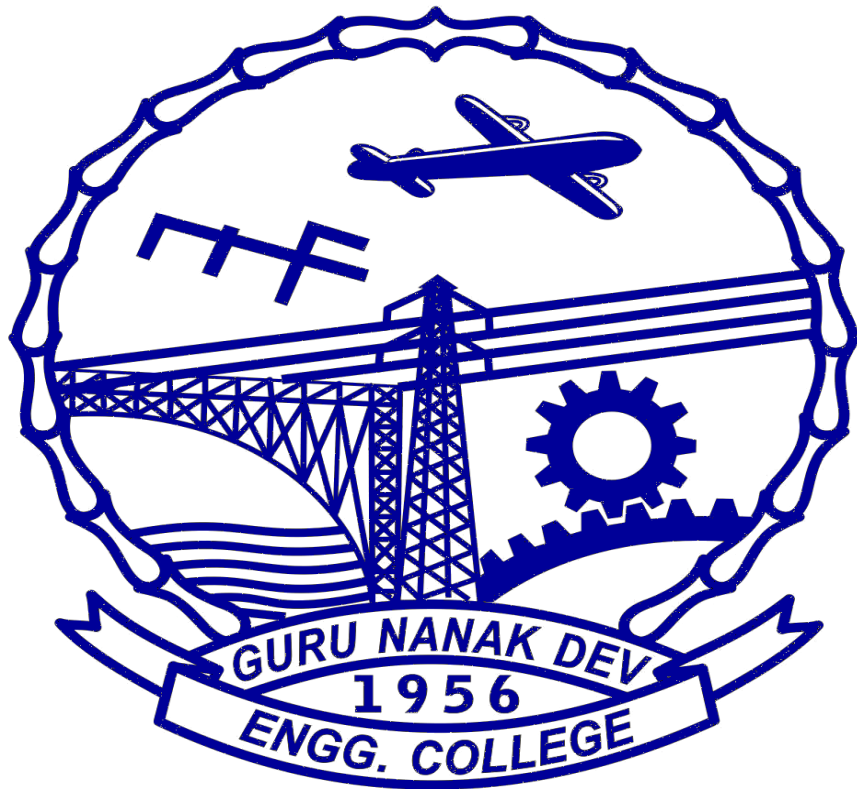


**Study Scheme  
&  
Syllabus  
Of  
B.Tech Production Engineering  
2014 onwards**



# **Guru Nanak Dev Engineering College**

**(An Autonomous College U/S [2(f) and 12 (B) of UGC Act 1956)**

**NBA Accredited Programmes under Tier-I (Washington Accord), 'A' Grade NAAC Accredited, TCS Accredited AICTE Approved, Punjab Govt. Aided Status, Affiliated to I.K. Gujral Punjab Tech. University, ISO : 9001:2008 Certified**

## **DEPARTMENT VISION**

The Production Engineering Department strives to establish an outstanding Centre of regional and national reputation for providing a quality engineering education to the students from the rural area of Punjab, excellent research and services to the professional and the community; to produce quality production engineers; and to employ principles of continual quality improvement to enhance its program and faculty.

## **DEPARTMENT MISSION**

- a. Quality education to be provided to the students along with enhancement of their skills to make them globally competitive Production Engineers.
- b. Development of linkages with top R&D organizations and educational institutions in India and abroad for excellence in teaching, research and consultancy practices.
- c. Strengthening Continuing Education with special focus on training and skills up gradation of teaching and technical manpower of the region.
- d. Enhancement of Industrial Consultancy and Testing.
- e. Enhancement of research activities through AICTE/DST/UGC sponsored research projects.
- f. Dedicated efforts to be made for enhancing employability of students.
- g. Introduction of new UG and PG programs in emerging fields of engineering.

