Department of Production Engineering

GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA

Syllabus Scheme 2020
BACHELOR OF TECHNOLOGY

MECHANICAL ENGINEERING (PRODUCTION)

DEPARTMENT OF PRODUCTION ENGINEERING,
GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA **GNDEC/MPE-2020**

BACHELOR OF TECHNOLOGY MECHANICAL ENGINEERING (PRODUCTION) 2020 ONWARDS

Examination Pattern and Conditions 2020 Batch & Onwards

Minimum Attendance requirement to appear in Final Examinations

1. Minimum requirement for appearing in Examinations is 75% attendance of Schedule Lectures.
2. 10% relaxation is given in case of medical leave, Duty Leave (Representing College or Department) submitted within the week after joining college or after completion of duty.
3. Student Falling short of 75% attendance or 65% attendance (in case of medical leave & Duty Leave) detained in corresponding Subject and will not be allowed to sit in examination of detained subject. Student will have to clear attendance along with his/her junior classes when that subject is offered with permission of Head of Department

Minimum Marks required to pass and Distribution of Marks for Machine Drawing

1. Passing Marks are 40% of Internal(Max.40 Marks) and External (Max. 60 Marks) Both
2. Internal Marks are distributed as, 20 marks as average of two Mid Semester examination marks, 5 marks for attendance (0 for 75% attendance and 5 for more than 95% attendance) and remaining 15 marks for Drawing Sheets

Minimum Marks required to pass and Distribution of Marks for Theory Subjects

1. Passing Marks are 40% of Internal(Max.40 Marks) and External (Max. 60 Marks) Both
2. Internal Marks are distributed as, 24 marks as average of two Mid Semester examination marks, 6 marks for attendance (0 for 75% attendance and 6 for more than 95% attendance) and remaining 10 marks for assignments(Minimum 1 assignment for each chapter)

Minimum Marks required to pass and Distribution of Marks for Practical Subjects

1. Passing Marks are 40% of Internal(Max.30 Marks) and External(Max. 20 Marks) Both
2. Internal Marks are distributed as, 10 marks as Viva Voce Marks 4 marks for attendance (0 for 75% attendance and 4 for more than 95% attendance), 8 Marks for physically performing the practical and remaining 8 marks for Practical File
3. In case of Minor Projects, Passing Marks are 40% of Internal(Max. 60 Marks) and External(Max. 40 Marks) Both and in case of Major Project (CASE I) and Project 1 and Project 2 (CASE II) Passing Marks are 40% of Internal(Max. 120 Marks) and External(Max. 80 Marks) Both
4. In Minor Project, Major Project, Project 1 and Project 2 15 % Marks will be allocated to Novelty of Idea of Project, 15% of Marks will be allocated to presentation of Project, 30% marks will be allocated to report of Project, 30% of marks are allocated to Viva and Discussion of Project and remaining 10% marks are allocated for attendance in case of Internal Marks Distribution
5. In case of External Marks Distribution in Minor Project, Major Project, Project 1 and Project 2 15 % Marks will be allocated to Novelty of Idea of Project, 15% of Marks will be allocated to presentation of Project, 30% marks will be allocated to report of Project and 40% of marks are allocated to Viva and Discussion of Project

Theory Paper Pattern

The Question paper shall be having following structure / weight age:

1. Section A - Short type questions based upon whole syllabus- 6 Questions of 2 marks each. All questions are compulsory 6 x 2 =12 marks
2. Section B - Questions based upon whole syllabus- 6 Questions of 4 marks each. All questions are compulsory 6 x 4 =24 marks
3. Section C - Questions based upon whole syllabus- 2 Questions of 12 marks each. All questions are compulsory with Internal Choice in both the questions 2x12 =24 marks

Machine Drawing Paper Pattern

The Question paper shall be having following structure / weight age:

1. Section A - Short type questions based upon whole syllabus- 10 Questions of 2 marks each. All questions are compulsory 10 x 2 =20 marks
2. Section B - Free Hand sketching of machine parts etc.-3 Questions of 5 marks each 2 Questions are to be attempted 2 x 5 =10 marks
3. Section C - Assembly drawing of machine parts with at least two views -2 Questions of 30 marks each 1 question is to be attempted 1 x 30 = 30 marks.

