

GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA
Department of Information Technology
B.Tech (Information Technology)
Scheme-2018

SEMESTER-3rd										
Course Category	Course Code	Course Title	Theory / Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Core Courses	PCIT-101	Data Structures	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-102	Object Oriented Programming Using C++	Theory	3	0	0	40	60	100	3
Engineering Science Courses	ESIT-101	Digital Circuits and Logic Design	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-103	Data Communication and Computer Networks	Theory	3	0	0	40	60	100	3
Humanities and Social Sciences including Management Courses	HSMIT-101	Professional Practice, Laws and Ethics for IT Engineers	Theory	3	0	0	40	60	100	3
Professional Core Courses	LPCIT-101	Data Structures Laboratory	Practical	0	0	2	30	20	50	1
Professional Core Courses	LPCIT-102	Object Oriented Programming using C++ Laboratory	Practical	0	0	2	30	20	50	1
Professional Core Courses	LPCIT-103	Data Communication and Computer Networks Laboratory	Practical	0	0	2	30	20	50	1
Engineering Science Courses	LESIT-101	Digital Circuits and Logic Design Laboratory	Practical	0	0	2	30	20	50	1
Industrial/ Institution Training	TR-101	Training-I*	Practical	0	0	0	60	40	100	1
Mandatory Courses [§]	MCIT-101	Environmental Sciences	Theory	2	0	0	50	0	50	0

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Seminar/Practical	PRIT-101	Seminar and Technical Writing for Engineers	Practical	0	0	2	50	0	50	1
Mentoring	MPD-102 [#]	Mentoring and Professional Development	Practical	0	0	1	0	0	0	0
Total				17	0	10+1[#]	480	420	900	21
Contact Hours= 27+1[#]										

* Industrial /Institutional Training will be imparted at the end of 2nd semester in the institute or students can go to industry for four weeks

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

\$ The minimum criteria for passing Non Credit course is securing 40% marks in internal exams.

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SEMESTER-4th										
Course Category	Course Code	Course Title	Theory /Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Basic Science Courses	BSIT-101	Probability and Statistics	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-104	Database Management System	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-105	Python Programming	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-106	Operating System	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-107	Web Technologies	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-108	Computer Architecture and Microprocessors	Theory	3	0	0	40	60	100	3
Professional Core Courses	LPCIT-104	Database Management System Laboratory	Practical	0	0	2	30	20	50	1
Professional Core Courses	LPCIT-105	Python Programming Laboratory	Practical	0	0	2	30	20	50	1
Professional Core Courses	LPCIT-106	Operating System and Microprocessors Laboratory	Practical	0	0	2	30	20	50	1

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Professional Core Courses	LPCIT-107	Web Technologies Laboratory	Practical	0	0	2	30	20	50		1
Mentoring	MPD-102 [#]	Mentoring and Professional Development	Practical	0	0	1	100	0	100		1
Total				18	0	9	460	440	900		23
Contact Hours= 27+1[#]											

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

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SEMESTER-5th										
Course Category	Course Code	Course Title	Theory/ Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Core Courses	PCIT-109	Programming in Java	Theory	3	1	0	40	60	100	4
Professional Core Courses	PCIT-110	Discrete Mathematics	Theory	3	1	0	40	60	100	4
Professional Core Courses	PCIT-111	Internet of Things	Theory	3	0	0	40	60	100	3
Professional Core Courses	PCIT-112	Theory of Computation	Theory	3	1	0	40	60	100	4
Professional Elective Courses	PEIT-XXX	Elective-I	Theory	3	0	0	40	60	100	3
Professional Core Courses	LPCIT-109	Programming in Java Laboratory	Practical	0	0	4	30	20	50	2
Professional Core Courses	LPCIT-111	Internet of Things Laboratory	Practical	0	0	2	30	20	50	1
Professional Elective Courses	LPEIT-XXX	Elective-I Laboratory	Practical	0	0	2	30	20	50	1
Industrial/ Institution Training	TR-102	Training-II *	Practical	0	0	0	60	40	100	1
Mentoring	MPD-103 [#]	Mentoring and Professional Development	Practical	0	0	1	0	0	0	0
Total				15	3	8+1[#]	350	400	750	23
Contact Hours 26+1[#]										

