDPE, LLDPE, PVC, PP, PET and Non-woven. 2.4 - Metal packaging materials - Tin and Aluminium – Properties and Applications.	15
III	**Packaging Machinery & Finishing** 3.1 - Factors influencing the design of a package – product, distribution, marketing Statutory &regulation, packaging operation and cost. 3.2 - Structural Fundamentals of folding carton – Types of panels, types of flap, grain direction, creasing and cutting. 3.3 - Introduction to Food packaging and shelf life improving	15

	techniques - Aseptic packaging (Tetra pack), Structural layers used in Aseptic packaging, Importance of Ultra Heat treatment Technology. 3.4 - Flexible pouch - types – Thermoform/fill/seal machines- Multi layer film forming. Labels and its types.	
IV	**Ancillary Packaging** 4.1 - Closures - Screw cap, Lug cap, Roll on, Crown Cap, Child resistant closure and Tamper evident closure. 4.2 - Dispensing devices - Snip-top, Dial disc, Dip tube, Brush applicator, Shaker sifter and push-pull type. 4.3 - Cushioning Materials and its importance. Types - Resilient, Non-resilient and Space filers. 4.4 - Introduction and application of RFID and QR Code, common symbols used in shipping boxes.	**15**
V	**Specialty Packages** 5.1 - Introduction and application of Shrink-Wrapping and Stretch Wrapping. 5.2 - Introduction and application of Skin Packaging, Blister Packaging and Strip Packaging. 5.3 - Introduction and application of Aerosol Packaging and airless. 5.4 - Introduction and application of Modified Atmospheric Packaging.	**13**

Text Book / Reference Book:

1. Hand Book of Packaging Engineering – by Joseph F Hanlon, Robert J Kelsey, andHalline E Forcinio.
2. Guarding of Folding Box Gluers – by British Printing Industries federation.
3. Guarding of sheet fed cutting and creasing machine – by British Printing Industriesfederation.
4. A Handbook of Food Packaging – by Frank A. Paine and Heather Y. Paine, Leonard HillPublishers, Glasgow G 642 NZ

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic Year 2020-2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48254

Semester : V

Subject Title : ENTREPRENERUSHIP AND STARTSUPS

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
ENTREPRENEURSHIP AND START UPS	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Minimum Marks for Pass is 50 out of which minimum 50 marks should be obtained out of 100 marks in the board examination alone.

Topics and Allocation of Hours

UNIT	Topic	Hours
1	Entrepreneurship – Introduction and Process	10
2	Business Idea and Banking	10
3	Start ups, E-cell and Success Stories	10
4	Pricing and Cost Analysis	10
5	Business Plan Preparation	10
Revision, Field visit and Preparation of case study report		14
Total		**64**

RATIONALE:

Development of a diploma curriculum is a dynamic process responsive to the society and reflecting the needs and aspiration of its learners. Fast changing society deserves changes in educational curriculum particularly to establish relevance to emerging socio-economic environments; to ensure equity of opportunity and participation and finally promoting concern for excellence. In this context the course on entrepreneurship and start ups aims at instilling and stimulating human urge for excellence by realizing individual potential for generating and putting to use the inputs, relevant to social prosperity and thereby ensure good means of living for every individual, provides jobs and develop Indian economy.

OBJECTIVES:

At the end of the study of 5th semester the students will be able to

- To execute the students about entrepreneurship
- Acquiring Entrepreneurial spirit and resourcefulness
- Understanding the concept and process of entrepreneurship
- Acquiring entrepreneurial quality, competency and motivation
- Learning the process and skills of creation and management of entrepreneurial venture
- Familiarization with various uses of human resource for earning dignified means of living
- Know its contribution in and role in the growth and development of individual and the nation
- Understand the formation of E-cell
- Survey and analyze the market to understand customer needs
- Understand the importance of generation of ideas and product selection
- Learn the preparation of project feasibility report
- Understand the importance of sales and turnover
- Familiarization of various financial and non financial schemes
- Aware of the concept of incubation and starts ups

ENTREPRENERUSHIP AND STARTSUPS

DETAILED SYLLABUS

Unit	Name of the Topics	Hours
1	**Entrepreneurship – Introduction and Process** • Concept, Functions and Importance • Myths about Entrepreneurship • Pros and Cons of Entrepreneurship • Process of Entrepreneurship • Benefits of Entrepreneur • Competencies and characteristics • Ethical Entrepreneurship • Entrepreneurial Values and Attitudes • Motivation • Creativity • Innovation • Entrepreneurs - as problem solvers • Mindset of an employee and an entrepreneur • Business Failure – causes and remedies • Role of Networking in entrepreneurship	10
2	**Business Idea and Banking** • Types of Business: Manufacturing, Trading and Services. • Stakeholders: sellers, vendors and consumers and Competitors • E- commerce Business Models • Types of Resources - Human, Capital and Entrepreneurial tools and resources • Selection and utilization of human resources and professionals, etc. • Goals of Business; Goal Setting • Patent, copyright and Intellectual property rights • Negotiations - Importance and methods • Customer Relations and Vendor Management	10

	• Size and capital based classification of business enterprises • Various sources of Information • Role of financial institutions • Role of Government policy • Entrepreneurial support systems • Incentive schemes for state government • Incentive schemes for Central governments	
3	**Start ups, E-cell and Success Stories** • Concept of Incubation centre's • Visit and report of DIC , financial institutions and other relevance institutions • Success stories of Indian and global business legends • Field Visit to MSME's • Study visit to Incubation centers and start ups • Learn to earn • Startup and its stages • Role of Technology – E-commerce and Social Media • Role of E-Cell • E-Cell to Entrepreneurship	10
4	**Pricing and Cost Analysis** • Estimation of Printed Products – Leaflet, Folder, Booklet, Poster, Calendar etc., • Types of Costs - Start up, Variable and Fixed • Income Statement • Cash flow Projections • Break Even Analysis - for single product or service • Taxes • Financial Business Case Study • Understand the meaning and concept of the term Cash Inflow and Cash Outflow • Price	10

	• Calculate Per Unit Cost of a single product • Operational Costs • Understand the importance and preparation of Income Statement • Prepare a Cash Flow Projection • Pricing and Factors affecting pricing. • Launch Strategies after pricing and proof of concept	
5	**Business Plan Preparation** • Generation of Ideas. • Business Ideas vs. Business Opportunities • Opportunity Assessment – Factors, Micro and Macro Market Environment • New product development and analysis • Feasibility Study Report – Technical analysis, financial analysis and commercial analysis • Market Research - Concept, Importance and Process • Marketing and Sales strategy • Digital marketing • Branding - Business name, logo, tag line • Promotion strategy • Business Plan Preparation • Execution of Business Plan – Setting up of a small scale Printing unit – Budget proposal with list of Equipment and Machineries • Social Entrepreneurship as Problem • Solving - Concept and Importance • Risk Taking-Concept • Types of business risks	10

Note: (i) Unit 1, 2 & 3 contents are common for all diploma programs

(ii) Unit 4 & Unit 5 contents are optional; Conveners/HoDs are requested framing with their branch specific contents.