## **GRADUATE ATTRIBUTES**

1. Engineering knowledge
2. Problem analysis
3. Design/development of solutions
4. Investigations of complex problems
5. Modern tool usage
6. Engineer and society
7. Environment and sustainability
8. Ethics
9. Individual and team work
10. Communication
11. Life-long learning
12. Project management and Finance

### **PROGRAM EDUCATION OBJECTIVES (PEOs)**

1. To prepare students for successful careers as per the need of Indian and multinational industries/companies.
2. To develop the strong basic technical as well as non-technical (knowledge of computer skills of solving the problems) skills in the students.
3. To develop the ability among students for taking research/teaching assignments.

### **PROGRAM OUTCOMES (POs)**

After completion of B. Tech. in Production Engineering:

- a. An ability to apply knowledge of mathematics, science, and engineering.
- b. An ability to design and conduct experiments, as well as to analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

- d. An ability to function on multi-disciplinary teams.
- e. An ability to identify, formulates, and solves engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- i. Recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary or engineering practice.
- l. Graduates are expected to gain the technical, managerial and working relationship qualities for the industry/ organization and use this knowledge for the higher studies/teaching/research works

# SYLLABUS STRUCTURE AND END SEMESTER EXAMINATIONS

## QUESTION PAPER PATTERN

### Syllabus Structure

1. In most of courses, there are topics under the heading **Topics for Self Learning (TSL)**. These are the topics to be learnt by the student on their own under the guidance of the course instructor/s. Course instructor/s will inform the students about the depth to which TSL components are to be studied. *The evaluation of TSL will be done in Assignments ONLY.*

### Pattern of End Semester Examinations Question Paper

- a) Question paper will consist of total Nine (09) questions distributed among three parts: Part A, Part B and Part C.
- b) Part A will consist of One (01) question having Ten (10) parts, each of Two (02) marks. Five (05) questions will be asked from each section of the syllabus i.e. Section A and Section B, covering maximum units of respective section. Candidate has to attempt all parts of this question.
- c) Part B will consist of Five (05) questions, each of Five (05) marks. Minimum Two (02) questions have to be asked from each section of syllabus i.e. Section A and Section B. Candidate has to attempt any Four (04) questions out of these Five questions.
- d) Part C will consist of Three (03) questions, each of Ten (10) marks. Out of these Three questions, Two (02) questions have to be asked taking One (01) from each section of syllabus i.e. Section A and Section B and **the third question has to be from that section of syllabus from which two questions have been asked in Part B of question paper**. Candidate has to attempt any Two (02) questions out of these three questions.
- e) The above points (a) to (d) will not be applicable for courses related to Machine Design/ Drawing. For pattern of question paper of such courses reference may be made to the note given in the syllabus of these courses.

## Syllabus for B.Tech Production Engineering

### 3rd SEMESTER

Course Code	Subject	L	T	P	Int	Ext	Total	Credits
PE - 14301	Strength of Materials	3	1	-	40	60	100	4
PE - 14302	Machine Drawing	2	-	6	40	60	100	5
PE - 14303	Thermal Engineering	3	1	-	40	60	100	4
PE - 14304	Theory of Machines	3	1	-	40	60	100	4
PE - 14305	Manufacturing Processes-I	4	-	-	40	60	100	4
PE - 14306	Strength of Material Lab.	-	-	2	30	20	50	1
PE - 14307	Thermal Engineering Lab.	-	-	2	30	20	50	1
PE - 14308	Theory of MachinesLab.	-	-	2	30	20	50	1
PE - 14309	Manufacturing Processes-I Lab.	-	-	2	30	20	50	1
	Advisory Meeting	-	1	-	-	-	-	-
TR - 14301	*Workshop Training	-	-	-	60	40	100	2
	<b>Total</b>	<b>15</b>	<b>4</b>	<b>14</b>	<b>380</b>	<b>420</b>	<b>800</b>	<b>27</b>

**Total Contact hours = 33**

\*Workshop Training will be imparted in the institution at the end of 2<sup>nd</sup> semester during summer vocation of 4 weeks (Six hours per day and six days a week).