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There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

SEMESTER-6th										
Course Category	Course Code	Course Title	Theory/ Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Core Courses	PCIT-113	Design and Analysis of Algorithm	Theory	3	1	0	40	60	100	4
Professional Core Courses	PCIT-114	Introduction to Machine Learning	Theory	3	1	0	40	60	100	4
Professional Core Courses	PCIT-115	DevOps: Software Architecture	Theory	3	1	0	40	60	100	4
Professional Elective Courses	PEIT-XXX	Elective-II	Theory	3	0	0	40	60	100	3
Professional Core Courses	LPCIT-113	Design and Analysis of Algorithm Laboratory	Practical	0	0	2	30	20	50	1
Professional Core Courses	LPCIT-114	Introduction to Machine Learning Laboratory	Practical	0	0	2	30	20	50	1
Professional Core Courses	LPCIT-115	DevOps: Software Architect Laboratory	Practical	0	0	2	30	20	50	1
Professional Elective Courses	LPEIT-XXX	Elective-II Laboratory	Practical	0	0	2	30	20	50	1
Open Elective Courses	OEIT-XXX	Open Elective-I	Theory	3	0	0	40	60	100	3
Seminar/Project	PRIT-102	Minor Project	Practical	0	0	2	60	40	100	1
Mandatory Theory Course (Non-Credit)	MCI-10X	Open Elective ^{\$}	Theory	2	0	0	50	0	50	0

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Mentoring	MPD-103 [#]	Mentoring and Professional Development	Practical	0	0	1	100	0	100	1
Total				17	3	10+1[#]	530	420	950	24
Contact Hours= 30+1[#]										

* Industrial /Institutional Training-II will be imparted at the end of 4th Semester in the institute or students can go to industry for four weeks

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

\$ The minimum criteria for passing Non Credit course is securing 40% marks in internal exams.

Open Elective Mandatory Course

1. MCI-102 Constitution of India
2. MCI-103 Organizational Behaviour

Professional Elective -1

- PEIT-101- Business Intelligence and Applications
- LPEIT-101- Business Intelligence and Applications Laboratory
- PEIT-102 Advanced Web Technologies
- LPEIT-102 Advanced Web Technologies Laboratory
- PEIT-103 Digital Image Processing
- LPEIT-103 Digital Image Processing Laboratory
- PEIT-104 Software Modeling and Analysis
- LPEIT-104 Software Modeling and Analysis Laboratory
- PEIT-105 Cryptography
- LPEIT-105 Cryptography Laboratory

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PEIT-106 Advanced Computer Networks

LPEIT-106 Advanced Computer Networks Laboratory

PEIT-107 X **

LPEIT-107 X**

**** Subject will be decided time to time as per Industry Need**

Professional Elective –II

PEIT-108 Big Data Analytics

LPEIT-108 Big Data Analytics Laboratory

PEIT-109 Mean Full Stack Web Development

LPEIT-109 Mean Full Stack Web Development Laboratory

PEIT-110 Computer Vision

LPEIT-110 Computer Vision Laboratory

PEIT-111 Software Design and Testing

LPEIT-111 Software Design and Testing Laboratory

PEIT-112 Digital Forensics

LPEIT-112 Digital Forensics Laboratory

PEIT-113 Network Security

LPEIT-113 Network Security Laboratory

PEIT-114X **

LPEIT-114 X**

**** Subject will be decided time to time as per Industry Need**

Open Electives (To be offered to other Departments)

Open Elective-I

OEIT-101 Python Programming

OEIT-102 Management Information System

OEIT-103 Web Designing

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Open Elective-II

OEIT-104 Artificial Intelligence

OEIT-105 Digital Marketing

OEIT- 106 System Analysis and Design

Open Elective-III

OEIT-107 Cyber Laws and IPR

OEIT-108 ICT in Agriculture and Rural Development

OEIT- 109 IT Enabled Services

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After 6th Semester there are three types of choices for students