REFERNCE BOOKS:

1. Dr. G.K. Varshney, Fundamentals of Entrepreneurship, Sahitya Bhawan Publications, Agra - 282002
2. Dr. G.K. Varshney, Business Regulatory Framework , Sahitya Bhawan Publications, Agra - 282002
3. Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd, Entrepreneurship , McGraw Hill (India) Private Limited, Noida - 201301
4. M.Scarborough, R.Cornwell, Essentials of Entrepreneurship and small business management, Pearson Education India, Noida - 201301
5. Charantimath Poornima M. Entrepreneurship Development and Small Business Enterprises, Pearson Education, Noida - 201301
6. Trott, Innovation Management and New Product Development, Pearson Education, Noida - 201301
7. M N Arora, A Textbook of Cost and Management Accounting, Vikas Publishing House Pvt. Ltd., New Delhi-110044
8. Prasanna Chandra, Financial Management, Tata McGraw Hill education private limited, New Delhi
9. I. V. Trivedi, Renu Jatana, Indian Banking System, RBSA Publishers, Rajasthan
10. Simon Daniel, HOW TO START A BUSINESS IN INDIA, BUUKS, Chennai - 600018
11. Ramani Sarada, The Business Plan Write-Up Simplified - A practitioners guide to writing the Business Plan, Notion Press Media Pvt. Ltd., Chennai 600095.

Board Examination – Evaluation Pattern

Internal Mark Allocation

Assignment (Theory portion)*	– 10
Seminar Presentation	– 10
Attendance	– 5
Total	**- 25**

Note: * Two assignments should be submitted. The same must be evaluated and converted to 10 marks.

Guidelines for assignment:

First assignment – Unit I

Second assignment – Unit II

Guidelines for Seminar Presentation- Unit III

Each assignment should have five three marks questions and two five marks questions.

BOARD EXAMINATION

Note

1. The students should be taught all units and proper exposure and field visit also arranged. All the portions should be completed before examinations.
2. The students should maintain theory assignment and seminar presentation. The assignment and seminar presentation should be submitted during the Board Practical Examinations.
3. The question paper consists of theory and practical portions. All students should write the answers for theory questions (40 Marks) and practical portions (60 Marks) should be completed for board examinations.
4. All exercises should be given in the question paper and students are allowed to select by lot. If required the dimensions of the exercises may be varied for every batch. No fixed time allotted for each portion and students have liberty to do the examination for 3Hrs.
5. For Written Examination: theory question and answer: 45 Marks

Ten questions will be asked for 3 marks each. Five questions from each unit 1 & 2. (10 X 3 = 30).

Three questions will be asked for 5 marks each. One question from each unit 1, 2 & 3. (3 X 5 = 15)

6. For Practical Examination: The business plan/Feasibility report or Report on Unit 4 & 5 should be submitted during the board practical examinations. The same have to be evaluated for the report submission (40 marks).

DETAILED ALLOCATION OF MARKS

Sl. No	Description	Marks
Part A	Written Examination - Theory Question and answer (10 questions x 3 marks:30 marks & (3 questions x 5 marks: 15 marks)	45
Part B	Practical Examination – Submission on Business Plan/Feasibility Report or Report on Unit 4 & 5	40
Part C	Viva voce	15
	Total	**100**

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	DIPLOMA IN PRINTING TECHNOLOGY
Subject Code	:	48255
Semester	:	V Semester
Subject Title	:	E-PUBLISHING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
E-PUBLISHING PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

This subject is aimed at providing basic understanding of the fundamentals of practical sections; mainly HTML, CSS and XML Markup Language, Principles of PDF and its creation, Proof Reading Symbols and Marks.

The topics covered are based on the syllabus for Diploma in Printing Technology. The subject is planned to include sufficient practices which would help the student to understand the principles of Web Designing using markup language.

OBJECTIVES:

On completion of the following exercises, the students will be able to

1. Understand the basic HTML language
2. Familiarize and customize the Webpage
3. Use the different facilities available in the HTML language
4. Prepare one page profile using HTML
5. Expose HTML font formatting Tags
6. Analyze the XML document
7. Create and manipulate the XML Data
8. Create different types of Style Sheet in CSS
9. Create PDF file with different options
10. Understand Internet concepts and usage of proofreading symbols and marks

E-PUBLISHING PRACTICAL

Contents: Practical

List of Exercises

1. Print the numbers 1 - 10, each number being a different color and Print your name to the screen with every letter being a different heading size using HTML language and write the procedure for the same.
2. Print a paragraph that is a description of a book, include the title of the book as well as its author. Names and titles should be underlined, adjectives should be italicized and bolded using HTML language given below and write the procedure for the same.

One particular book which is recommended reading is The Street Lawyer by John Grisham. This book is about a lawyer who begins re-evaluating his priorities in life when a bad incident occurs within his law firm. Consequently, he becomes acquainted with the inner city streets, and realizes the harsh existence of the homeless, and vows to give them a chance in the courts. The Street Lawyer is a ***great*** book. It is ***well written*** and ***interesting***. Other books by John Grisham include The Firm, The Pelican Brief, and The Client.

3. Print two lists with any information you want. One list should be an ordered list, the other list should be an unordered list using HTML language and write the procedure for the same.
4. Display five different images. Skip two lines between each image. Each image should have a title using HTML language and write the procedure for the same.
5. Display an image that when clicked will link to a search engine of your choice using HTML language and write the procedure for the same.
6. Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading, a horizontal rule, three links and your photo. Also, write three HTML documents for the links and write the procedure for the same.
7. Develop a web page using Internal Style Sheet and External Style Sheet method with CSS programme and write the procedure for the same.
8. Design basic XML tree structure for contact info and execute the programme and write the procedure for the same.

9. Write a programme for XML document describes some entries of a library and write the procedure for the same.
10. Make correct Proof Reading symbols & Marks for the given sample and write the procedure for the same.

Materials Required

- Paper
- Color toner cartridges
- Black toner cartridge for laser printer
- CDs/DVDs/USB flash drive/memory cards.