## Syllabus for B.Tech Production Engineering

### 4<sup>th</sup> SEMESTER

Course Code	Subject	L	T	P	Int	Ext	Total	Credits
PE - 14401	Design of Machine Elements	3	1	-	40	60	100	4
PE - 14402	Fluid Mechanics and Fluid Machinery	3	1	-	40	60	100	4
PE - 14403	Manufacturing Processes - II	4	-	-	40	60	100	4
PE - 14404	Engineering Materials and Metallurgy	4	-	-	40	60	100	4
PE - 14405	Industrial Organization and Management	4	-	-	40	60	100	4
PE - 14406	Design of Machine Elements Lab.	-	-	2	30	20	50	1
PE - 14407	Fluid Mechanics and Fluid Machinery Lab.	-	-	2	30	20	50	1
PE - 14408	Manufacturing Processes –II Lab.	-	-	2	30	20	50	1
PE - 14409	Engineering Materials and Metallurgy Lab.	-	-	2	30	20	50	1
GF-14401	General Fitness	-	1	-	100	-	100	1
<b>Total</b>		<b>18</b>	<b>3</b>	<b>8</b>	<b>420</b>	<b>380</b>	<b>800</b>	<b>25</b>

**Total Contact hours = 29**

**Note:-** There shall be Industrial training of 04 weeks duration in reputed industries at the end of 4<sup>th</sup> Sem. The marks for this will be included in the 5<sup>th</sup> Sem.

## Syllabus for B.Tech Production Engineering

### 5<sup>th</sup>SEMESTER

Course Code	Subject	L	T	P	Int	Ext	Total	Credits
PE - 14501	Operation Research	3	1	-	40	60	100	4
PE - 14502	Machining Science	3	1	-	40	60	100	4
PE - 14503	Engineering Metrology	4	-	-	40	60	100	4
PE - 14504	Metal Forming	4	-	-	40	60	100	4
DEPE-149XX	(Dept. Elective-I)	4	-	-	40	60	100	4
PE - 14505	Machining Science Lab.	-	-	2	30	20	50	1
PE - 14506	Engineering Metrology Lab.	-	-	2	30	20	50	1
PE - 14507	Metal Forming Lab	-	-	2	30	20	50	1
TR - 14501	**Industrial training	-	-	-	60	40	100	2
	Advisory Meeting	-	1	-	-	-	-	-
<b>Total</b>		<b>18</b>	<b>3</b>	<b>6</b>	<b>350</b>	<b>400</b>	<b>750</b>	<b>25</b>

**Total Contact hours = 27**

\*\* Industrial training of 04 weeks will be imparted in the reputed industries at the end of 4<sup>th</sup> semester.



**Syllabus for B.Tech Production Engineering**

**6<sup>th</sup>SEMESTER**

Course Code	Subject	L	T	P	Int	Ext	Total	Credits
PE - 14601	Industrial Engineering	4	-	-	40	60	100	4
PE - 14602	Product Design & development	3	1	-	40	60	100	4
PE - 14603	Tool & cutter Design	3	1	-	40	60	100	4
PE - 14604	Non-Traditional machining Methods	4	-	-	40	60	100	4
OEPE-140XX	Open Elective	3	-	-	40	60	100	3
DEPE-149XX	Dept. Elective-II	4	-	-	40	60	100	4
PE - 14605	Industrial Engineering Lab.	-	-	2	30	20	50	1
PE - 14606	Product Design & development Lab.	-	-	2	30	20	50	1
PE - 14607	Tool & cutter Design Lab.	-	-	2	30	20	50	1
PE - 14608	Minor project*	-	-	1	60	40	100	1
GF - 14601	General fitness	-	1	-	100	-	100	1
<b>Total</b>		<b>21</b>	<b>3</b>	<b>7</b>	<b>490</b>	<b>460</b>	<b>950</b>	<b>28</b>

**Total Contact hours = 31**

**\*Note:-**Only one project will be carried out in parts as **Minor Project** in 6<sup>th</sup> Semester& a **MajorProject** in 7<sup>th</sup>/8<sup>th</sup> Semester. LiteratureSurvey, Problem formulation, Assessment for

viability of the project, objectives & methodology for the project shall be decided & formulated as minor project in 6<sup>th</sup> Semester.