Practical Examination Pattern

1. An External Viva Voce will be held by an External Examiner/ Senior Faculty Member.
2. Student will have to perform Practical on Machine/Equipment/Computer in the presence of an External Examiner/ Senior Faculty Member and Internal Examiner.
3. Marks will be distributed as 8 marks for Practical Performance, 8 Marks for Viva Voce and 4 Marks for File/Copy/Report.

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3RD SEMESTER

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Core Course	PCMP-101	Strength of Materials	Theory	3	0	0	40	60	100	3
2	Professional Core Course	PCMP-102	Machine Drawing	Theory	2	0	4	40	60	100	4
3	Professional Core Course	PCMP-103	Thermal Engineering	Theory	3	0	0	40	60	100	3
4	Humanities Course	HSMMP-101	Operations Management	Theory	3	0	0	40	60	100	3
5	Basic Science Course	BSMP-101	Material Science	Theory	3	0	0	40	60	100	3
6	Engineering Science Course	ESMP-101	Industrial Engineering	Theory	3	0	0	40	60	100	3
7	Professional Core Course	LPCMP-101	Strength of Material Lab	Practical	0	0	2	30	20	50	1
8	Professional Core Course	LPCMP-102	Thermal Engineering Lab	Practical	0	0	2	30	20	50	1
9	Institutional Training	TR-101	Training I	Practical	-	--	-	60	40	100	1
10	Project	PRMP-101	Seminar/ Technical Report Writing	Practical	0	0	2	100	-	100	1
11	Mandatory Course	MPD-102	Mentoring and Professional Development	Practical	0	0	1	-	-	-	-
				Total	17	0	11	460	440	900	23

Institutional Training after 2ND semester of 4 weeks duration will be conducted during summer vacations and marks will be added in 3rd semester

4TH SEMESTER

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Core Course	PCMP-104	Design of Machine Elements	Theory	3	1	0	40	60	100	4
2	Professional Core Course	PCMP-105	Fluid Mechanics & Machinery	Theory	3	1	0	40	60	100	4
3	Professional Core Course	PCMP-106	Manufacturing Processes	Theory	3	0	0	40	60	100	3
4	Professional Core Course	PCMP-107	Kinematics & Dynamics of Machines	Theory	3	0	0	40	60	100	3
5	Professional Core Course	PCMP-108	Physical Metallurgy & Heat Treatment	Theory	3	0	0	40	60	100	3
6	Professional Core Course	LPCMP-103	Fluid Mechanics & Machinery Lab	Theory	0	0	2	40	60	100	1
7	Professional Core Course	LPCMP-104	Kinematics & Dynamics of Machines Lab	Practical	0	0	2	30	20	50	1
8	Professional Core Course	LPCMP-105	Manufacturing Processes Lab & Physical Metallurgy & Heat Treatment Lab	Practical	0	0	4	30	20	50	2
9	Mandatory Non Credit Course	MCI-101	Environmental Engineering	Practical	2	0	0	50	-	50	-
10	Mandatory Course	MPD-102	Mentoring and Professional Development	Practical	0	0	1	100	-	100	1
				Total	17	2	9	410	390	800	22

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5th SEMESTER

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Core Course	PCMP-109	Industrial Automation & Robotics	Theory	3	0	0	40	60	100	3
2	Professional Core Course	PCMP-110	Inspection & Quality Control	Theory	3	0	0	40	60	100	3
3	Professional Core Course	PCMP-111	Metal Forming	Theory	3	0	0	40	60	100	3
4	Professional Core Course	PCMP-112	Engineering Metrology	Theory	3	0	0	40	60	100	3
5	Professional Core Course	PCMP-113	Machining Science	Theory	3	0	0	40	60	100	3
6	Professional Elective Course	PEMP-XXX	Departmental Elective-I	Theory	4	0	0	40	60	100	4
7	Professional Core Course	LPCMP-106	Industrial Automation & Robotics Lab	Practical	0	0	2	30	20	50	1
8	Professional Core Course	LPCMP-107	Metal Forming & Machining Science Lab	Practical	0	0	2	30	20	50	1
9	Professional Core Course	LPCMP-108	Engineering Metrology Lab	Practical	0	0	2	30	20	50	1
10	Industrial/Institutional Training	TR-102	Training II	Practical	-	-	--	60	40	100	1
11	Mandatory Course	MPD-103	Mentoring and Professional Development	Practical	0	0	1	-	-	--	-
				Total	19	0	7	390	460	850	23