Hardware and Software Requirements

Hardware Requirements:

- Computers – 36Nos
- Intel Core i3 Processor
- 500 GB Hard Disk, 2 MB RAM
- 14” Monitor
- Projector – 1 Nos
- Laser Printer – 1 No
- Internet Connection – Minimum of 512 KB

Software Requirement

- Any GUI Operating System
- Open Source Software / MS- Office
- Any web browser like Internet explorer, Google Chrome, Firefox, Opera etc.,

BOARD PRACTICAL EXAMINATIONS

Note:

- The student should be given proper training in all the exercises. All the exercises should be completed before the examinations.
- The student should maintain observation note book / manual and record notebook. The record note book should be submitted during the Board Practical Examinations. Common printout for the record note book should not be allowed. Individual student output for every exercise should be kept in the record note book.
- All exercises should be given in the question paper and student is allowed to select any one by lot. All exercises with the hard copy of the template related to the exercise should be provided by the external examiner for the examination. Template can be varied for every batch.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output Printout / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48256

Semester : V

Subject Title : DIGITAL PRINTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examinations	Total	
DIGITAL PRINTING PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

The digital printing processes help to print on various natures of substrates like paper, board, woven and knitted cloth, Non-absorbable, Non-woven, plastics, rubber, metal, glass, and ceramics. These practical exercises will describe the concepts of Pad Printing, 3D Printing, Textile printing processes. This will helps to understand the printing methods on irregular, un-even, shrinkable, and curved surfaces using suitable digital printing process for specific applications with suitable types of printing inks. This will support students to use/apply and start earn while they learn, and in further will turn in to an entrepreneur and an innovator.

OBJECTIVES:

1. Create / modify digital images, edit with suitable software to get required digital file format as per printing processes demands.
2. Study and utilize Pad Printing, Textile Printing, 3D printing processes.
3. Application on various digital printing processes.
4. Apply the principles of screen printing and inkjet printing processes on various substrates.
5. Work out costing of various printed applications and digital printed jobs to compare with conventional processes.
6. Understand components, tool, chemical used and principles of digital printing, pad printing machine, 3D Printing and textile printing machines.

DIGITAL PRINTING PRACTICAL

Contents: Practical

List of Exercise

1. Design and print multicolour work using digital printing.
2. Print on any one irregularly shaped surface using table top manual Pad Printing machine.
3. Print on curved surface using Pad printing process or Inkjet process.
4. Print on regular glass surface / regular flat ceramic surface using screen printing technique or PAD printing technique.
5. Design suitable graphic work and print image on piece of Non-Woven fabric of different GSM using screen printing process.
6. Print on any one non-absorbent Substrate (Plastic sheet/Rubber Sheet/Bio Plastic).
7. Print a simple prototype / 3D model using FDM technique.
8. Do Textile printing on piece of cloth using any one of the following techniques (Heat transfer / Thermal transfer printing / Garment digital printing.
9. Print on paper with marbling effect using suitable printing process.
10. Multi color printing on coated paper/board using digital printing process.

List of Equipment

1. Digital Printing Machine / Color Laser Printer / Inkjet Printer – 1 No.
2. Table Top Manual Pad Printing Machine – 1 No.
3. Screen Printing Table with standard tools and accessories. – 1 No.
4. Table Top 3 D Printing Machine – FDM Filament Type / SLA (DLP) Type – 1 No.
5. Textile Printing accessories.
6. Thermal Transfer materials.

Consumables

1. Pad Printing ink, pads of variable shape and size.
2. Screen Printing Ink, Mesh, Accessories.
3. Different substrates, Paper, Paperboard, Corrugated sheets, Cloth, Foil, Film, Laminates, Non-woven cloth, ceramic tiles, different plastic films, Tissue paper, Rubber sheets, Metal sheets.
4. Textile Inks, Textile transfer sheets, Hot plate (Iron Box)
5. Coated paper/board.

BOARD EXAMINATION

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output Printout / Handout ^	20
4.	Viva Voce	10
	Total	**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48257

Semester : V Semester

Subject Title : PACKAGING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PACKAGING PRACTICAL	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

This subject is aimed at providing basic understanding of the fundamentals of practical sections; mainly checking the test properties of paper, board and ink and preparation of carton making.

The topics covered are based on the syllabus for Diploma in Printing Technology. The subject is planned to include sufficient practices which would help the student to understand the principles of packaging technology.

OBJECTIVES:

At the end of the study of V Semester the student will be able to:

1. Prepare a tube style/tray style folding carton.
2. Prepare a rigid box.
3. Find the peel strength of the given sample.
4. Determine the caliper/GSM of the given paper board.
5. Find the bursting strength of the given paper board.
6. Determine the scuff/rub resistance of the given sample.
7. Find the edge crush strength of the given sample.
8. Determine the Cobb value of the given sample.
9. Perform a skin packing/shrink packaging.
10. Find the tearing strength of the given sample.

PACKAGING PRACTICAL

Contents: Practical

List of Exercises

1. Preparing a tube style/tray style folding carton.
2. Preparing a rigid box.
3. Finding the peel strength of the given sample.
4. Determining the caliper/GSM of the given paper board.
5. Finding the bursting strength of the given paper board.
6. Determining the scuff/rub resistance of the given sample.
7. Finding the edge crush strength of the given sample.
8. Determining the Cobb value of the given sample.
9. Performing a skin packing/shrink packaging.
10. Finding the tearing strength of the given sample.

List of Equipment and Instrument:

1. Digital physical balance
2. Bursting strength tester
3. Bench micrometer
4. Scuff resistance tester
5. Cobb tester.
6. Skin/Shrink packaging machine.
7. Tearing strength tester.
8. Adhesive Tester.
9. GSM tester.
10. Edge crush tester.

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

VI SEMESTER

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48261

Semester : VI Semester

Subject Title : TOTAL QUALITY MANAGEMENT

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TOTAL QUALITY MANAGEMENT	6	96	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Introduction	18
II	Material Inspection and Testing	18
III	Process Control	18
IV	Control tools, equipments & Procedure of calibration Process	18
V	Implementation of ISO for Print Quality	17
Test & Model Exam		7
Total		**96**

RATIONALE:

"Quality management" ensures superior quality products and services. Quality of a product can be measured in terms of performance, reliability and durability. Quality is a crucial parameter which differentiates an organization from its competitors. Quality management tools ensure changes in the systems and processes which eventually result in superior quality products and services.