Choice-I, Choice-II and Choice-III

- a) Choice –I means Industrial Training-IV TR-104 will be offered in 7th semester.
- b) Choice –II means Industrial Training-IV TR-104 will be offered in 8th semester.
- c) Choice –III means Industrial Training TR-104 will not be offered as a course.
- d) Choices I/II/III from the students shall be taken in 6th semester itself after notification of regular/reappear results of November exam session/odd semester.

CHOICE-I

(For those students who are opting six-month Industrial Training (TR-104) during the 7th Semester)

SEMESTER-7 th							
Course Category	Course Code	Course Title	Theory/Practical	Internal Marks	External Marks	Total Marks	Credits
Industrial/ Institution Training	TR-103	Training-III*	Practical	60	40	100	1
Industrial/ Institution Training	TR-104	Industrial Training	Practical	350	150	500	15
Total				410	190	600	16

* Industrial /Institutional Training-II will be imparted at the end of 6th semester in the institute or students can go to industry for 04 weeks

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SEMESTER-8th										
Course Category	Course Code	Course Title	Theory/ Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Elective Courses	PEIT-XXX	Elective-III	Theory	3	0	0	40	60	100	3
Professional Elective Courses	PEIT-XXX	Elective-IV	Theory	3	1	0	40	60	100	4
Professional Elective Courses	LPEIT-XXX	Elective-III Laboratory	Practical	0	0	2	30	20	50	1
Seminar / Project	PRIT-106	Comprehensive Laboratory	Practical	0	0	2	50	0	50	1
Open Elective Courses	OEIT-XXX	Open Elective-II	Theory	3	0	0	40	60	100	3
Seminar/Project	PRIT-103	Major Project	Practical	0	0	6	120	80	200	3
Mentoring	MPD-104 [#]	Mentoring and Professional Development	Practical	0	0	1	100	0	100	1
Total				09	01	10+1[#]	420	280	700	16
Contact Hours=20+1[#]										

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

Professional Electives for Choice-I (For those students who are opting six-month Industrial Training (TR-104) during the 7th Semester)

Professional Elective-III

PEIT-115 Cloud Infrastructure and Services

LPEIT-115 Cloud Infrastructure and Services Laboratory

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PEIT-116 Mobile Application Development
LPEIT-116 Mobile Application Development Laboratory
PEIT-117 Augmented Reality and Virtual Reality
LPEIT-117 Augmented Reality and Virtual Reality Laboratory
PEIT- 118 Software Process and Quality Assurance
LPEIT- 118 Software Process and Quality Assurance Laboratory
PEIT-119 Cyber Security
LPEIT-119 Cyber Security Laboratory
PEIT-120 Software Defined Networking
LPEIT-120 Software Defined Networking Laboratory
PEIT-121X **
LPEIT-121 X**

**** Subject will be decided time to time as per Industry Need**

Professional Elective-IV

PEIT-123 Business Enterprise Application
PEIT-124 ICT in Agriculture and Rural Development
PEIT-125 Research Methodologies
PEIT-126 Enterprise Resource Planning
PEIT-127 Engineering Entrepreneurship
PEIT-128X**

**** Subject will be decided time to time as per Industry Need**

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CHOICE-II

(For those students who are opting six-month Industrial Training (TR-104) during the 8th Semester)