**Syllabus for B.Tech Production Engineering**

**7<sup>th</sup>SEMESTER**

Course Code	Subject	L	T	P	Int	Ext	Total	Credits
PE - 14701	Computer Integrated Manufacturing	4	-	-	40	60	100	4
PE - 14702	Machine Tool Design	3	1	-	40	60	100	4
PE - 14703	Industrial Automation & Robotics	4	-	-	40	60	100	4
PE - 14704	Industrial Tribology	4	-	-	40	60	100	4
DEPE-149XX	Departmental Elective - III	4	-	-	40	60	100	4
DEPE-149XX	Departmental Elective - IV	4	-	-	40	60	100	4
PE - 14705	Industrial Automation & Robotics Lab.	-	-	2	30	20	50	1
PE - 14706	Computer Integrated Manufacturing Lab.	-	-	2	30	20	50	1
PE - 14707	Machine Tool Design Lab.	-	-	2	30	20	50	1
PE - 14708	Industrial Tribology Lab.	-	-	2	30	20	50	1
PE - 14709	Major project*	-	-	3	100	50	150	3
GF - 14701	General Fitness	-	1	-	100	-	100	1
<b>Total</b>		<b>23</b>	<b>2</b>	<b>11</b>	<b>560</b>	<b>490</b>	<b>1050</b>	<b>32</b>

**Total Contact hours = 36**

**\*Note:-**In the Major Project, the Problem formulated in Minor Project during 6<sup>th</sup> Semester is to be executed. The theory, design, construction/fabrication, computer modeling, experimentation on the fabricated models, results, analysis followed by discussions regarding suitability/non suitability of the project or any positive gain in the project made with conclusions & recommendation for future extension of the project must be covered.

**Syllabus for B.Tech Production Engineering**

**8<sup>th</sup>SEMESTER**

<b>Course Code</b>	<b>Course Title</b>	<b>Internal</b>	<b>External</b>	<b>Total</b>	<b>Credit</b>
TR - 14701	Industrial Training-II	450	350	800	13
TR - 14702	Industry Oriented Training (02 week)	200	-	200	2
<b>Total</b>		<b>650</b>	<b>350</b>	<b>1000</b>	<b>15</b>

### List of Department Elective Subjects:

<b>Group -I</b>		
<b>S.No.</b>	<b>Code</b>	<b>Name of Subject</b>
1.	DEPE-14901	Industrial Finishing Technology
2.	DEPE-14902	Welding technology
3.	DEPE-14903	Plastic & ceramic technology
4.	DEPE-14904	Non- Destructive Testing
5.	DEPE-14905	Material Handling & Plant Layout
6.	DEPE-14906	Supply Chain Management
7.	DEPE-14907	Applied Elasticity and Plasticity
8.	DEPE-14908	Productivity Management
<b>Group -II</b>		
9.	DEPE-14909	Marketing & Financial Management
10.	DEPE-14910	Modeling & Simulation
11.	DEPE-14911	Estimating & Costing
12.	DEPE-14912	Value Engineering
13.	DEPE-14913	Automobile Engineering
14.	DEPE-14914	Production Planning & Control
15.	DEPE-14915	Jigs, Fixtures& Tool Design
16.	DEPE-14916	Industrial Safety & Environment
17.	DEPE-14917	Mechatronics
<b>Group -III</b>		
18.	DEPE-14918	Maintenance & Reliability Engineering
19.	DEPE-14919	Quality Assurance and Reliability
20.	DEPE-14920	Total Quality Management
21.	DEPE-14921	Material Management
22.	DEPE-14922	Project Management
23.	DEPE-14923	Investment Planning
24.	DEPE-14924	Entrepreneurship
25.	DEPE-14925	Inspection and Quality Control
26.	DEPE-14926	CAD & Computer Graphics

### List of Open Elective Subjects (To be offered in 6<sup>th</sup> semester):

<b>Sr. No.</b>	<b>Code</b>	<b>Name Of Subject</b>
1.	OEPE-14601	Operation Management
2.	OEPE-14602	Operation Research

**Note:**

1. **Minimum 25 students and maximum 30 students are required to offer a Department Elective subject**