Quality management methods such as Total Quality management or Six Sigma have a common goal - to deliver a high quality product. Quality management is essential to create superior quality products which not only meet but also exceed customer satisfaction. Customers need to be satisfied with our brand. Business marketers are successful only when they emphasize on quality rather than quantity. Quality products ensure that we survive the cut throat competition with a smile.

Due to the comprehensive topics covered under this subject students can acquire an enormous amount of knowledge. Students attain scope to be placed in E-Publishing industries installed with sophisticated machineries.

OBJECTIVE:

At the end of the study of VI Semester the student will be able to :

- Make Quality a culture in Printing Industry.
- Understand terms and tools used in TQM.
- Learn to inspect and test incoming materials.
- Test the characteristics of paper, ink and fountain solution.
- Control the process with reference to standards.
- Identify factors in wastage minimization.
- Understand the QC Instrumentation.
- Learn the calibration and profile setting for Input / Output devices
- Study ISO standard for printing industry and practices.
- Learn steps of implementation for Print Quality.
- Identify importance of customer satisfaction

TOTAL QUALITY MANAGEMENT

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Introduction** 1.1 - Define: Quality, Quality assurance, Process Control, TQM and ISO. 1.2 - Quality control Process - Elements of success – Management, support , mission Statement, proper planning, bottom line, focus, measurement system, empowerment, teamwork, continuous improvement process and dedicated resources. 1.3 - Quality Improvement Methods – PDCA Cycle, DMAIC Process - Define, measure, analyse, improve and control, DMADV – Design and validate. 1.4 - Statistical Process Control Tools: Purpose of SPC, cause and effect diagram, check sheet, flow diagram, pareto analysis, histogram, run chart and control chart. 1.5 - Basic concepts and benefits of Kaizen, LEAN, JIT, TPM, 5S and Six Sigma.	18
II	**Material Inspection and Testing** 2.1 - Visual Inspection, Storage and Handling of Substrates and Chemicals. Maintenance of data sheets of materials – MSDS (Material safety data sheet), TDS(Technical data sheet). 2.2 - Testing procedures for Paper and board – Grain Direction, GSM, stiffness, tensile strength, tearing resistance, folding endurance, RH, smoothness, moisture, BULK, Bursting strength and COBB. 2.3 - Dampening solution testing methods – Testing of pH and conductivity. 2.4 - Ink testing methods – Draw down, grind gauge, Viscosity, Tack. 2.5 - Introduction to light viewing booth - different light sources in light booth.	18

III	**Process Control** 3.1 - Quality control targets – registration mark, star target, Ink Coverage target and Line Resolution target. 3.2 - Control patches – Solid patches, Halftone, Slur/Doubling, Gray Balance, Solid overprint and Plate exposure control patches. 3.3 - Analysis of Print Attributes: Solid Ink Density (SID), Dot Gain, Print contrast, Ink Trapping and Dot Area. CIE Lab and colour difference - Delta E. 3.4 - Process control charts - recording, monitoring and controlling procedure.	**18**
IV	**Control tools, Equipments & Procedure of calibration Process** 4.1 - Densitometer - Basic components and its working principles. 4.2 - Spectrophotometer - Basic components and its working principles. 4.3 - Introduction about Profiling for Input and Output devices – Digital Camera, Scanner, Monitor and Printer 4.4 - Introduction about Color Calibration, From proof to perfect color reproduction.	**18**
V	**Implementation of ISO for Print Quality** 5.1 - Introduction to ISO standards, Steps involved in ISO 9001 Certification, Common ISO standards (9001/14001/osho etc) and ISO standards for printing process. 5.2 - Types of Audit – First Party, Second Party and Third Party and Purpose and benefits of audits. 5.3 - Implementation Process of ISO standards in printing organisation, maintaining and renewal process of ISO certification. 5.4 - Benefits of ISO implementation, Customer Satisfaction and Case Studies of ISO certified print industry.	**17**

Text Book / Reference Book :

1. Total Quality Management, Dale H. Besterfield, Pearson Education, Delhi, 2002
2. Implementing Quality Management in the Graphic Arts, Herschel L and Michael J Apfelberg, GATF, Pittsburgh, 1999
3. Colour control in lithography, Kelvin Tritton, Pira International Surrey UK 1995
4. What the Printer should know about Paper, 3rd ed., Lawrence A. Wilson, GATF Press, Pittsburgh, 1998
5. What the Printer should know about Ink, Nelson R. Eldred and Terry Scarlett, GATF, Pennsylvania, USA 1990
6. Total Quality Management, Ken Holmes, Pira International, Leatherland, 1992.

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name	:	DIPLOMA IN PRINTING TECHNOLOGY
Subject Code	:	48262
Semester	:	VI Semester
Subject Title	:	PRINTING PRESS MANAGEMENT

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PRINTING PRESS MANAGEMENT	6	96	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Principles of Management	18
II	Estimating and Costing	18
III	Planning for Print Production	18
IV	Accounting and Budgeting	18
V	Human Resource Management	17
	Test & Model Exam	7
Total		**96**

RATIONALE:

Printing press management subject has given the exposure on the principle and functions of management for effective functioning of printing presses. The estimating and costing helps the students on the procedure and cost of various materials used in printed products and the cost of printing process involved and in producing competitive estimates. Production system administration is an important area where job turnover brings more productively in terms of job and quality assurance. It also imbibes the value system in the industry to maintain good will. It also throughs light on accounting and budgeting methods followed in successful industries. The most important strength of any organization is its human resource. Employee requirement training & development employee wastage, professional ethics are part of the HRM. The EHS (Environment, Health & safety) systems and regulation in printing industry all included in the syllabus.

OBJECTIVE:

At the end of the study of VI Semester the student will be able to :

- Understand the Principles of management and structure of printing press management.
- Learn the Purpose of business management.
- Do estimating and costing for various printed products.
- Learn the preparation of estimates for print jobs and costing.
- Study about planning for print production.
- Study about material planning and role of supervisors and managers in management.
- Understand the accountancy principles and stock exchange.
- Study about book keeping methods and importance of budgeting.
- Understand the concept of employee recruitment and training.
- Study about the Productivity and waste management.