Industrial/ Institutional Training after 4th semester of 4 weeks duration will be conducted during summer vacations and marks will be added in 5th semester

6TH SEMESTER

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Core Course	PCMP-114	Industrial Tribology	Theory	3	0	0	40	60	100	3
2	Professional Core Course	PCMP-115	Machine Tool Design	Theory	3	0	0	40	60	100	3
3	Professional Core Course	PCMP-116	Operation Research	Theory	3	1	0	40	60	100	4
4	Professional Core Course	PCMP-117	Non-Traditional Machining	Theory	3	0	0	40	60	100	3
5	Professional Elective Course	PEMP-XXX	Departmental Elective-II	Theory	4	0	0	40	60	100	4
6	Professional Open Course	OEZZ-XXX	Open Elective- I	Theory	3	0	0	40	60	100	3
7	Professional Core Course	LPCMP-109	Industrial Tribology Lab & Machine Tool Design Lab	Practical	0	0	2	30	20	50	1
8	Professional Core Course	LPCMP-110	Non-Traditional Machining Lab	Practical	0	0	2	30	20	50	1
9	Seminar/Project	PRMP-102	Minor Project	Practical	0	0	2	60	40	100	1
10	Mandatory Course	MPD-103	Mentoring and Professional Development	Practical	0	0	1	100	-	100	1
				Total	19	1	7	460	440	900	24

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(Case I: - If student opts for Sixth Month Training then the student will have to select the Case I Scheme)

7TH SEMESTER CASE I

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Elective Course	PEMP-XXX	Departmental Elective-III	Theory	4	0	0	40	60	100	4
2	Professional Elective Course	PEMP-XXX	Departmental Elective-IV	Theory	4	0	0	40	60	100	4
3	Professional Open Course	OEZZ-XXX	Open Elective- II	Theory	3	0	0	40	60	100	3
4	Mandatory Course Non Credit (Open Elective)	MCI-10X	Indian Constitution/ Organizational Behavior	Theory	2	0	0	50	-	-	-
5	Seminar/Project	PRMP-103	Major Project	Practical	0	0	6	120	80	200	3
6	Industrial/Institutional Training	TR-103	Training III	Practical	-	-	-	60	40	100	1
7	Mandatory Course	MPD-104	Mentoring and Professional Development	Practical	0	0	1	-	-	-	-
				Total	13	0	7	350	300	650	15

Industry/Institutional Training after 6th semester of 4 weeks duration will be conducted during summer vacations and marks will be added in 7th Semester

8th SEMESTER CASE I

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Industrial/Institutional Training	TR-104	Training IV	Practical	-	-	30	350	150	500	15
2	Mandatory Course	MPD-104	Mentoring and Professional Development	Practical	0	0	1	100	-	100	1
				Total	0	0	31	450	150	600	16

(Case II: - If student opts for theory classes then the student will have to select the Case II Scheme)

7th SEMESTER CASE II

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Elective Course	PEMP-XXX	Departmental Elective-III	Theory	4	0	0	40	60	100	4
2	Professional Elective Course	PEMP-XXX	Departmental Elective-IV	Theory	4	0	0	40	60	100	4
3	Professional Open Course	OEZZ-XXX	Open Elective- II	Theory	3	0	0	40	60	100	3
4	Industrial/Institutional Training	TR-103	Training III	Practical	-	-	-	60	40	100	1
5	Seminar/Project	PRMP-104	Project I	Practical	0	0	6	120	80	200	3
6	Mandatory Course	MPD-104	Mentoring and Professional Development	Practical	0	0	1	-	-	-	-
				Total	11	0	9	300	300	600	15

Industry/Institutional Training after 6th semester of 4 weeks duration will be conducted during summer vacations and marks will be added in 7th Semester

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Industry/Institutional Training after 6th semester of 4 weeks duration will be conducted during summer vacations and marks will be added in 7th Semester