PRINTING PRESS MANAGEMENT

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Principles of Management** 1.1 - Principles of management – Scientific management, Taylorism, Maslow's hierarchy needs, Leadership management, Management grid, Organizational development, and Business process management. 1.2 - Management principles and functions – Managing men, Machines, Materials, Money and Morale – Principle of Management, Definition of Management, Functions of Management and Elements of Management. 1.3 - Management Structure – Structure of organization, Formal and Informal organization, Market research, Sales promotion and Purpose of business management. 1.4 - Business communication and coordination – Business communication, Channels of communication, Methods of business communication, Management information system, Benefits of MIS and Application of MIS.	18
II	**Estimating and Costing** 2.1 - Estimating for various printed products – Definition of costing and estimating, Components of cost, Advantages of costing, Difference between costing and estimating. 2.2 - Costing for printing materials and Production – Qualification of an Estimator, Estimating form, Estimating for Paper, Calculating the number of sheets required for a job and Cost of Paper for job. 2.3 - Overhead Expenses and Classification of Overhead Expenses and Importance of Overhead Expenses. 2.4 - Preparation of Competitive Estimate and Costing – Economical consideration for preparing competitive estimates, Fixed and variable cost in printing – Graphical representation of fixed and variable cost.	18
III	**Planning for Print Production** 3.1 - Production system administration, Planning for various printed Products – Production control systems – Works initiaton Procedures - Estimate, Purchase order, Raw material purchase, job card, changes in the specification of the Job, Proof, Material release authorization and final print order. 3.2 - Planning consideration - Material purchasing and inventory control suitable material selection – Material management,	18

	Principles of purchasing, Production planning and control – Production scheduling, Production control, Quality control and Press layouts. 3.3 - Role of supervisor and manager in effective management workflow – managerial roles, Management influences and process integration, Ergonomics – Physical requirements of employees – Working environment - Lighting, Glare and Contrast, Climate, Safety and Noise.	
IV	**Accounting and Budgeting** 4.1 - Accounting principles – Meaning of accounting principles, Classification or sub-fields of accounting – Financial accounting, Cost accounting, Management accounting and Tax accounting. 4.2 - Definition of book keeping and Book keeping methods – Double entry book keeping and Advantages of Double Entry System. 4.3 - Definition of Budgeting and Importance of Budgeting – Annual Budget : Meaning of Budget, Purpose of Budget, Types of Budgets – Sales Budget, Production Budget, Marketing Budget, Sales and Turnover, Channel distribution and Sales Forecasting. 4.4 - Type of Companies - Private and Public Limited – Characteristics of Private and Public Limited Companies, Meaning of Stock Register - Maintenance of Stock Registers and Advantages of Stock Registers.	**18**
V	**Human Resource Management** 5.1 - Employee Recruitment, Training and Retention – Human Resource Management, Meaning of Recruitment, Objective of the Recruitment Process, Training and Development, Out sourcing, E-Recruitment, Employee Retention. 5.2 - Employee Motivation and Welfare – How to Motivate Employees, Employee Benefits and Reduce or Minimizing the Wastages. 5.3 - Professional Ethics - Honesty, Integrity, Transparency and accountability. Media Ethics and law, Copyright - Obtaining and enforcing copyright and MSME Registration. 5.4. - Safety, Health and Environmental Regulations in Graphic Arts Industry – Safety of Machinery in Printing Industry, Safety aspects in machines.	**17**

Test Book / Reference Book :

1. Printer’s Costing and Estimating - by B.D. Mendiratta.
2. Printing Estimating Primer - by Don Ment, GATF.
3. The Print and Production Manual - by Michael Barnard.
4. Management Aspect of Printing Industry - by T.S. Saifuddin
5. Printing Management : A Reference Manual - by Print India Journals.
6. Estimating Methods and Cost Analysis for Printer - by K. S. Venkataraman
7. Book Production - by John Peacock.

Board Examination - Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION &TRAINING, TAMILNADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48263

Semester : VI Semester

Subject Title : PRINTING MACHINERY MAINTENANCE

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PRINTING MACHINERY MAINTENANCE	6	96	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Topics and Allocation of Hours:

Unit No.	Topic	Hours
I	Maintenance Management	18
II	Power Transmission	18
III	Mechanical and Electrical Elements	18
IV	Lubrication and Reconditioning	18
V	Maintenance of Mechanisms	17
Test & Model Exam		7
Total		**96**

RATIONALE:

The main purpose of regular maintenance is to ensure that all equipment required for production is operating at 100% efficiency at all times. Through short daily inspections, cleaning, lubricating, and making minor adjustments, minor problems can be detected and corrected before they become a major problem that can shut down a production line.

Preventive maintenance makes economic sense as it may reduce or potentially eliminate the need for, and the extent of, major repair projects. The importance of an effective maintenance program cannot be overlooked because it plays such an important role in the effectiveness of Lean manufacturing.

OBJECTIVE:

At the end of the study of VI Semester the student will be able to :

1. Learn the Objectives of Maintenance Management.
2. Understand the Safety and Housekeeping Procedures in presses.
3. Know about the Need of Power Transmission Devices.
4. Understand the Importance of Maintenance of Power Transmission Devices.
5. Study Various Machine Elements.
6. Know the Applications of Machine Elements in Printing Machinery.
7. Understand the Importance of Lubrication and Lubrication Devices.
8. Impart the knowledge on Reconditioning.
9. Study Various Auxiliary Equipments.
10. Understand the Application of Auxiliary Equipments in Printing Industry.

PRINTING MACHINERY MAINTENANCE

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Maintenance Management** 1.1 - Maintenance – Definition, Objectives, Types of Equipment Maintenance – Planned maintenance and unplanned maintenance. 1.2 - Types of Planned maintenance - Preventive Maintenance, Predictive Maintenance and Scheduled maintenance - Merits and demerits. 1.3 - Unplanned maintenance - Breakdown Maintenance or Emergency maintenance - Merits and Demerits. Contract maintenance - Definition - Merits and Demerits. 1.4 - Preventive Maintenance Functions - Planning, scheduling, Repair cycles, Dispatching and Controlling. 1.5 - Safety Precautions and House Keeping – safety precautions to be followed in press area and Five steps of housekeeping (5S method).	18
II	**Power Transmission** 2.1 - Chain Drives - Introduction, Types of Chains – Roller Chain, Silent Chain, Ewart Chain and Bead Chain, Merits and Demerits of Chain Drives. 2.2 - Belt Drives - Introduction, Types of Belts – Flat belt, Rope belt, Tooth Belt, V belt and Timing Belt, Merits and Demerits of Belt drives. 2.3 - Gear Drives - Introduction, Types of Gears – Spur gear, Helical gear, Bevel gear, Worm gears and Herringbone gear, Merits and Demerits of gear drives. 2.4 - Maintenance and Lubrication of Drive Systems - Chain Drive, Belt Drive and Gear Drive. 2.5 - Direct drive technology – Introduction, Advantages and Application in the printing field.	18