8TH SEMESTER CASE II

S. No.	Course Category	Course Code	Course Title	Theory/ Practical	Hours per Week			Internal Marks	External Marks	Total Marks	Credits
					L	T	P				
1	Professional Elective Course	PEMP-XXX	Departmental Elective-V	Theory	4	0	0	40	60	100	4
2	Professional Elective Course	PEMP-XXX	Departmental Elective-VI	Theory	4	0	0	40	60	100	4
3	Professional Open Course	OEZZ-XXX	Open Elective- III	Theory	3	0	0	40	60	100	3
4	Mandatory Course Non Credit (Open Elective)	MCI-10X	Indian Constitution/ Organizational Behavior	Theory	2	0	0	50	-	-	-
5	Seminar/Project	PRMP-105	Project II	Practical	0	0	6	120	80	200	3
6	Mandatory Course	MPD-104	Mentoring and Professional Development	Practical	0	0	1	100	-	100	1
7	Seminar/Project	PRMP-106	Seminar on Recent Advances in Production Engineering	Practical	0	0	2	50	-	50	1
				Total	13	0	9	440	260	700	16

LIST OF DEPARTMENTAL ELECTIVE SUBJECTS CASE I

S. No.	Course Code	Course Title	Course Code	Course Title	Course Code	Course Title
	Design & Manufacturing Engineering Group		**Industrial Engineering Group**		**Materials Group**	
Elective I (5TH Semester)						
1	PEMP-101	Tool & Cutter Design	PEMP-125	Agile Manufacturing	PEMP-149	Materials Testing & Characterization
2	PEMP-102	Micro Manufacturing	PEMP-126	Marketing Management	PEMP-150	Deformations & Defects of Materials
3	PEMP-103	Introduction to Robotics	PEMP-127	Human Engineering	PEMP-151	Science & Engineering of Metals
4	PEMP-104	Jig Fixture & Die Design	PEMP-128	Technology Management	PEMP-152	Composite Materials
Elective II (6TH Semester)						
1	PEMP-105	Maintenance & Reliability Engineering	PEMP-129	Estimating & Costing	PEMP-153	Advance Ceramics
2	PEMP-106	Cryogenic Manufacturing	PEMP-130	Plant Layout & Material Handling	PEMP-154	Material Processing
3	PEMP-107	Advance Casting & Welding Technology	PEMP-131	Productivity Management	PEMP-155	Aero Space Materials
4	PEMP-108	Statistic & Numerical Analysis	PEMP-132	Project Management	PEMP-156	Advance Engineering Material
Elective III (7TH Semester)						
1	PEMP-109	Plastic and Ceramics Technology	PEMP-133	Supply Chain Management	PEMP-157	Nano Materials
2	PEMP-110	Finite Element Method	PEMP-134	Quality & Reliability Engineering	PEMP-158	Explosive Materials used in Industries
3	PEMP-111	Automobile Engineering	PEMP-135	Green Manufacturing	PEMP-159	Wear Technology
4	PEMP-112	Industrial Finishing	PEMP-136	Investment Planning	PEMP-160	Thermodynamics of Materials
Elective IV (7TH Semester)						
1	PEMP-113	Non Destructive Testing	PEMP-137	Total Productive Maintenance	PEMP-161	Water Resistance Materials
2	PEMP-114	Computer Aided Design & Manufacturing	PEMP-138	Industrial Safety & Environment	PEMP-162	Nuclear Materials
3	PEMP-115	Precision Engineering	PEMP-139	Value Engineering	PEMP-163	Texture in Materials
4	PEMP-116	Theory of Plasticity	PEMP-140	Intellectual Property Rights	PEMP-164	Environmental Degradation of Materials