III	**Mechanical and Electrical Elements** 3.1 - Bearings, Types of Bearings - Sliding bearings and Antifriction bearings – Ball bearings, Needle bearings and Roller bearing. Merits and Demerits. 3.2 - Cams and Follower, Types of Cams and Followers – Disk Cam, Translation Cam, Groove Plate Cam, Cylindrical Cam, Eccentric Cam and Tow Wipe Cam. Advantages of cam and Follower. 3.3 - Springs, Types of springs – Helical Spring, Conical spring, Volute Spring and Torsion Springs and its application. 3.4 - Electrical Elements - Introduction to Contactors and its types, Introduction to Limit Switches and its application, Introduction to over Load Relay Switches and its types, Thermal and Magnetic.	**18**
IV	**Lubrication and Reconditioning** 4.1 - Lubrication – Introduction, Advantages, Types of Lubricants- Solid, Semisolid and Liquid. Lubrication Schedule, Chart and Paint Marks. 4.2 - Equipment and Tools used in Erection and Reconditioning - Cranes, Hoists, Spanner, Wrenches, Screwdriver, Spirit level, Dial Indicator with gauge, Feeler gauge, Micrometer and Vernier Calipers, Application. 4.3 - Test Run – Types of test runs - Idle, Performance, Accuracy, Rigidity and Vibration test.	**18**
V	**Maintenance of Mechanisms** 5.1 - Electrical Maintenance – Introduction to AC and DC motors, Maintenance Check list for motors, Common problems with Electricity. 5.2 - Pneumatic System Maintenance - Introduction to pneumatic system functioning, Compressor types - Reciprocating and Rotary compressor, Application in Printing Field and Check List for pneumatic system maintenance. 5.3 - Hydraulic System Maintenance - Introduction to Hydraulic System, Application in Printing field and Check list for Hydraulic System maintenance. 5.4 - Mechatronics – Introduction and applications in Printing Field.	**17**

Text Book / Reference Book:

1. H. P. Garg, Industrial Maintenance - by S. Chand and company Ltd.
2. Reading in Maintenance - by Lewis and Tow, Cohners Book.
3. A manual for Lithographic press operation - by A.S. Porter, Lithographic TrainingServices.
4. Litho Printing - by Ian Faux, Blueprint Publications.
5. Lithographers Manual - by Graphic Arts Technology Foundation, USA.
6. Design of Machine Elements - by Fairs, The Macmillan Co., London.
7. Mechanical Engineering Design - by Shirley McGrawhill.
8. “Machine Elements” - by DubrovalskyDaniel, MIR Publications.
9. Web offset press operating - by Daniel G. Wilson – GATF

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks.A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48264

Semester : VI Semester

Subject Title : PRINT QUALITY ASSURANCE PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PRINT QUALITY ASSURANCE PRACTICAL	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

This subject is aimed at providing basic understanding of the fundamentals of practical sections; mainly checking the paper, ink, plate properties and the use of measuring instruments in engineering applications.

The topics covered are based on the syllabus for Diploma in Printing Technology. The subject is planned to include sufficient practices which would help the student to understand the principles of quality assurance.

OBJECTIVES:

At the end of the study of VI Semester the student will be able to :

1. Testing of GSM for the paper/board sample.
2. Testing of paper grain direction for the paper sample.
3. Measuring solid print density using process colour control bar and compare CMYK with Line chart.
4. Determining the trapping tendency of the given print samples with graph.
5. Determining the print contrast and dot gain of the given sample with graph.
6. Determining the print characteristics curve of the given sample.
7. Determining CIE Lab values of the given print samples and find Delta E.
8. Finding the pH of the dampening solution and plotted graph for different samples.
9. Determining the solid ink density and plotted X bar chart and R chart.
10. Testing of Ink using draw down test method of the given sample.

PRINT QUALITY ASSURANCE PRACTICAL

Contents: Practical

List of Exercises

1. Testing of GSM for the paper/board sample.
2. Testing of paper grain direction for the paper sample.
3. Measuring solid print density using process colour control bar and compare CMYK with Line chart.
4. Determining the trapping tendency of the given print samples with graph.
5. Determining the print contrast and dot gain of the given sample with graph.
6. Determining the print characteristics curve of the given sample.
7. Determining CIE Lab values of the given print samples and find Delta E.
8. Finding the pH of the dampening solution and plotted graph for different samples.
9. Determining the solid ink density and plotted X bar chart and R chart.
10. Testing of Ink using draw down test method of the given sample.

Equipment Required

- Spectrophotometer/Densitometer.
- pH meter
- Conductivity meter.
- Printing down frame.
- GSM tester (Electronic / Mechanical).

Materials Required

- Reference Colour Patches.
- pH strips, buffer tablets (Solution).
- Colour control bar.
- Step wedge.
- Platemaking chemicals.
- Temperature meter.
- Ink.
- Knife.
- Various Paper/Board.

- Graph
- Calculator

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48265

Semester : VI Semester

Subject Title : MACHINERY MAINTENANCE PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
MACHINERY MAINTENANCE PRACTICAL	5	80	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

RATIONALE:

This subject is aimed at providing basic understanding of the fundamentals of practical sections; mainly carrying the maintenance activities like lubrication, cleaning, dismantling and assembling.

The topics covered are based on the syllabus for Diploma in Printing Technology. The subject is planned to include sufficient practices which would help the student to understand the principles of printing machine maintenance.

OBJECTIVES:

At the end of the study of VI Semester the student will be able to :

1. Know about handling and application of tools like Pipe wrench, Spanner, Vernier Caliper, Micrometer, Feeler Gauge, Dial Gauge and Screw Driver.
2. Learn removing, tensioning and mounting of various drives (Belt and Chain).
3. Check the levelling/alignment of the machine or motor surface.
4. Check the performance of Gripper.
5. Learn assembling and dismantling of bearings/gears/cams/springs.
6. Perform Oil changing, air filter cleaning and lubricating the points.
7. Check and replace electrical component.
8. Perform the solid print test for identifying mechanical problems in the machine.
9. Learn about removing of damaged screws/pins/bolts and nuts.
10. Check the sensors & detectors.

MACHINERY MAINTENANCE LAB

Contents: Practical

List of Exercises

1. Handling and application of tools – Pipe wrench, Spanner, Vernier Caliper, Micrometer, Feeler Gauge, Dial Gauge and Screw Driver.
2. Removing, Tensioning and mounting of various drives (motor belt and transfer & delivery chains).
3. Checking the leveling/alignment of the machine or motor.
4. Checking and adjusting the performance of Gripper.
5. Assembling and dismantling of bearings/gears/cams/springs.
6. Oil changing, air filter cleaning and lubricating the points.
7. Check and replace electrical component like fuses.
8. Performing the solid print test for identifying mechanical problems in the machine.
9. Trouble shooting in maintenance – removing damaged screws/pins/bolts and nuts.
10. Checking the sensors and adjusting its setting and write the procedure for same.