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LIST OF DEPARTMENTAL ELECTIVE SUBJECTS CASE II

S. No.	Course Code	Course Title	Course Code	Course Title	Course Code	Course Title
	Design & Manufacturing Engineering Group		**Industrial Engineering Group**		**Materials Group**	
Elective I (5TH Semester)						
1	PEMP-101	Tool & Cutter Design	PEMP-125	Agile Manufacturing	PEMP-149	Materials Testing & Characterization
2	PEMP-102	Micro Manufacturing	PEMP-126	Marketing Management	PEMP-150	Deformations & Defects of Materials
3	PEMP-103	Introduction to Robotics	PEMP-127	Human Engineering	PEMP-151	Science & Engineering of Metals
4	PEMP-104	Jig Fixture & Die Design	PEMP-128	Technology Management	PEMP-152	Composite Materials
Elective II (6TH Semester)						
1	PEMP-105	Maintenance & Reliability Engineering	PEMP-129	Estimating & Costing	PEMP-153	Advance Ceramics
2	PEMP-106	Cryogenic Manufacturing	PEMP-130	Plant Layout & Material Handling	PEMP-154	Material Processing
3	PEMP-107	Advance Casting & Welding Technology	PEMP-131	Productivity Management	PEMP-155	Aero Space Materials
4	PEMP-108	Statistic & Numerical Analysis	PEMP-132	Project Management	PEMP-156	Advance Engineering Material
Elective III (7TH Semester)						
1	PEMP-109	Plastic and Ceramics Technology	PEMP-133	Supply Chain Management	PEMP-157	Nano Materials
2	PEMP-110	Finite Element Method	PEMP-134	Quality & Reliability Engineering	PEMP-158	Explosive Materials used in Industries
3	PEMP-111	Automobile Engineering	PEMP-135	Green Manufacturing	PEMP-159	Wear Technology
4	PEMP-112	Industrial Finishing	PEMP-136	Investment Planning	PEMP-160	Thermodynamics of Materials
Elective IV (7TH Semester)						
1	PEMP-113	Non Destructive Testing	PEMP-137	Total Productive Maintenance	PEMP-161	Water Resistance Materials
2	PEMP-114	Computer Aided Design & Manufacturing	PEMP-138	Industrial Safety & Environment	PEMP-162	Nuclear Materials
3	PEMP-115	Precision Engineering	PEMP-139	Value Engineering	PEMP-163	Texture in Materials
4	PEMP-116	Theory of Plasticity	PEMP-140	Intellectual Property Rights	PEMP-164	Environmental Degradation of Materials
Elective V (8TH Semester)						
1	PEMP-117	Design of Experiments	PEMP-141	Entrepreneurship	PEMP-165	Smart Materials
2	PEMP-118	Bio Mechanics	PEMP-142	Quality Assurance	PEMP-166	Extreme Environmental Materials
3	PEMP-119	Mechatronics	PEMP-143	Probability & Statistics	PEMP-167	Cryogenic Materials
4	PEMP-120	Product Design & Development	PEMP-144	Total Quality Management	PEMP-168	Medical Materials
Elective VI (8TH Semester)						
1	PEMP-121	Reverse Engineering	PEMP-145	Materials Management	PEMP-169	Bio Materials
2	PEMP-122	Surface Engineering	PEMP-146	Enterprise Resource Planning	PEMP-170	Waste Material & Management
3	PEMP-123	Computer Integrated Manufacturing	PEMP-147	Production Planning & Control	PEMP-171	Lather Technology
4	PEMP-124	Rapid Prototyping	PEMP-148	Research Methodology	PEMP-172	Hazardous Materials

7TH SEMESTER in CASE I & 8TH SEMESTER in CASE II Mandatory Non Credit Course (Open Elective)

(Students can select any one Mandatory Non Credit Course (Open Elective))

S. No.	Course Category	Course Code	Course Title	S. No.	Course Code	Course Title
1	Mandatory Course Non Credit (Open Elective)	MCI-102	Indian Constitution	2	MCI-103	Organizational Behavior

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List of Open Elective Subjects Offered by the Department to the students of Other Departments

S. No.	Course Code	Course Title	Course Code	Course Title	Course Code	Course Title
	Open Elective I		**Open Elective II**		**Open Elective III**	
	6TH SEMESTER		**7TH SEMESTER**		**8TH SEMESTER**	
1	OEMP-101	Automobile Engineering	OEMP-104	Production Planning & Control	OEMP-107	Supply Chain Management
2	OEMP-102	Human Engineering	OEMP-105	Engineering Materials	OEMP-108	Composite Materials
3	OEMP-103	Nano Materials	OEMP-106	Product Design & Development	OEMP-109	Precision Engineering