List of Equipment and Instrument:

1. Pipe wrench, Spanner set, Hammer, Nylon rod, File set.
2. Vernier caliper
3. Micrometer
4. Feeler gauge
5. Bearing puller / Blanket gauge / Durometer / Dial gauge / Torque wrench.
6. Oil and grease gun
7. Punch set
8. Allen key set
9. Screw driver set
10. Spirit level

BOARD PRACTICAL EXAMINATIONS

Note:

- The students should be given proper practice in all the experiments. All the experiments should be completed before the examinations.
- The students should maintain observation note book / manual and record notebook. In the observation, the student should draw diagram, mention the readings / observations, calculations and result manually. The same have to be evaluated for the observation mark.
- The record note book should be submitted during the Board Practical Examinations. The record work for the experiments should be completed and evaluated in the respective semesters.
- All experiments should be given and the students are allowed to select any one by lot.
- The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of Practical Examination.
- The examiners should ensure the proper safety measures before the commencement of practical examinations.

DETAILLED ALLOCATION OF MARKS

S.No	Topic	Marks
1.	Aim & Procedure	20
2.	Execution *	50
3.	Output / Handout ^	20
4.	Viva Voce	10
Total		**100**

* Should be evaluated during the execution by the examiners only.

^ All actual output should be printed and submitted with the exam paper for evaluation.

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMIL NADU

DIPLOMA IN PRINTING TECHNOLOGY

N-SCHEME

(to be implemented from the student Admitted from the year 2020-2021 onwards)

Course Name : DIPLOMA IN PRINTING TECHNOLOGY

Subject Code : 48266

Semester : VI Semester

Subject Title : PROJECT WORK AND INTERNSHIP

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration (Hours)
			Internal Assessment	Board Examination	Total	
PROJECT WORK AND INTERNSHIP	4	64	25	100*	100	3

*** Board Exam for 100 marks converted to 75 marks**

Minimum Marks for Pass is 50 out of which minimum 50 marks should be obtained out of 100 marks in the board examination alone.

RATIONALE:

By bringing real-life context and technology to the curriculum through a Project work approach, students are encouraged to become independent workers, critical thinkers, and lifelong learners. Teachers can communicate with administrators, exchange ideas with other teachers and subject-area experts, and communicate with parents, all the while breaking down invisible barriers such as isolation of the classroom, fear of embarking on an unfamiliar process, and lack of assurances of success. A project is an extended, in-depth investigation of a topic,

ideally one worthy of the students attention and energy. In other words, projects involve students in conducting research on phenomena and events worth learning about in their own environments.

In the process of these investigations students have opportunities to pose questions, to generate theories and predictions concerning possible answers, to seek answers to their questions (answers from which they are likely to generate still more questions), to interview experts and others from whom relevant information can be obtained, and to engage in other activities involved in collecting information. Projects provide contexts in which students can apply a wide variety of social and intellectual skills in, addition to the basic academic skills being learned in the more formal parts of the curriculum.

OBJECTIVE:

- To make the students learn about the book printing and publications right from prepress to post press operations involved. The students learn about the selection of layout, substrates, designing software's, printing processes and finishing operations involved in the production of Book publications. This gives students hands on experience in handling of materials and various stages of operations of machines used in the Book production processes.
- The objective of project work is to make use of the knowledge gained by the student at various stages of the diploma course and to enable the students to work in convenient groups of not more than six members in a group on a project involving theoretical and experimental studies related to Printing Technology.
- Major Project work is meant for publication of books on latest and emerging trends in Printing Technology along with any one value addition process by applying the knowledge and skills gained through various subject areas.

Identification of project titles and project activities, which can be taken in them, should begin well in advance. Students should also be asked to identify suitable project and project activities, which can be taken by them. One teacher is expected to guide, supervise and evaluate the project work of 4 - 6 students.

This helps to judge the level of proficiency, originality, and capacity for application of the knowledge attained by the student at the end of the course.

Each student shall finally produce a comprehensive project report covering background information, project work details and conclusions. This final report shall be typewritten form as specified in the guidelines. Every Project Work shall have a Guide who is a member of the faculty of the Institute.

INTERNAL ASSESSMENT:

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	Period of Assessment	Max. Marks
First Review	6th week	10
Second Review	12th week	10
Attendance	Entire semester	5
Total		**25**

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	Max Marks
Demonstration/Presentation	25
Report	25
Viva Voce	30
Internship report	20
Total	**100**

*** Board Exam for 100 marks converted to 75 marks**

Selection of Questions should be from Question Bank by the External Examiner, no choice need be given to the candidates.

The Institute must conduct two review sessions on project work.

Zero Review – Before starting the Project work; to discuss and brief what their project title, its feasibility and the place of project work with the faculties of the institute.

First Review – In the month of January; at this time students should have completed 50% of their project work. They are expected to explain the half success of their project work.

Second Review - In the month of February, at this time students are expected to complete 80% of their Project work. They should brief about the completion of project along with their 80% of their completed work.

Final Review – In the first week of March;

These reviews have to be evaluated by the panel of all the Project guides along with the Project Coordinator

Evaluation is based on:

Effective Presentation includes Attire, Presentation Techniques, Clarity of Speech, hand outs, etc

Project work done includes Project Schedule maintained, Quality and Quantity of work done, etc

Smartness includes logical thinking and quick but good conduct while answering, etc.

Project work report should be in A4 size of 50 - 75 pages. Appearance should not display extravaganza.

The following factors are to be considered while selecting the projects

1. The project has to be done by the students themselves and not by any outsider, that is, the diploma students with their own knowledge and skill shall be able to do the project with somebody's guidance.
2. Repetition of same project done by any other batch of same year/previous years shall not be permitted.
3. The main motive of the project shall be gaining of knowledge and skill by the students.
4. The expense towards the project work shall not be a big burden to the parents.
5. The total number of students in a batch shall not exceed six

There should be enough staff guidance and available in the Institution.

INTERNSHIP REPORT

Objective of internship is to provide to students the feel of the actual working environment and to gain practical knowledge and skills, which in turn will motivate, develop and build their confidence. internship is also expected to provide the students the basis to identify their key operational area of interest.

During 4th Semester vacation students have to undergo minimum 2 weeks of Internship Training and during 5th Semester vacation students have to undergo minimum 2 weeks of Internship (Total duration - 4 weeks).

In 6th semester, each student will be required to submit a typed report (2 copies) as “Internship Report” giving industrial experience along with the details about the press, the process, their findings etc. in detail as a part of internship.

Performance during Internship provided in industrial unit will be evaluated, based on the report to be submitted by each student and necessary assessment / certificate as may be obtained by the Institute from the concerned unit. 100 marks are assigned for internship.

The marks will be based on regularity in attendance (minimum 75%), conduct and progress as reported by the industrial supervisor, quality of report and viva voce examination, besides behavior etc.

Once the student has been selected / deputed for internship by the institute, he/she shall not be permitted to undergo Internship elsewhere. In case students make direct arrangements with the industry / press for internship, these will necessarily have to be approved by the institute.

Responsibilities of institute and the student/trainee with aims & objectives have been prescribed for adherence.

1. RESPONSIBILITIES OF THE STUDENTS

1 Should be punctual.

2 Should maintain the training logbook up-to-date.

3 Should be attentive and careful while doing work.

4 Should be keen to learn and maintain high standards and quality of work.

5 Should interact positively with the Industry staff.

6 Should be honest and loyal to the Press and towards their training.

7 Should get their appraisals signed regularly from the HOD's or training manager.

8 Gain maximum from the exposure given, to get maximum practical knowledge and skills.

9 Should attend the training review sessions / classes regularly.

10 Should be prepared for the arduous working condition and should face them positively.

11 Should adhere to the prescribed training schedule.

12 Should take the initiative to do the work as training is the only time where you can get maximum exposure.

13 Should, on completion of internship, handover all the reports, appraisals, logbook and completion certificate to the institute.

2. RESPONSIBILITIES OF THE INSTITUTE

1 Should give proper briefing to students prior to the internship

2 Should make the students aware of the industry environment and expectations.

3 Should notify the details of training schedule to all the students.

4 Should coordinate regularly with the press especially with the training manager.

5 Should visit the press, wherever possible, to check on the trainees.

6 Should sort out any problem between the trainees and the press.

7 Should take proper feedback from the students after the training.

8 Should brief the students about the appraisals, attendance, marks, logbook and training report.

9 Should ensure that change of Internship Press is not permitted once the student has been interviewed, selected and has accepted the offer.

10 Should ensure trainees procure training completion certificate from the press before joining institute.

For award of marks, 5 marks of Internship would be on the basis of feed-back from the industry in a prescribed **Performance Appraisal Form (PAF).** It will be the students' responsibility to get this feed-back/assessment form completed from the industry/press for submission to the institute at the end of internship.

For the remaining 15 marks, students would be assessed on the basis of report/seminar/presentation of reports/Viva voce before a select panel. The presentation would be limited to only one key area of the student's interest. A hard copy of the report will also have to be submitted to the panel.

Internship Report should be in A4 size not exceeding 100 pages. Appearance should not display extravaganza

INTERNSHIP

PERFORMANCE APPRAISAL FORM (PAF)

Name of Student: _____	**Reg. No.:** _____
Institute/College: _____	**Duration:** **working days**
Name of the Press/Industry: _____	From: _____ To: _____

Appearance

Immaculate Appearance, Spotless dressings, Well groomed hair,	5
Smart Appearance, Crisp dressings, Acceptable hair,	4
Well Presented, Clean dressings, Acceptable hair,	3
Untidy hair, Creased ill kept dressings,	2
Dirty / disheveled, Long / unkempt hair,	1

Punctuality / Attendance (_____ days present out of _____ days)

On time, Well Prepared, Ready to commence task, Attendance Excellent	100%	5
On time, Lacks some preparation but copes well, Attendance Very good	90%	4
On time, Some disorganized aspects-just copes, Attendance Regular	80%	3
Occasionally late, Disorganized approach, Attendance irregular	60%	2
Frequently late, Not prepared, Frequently absent without excuse	50%	1

Ability to Communicate (Written / Oral)

Very confident, demonstrates outstanding confidence & ability both spoken/written	5
Confident, Delivers information	4
Communicates adequately, but lacks depth and confidence	3
Hesitant, lacks confidence in spoken / written communication	2
Very inanimate, unable to express in spoken or written work	1

Attitude to Colleagues / Supervisors

Wins / retains highest regard from colleagues has an outstanding rapport with superiors	5
Polite, considerate and firm, well liked.	4
Gets on well with most colleagues.	3
Slow to mix, weak manners, is distant has insensitive approach to superiors	2
Does not mix, relate well with colleagues & superiors	1

Attitude to Supervision

Welcomes criticism, Acts on it, very co-operative	5
Readily accepts criticism and is noticeably willing to assist others.	4
Accepts criticism, but does not necessarily act on it.	3
Takes criticism very personally, broods on it.	2
Persistently disregards criticism and goes own way.	1

Initiative / Motivation

Very effective in analyzing situation and resourceful in solving problems	Demonstrates ambition to achieve progressively.	5
Shows ready appreciation and willingness to tackle problems	Positively seeks to improve knowledge and performance	4
Usually grasps points correctly.	Shows interest in all work undertaken.	3
Slow on the uptake.	Is interested only in areas of work preferred.	2
Rarely grasps points correctly.	Lacks drive and commitment.	1

Reliability / Comprehension

Is totally trust worthy in any working situation. Understands in detail, why and how the job is done.	5
Can be depended upon to identify work requirements and willing to complete them. Readily appreciates, how and why the job is done.	4
Gets on with the job in hand. Comprehends, but doesn't fully understand work in hand	3
Cannot be relied upon to work without supervision. Comprehends only after constant explanation.	2
Requires constant supervision. Lacks any comprehension of the application.	1

Responsibility

Actively seeks responsibility at all times.	5
Very willing to accept responsibility.	4
Accepts responsibility as it comes.	3
Inclined to refer matters upwards rather than make own decision.	2
Avoids taking responsibility.	1

Quality of Work

Exceptionally accurate in work, very thorough usually unaided.	5
Maintains a high standard of quality	4
Generally good quality with some assistance.	3
Performance is uneven.	2
Inaccurate and slow at work.	1

Quantity of work

Outstanding in output of work.	5
Gets through a great deal.	4
Output satisfactory.	3
Does rather less than expected.	2
Output regularly insufficient	1

Total _____/ 50

Stipend Paid: Rs._____ (if any)

Name of Appraiser: _____ **Signature:** _____

Designation of Appraiser: _____**Date:** _____

Signature of Student: _____**Date:** _____