SEMESTER-7th										
Course Category	Course Code	Course Title	Theory/ Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Elective Courses	PEIT-XXX	Elective-III	Theory	3	0	0	40	60	100	3
Professional Elective Courses	PEIT-XXX	Elective-IV	Theory	3	1	0	40	60	100	4
Professional Elective Courses	LPEIT-XXX	Elective-III Laboratory	Practical	0	0	2	30	20	50	1
Seminar / Project	PRIT-106	Comprehensive Laboratory	Practical	0	0	2	50	0	50	1
Open Elective Courses	OEIT-XXX	Open Elective-II	Theory	3	0	0	40	60	100	3
Seminar/Project	PRIT-103	Major Project	Practical	0	0	6	120	80	200	3
Industrial/ Institution Training	TR-103	Training-III*	Practical	0	0	0	60	40	100	1
Mentoring	MPD-104 [#]	Mentoring and Professional Development	Practical	0	0	1	0	0	0	0
Total				09	01	10+1[#]	380	320	700	16
Contact Hours=20+1[#]										

* Industrial /Institutional Training-II will be imparted at the end of 6th semester in the institute or students can go to industry for 04 weeks

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

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SEMESTER-8th							
Course Category	Course Code	Course Title	Theory/Practical	Internal Marks	External Marks	Total Marks	Credits
Mentoring	MPD-104 [#]	Mentoring and Professional Development	Practical	100	0	100	1
Industrial/ Institution Training	TR-104	Industrial Training	Practical	350	150	500	15
Total				450	150	600	16

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

Professional Electives for Choice-II (For those students who are opting six-month Industrial Training (TR-104) during the 7th Semester)

Professional Elective-III

- PEIT-115 Cloud Infrastructure and Services
- LPEIT-115 Cloud Infrastructure and Services Laboratory
- PEIT-116 Mobile Application Development
- LPEIT-116 Mobile Application Development Laboratory
- PEIT-117 Augmented Reality and Virtual Reality
- LPEIT-117 Augmented Reality and Virtual Reality Laboratory
- PEIT- 118 Software Process and Quality Assurance
- LPEIT- 118 Software Process and Quality Assurance Laboratory
- PEIT-119 Cyber Security
- LPEIT-119 Cyber Security Laboratory
- PEIT-120 Software Defined Networking
- LPEIT-120 Software Defined Networking Laboratory

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PEIT-121X **

LPEIT-121 X**

**** Subject will be decided time to time as per Industry Need**

Professional Elective-IV

PEIT-123 Business Enterprise Application

PEIT-124 ICT in Agriculture and Rural Development

PEIT-125 Research Methodologies

PEIT-126 Enterprise Resource Planning

PEIT-127 Engineering Entrepreneurship

PEIT-128X**

**** Subject will be decided time to time as per Industry Need**

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CHOICE-III

(For those students who are opting Course Work during 7th & 8th Semester)

SEMESTER-7th										
Course Category	Course Code	Course Title	Theory/ Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Elective Courses	PEIT-XXX	Elective-III	Theory	3	0	0	40	60	100	3
Professional Elective Courses	PEIT-XXX	Elective-IV	Theory	3	1	0	40	60	100	4
Professional Elective Courses	LPEIT-XXX	Elective-III Laboratory	Practical	0	0	2	30	20	50	1
Seminar / Project	PRIT-106	Comprehensive Laboratory	Practical	0	0	2	50	0	50	1
Open Elective Courses	OEIT-XXX	Open Elective-II	Theory	3	0	0	40	60	100	3
Seminar/Project	PRIT-104	Project-I	Practical	0	0	6	120	80	200	3
Industrial/ Institution Training	TR-103	Training-III*	Practical	0	0	0	60	40	100	1
Mentoring	MPD-104 [#]	Mentoring and Professional Development	Practical	0	0	1	0	0	0	0
Total				09	01	10+1[#]	380	320	700	16
Contact Hours=20+1[#]										

* Industrial /Institutional Training-II will be imparted at the end of 6th semester in the institute or students can go to industry for 04 weeks

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

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SEMESTER-8th										
Course Category	Course Code	Course Title	Theory/ Practical	Hours Per Week			Internal Marks	External Marks	Total Marks	Credits
				L	T	P				
Professional Elective Courses	PEIT-XXX	Elective-V	Theory	3	0	0	40	60	100	3
Professional Elective Courses	PEIT-XXX	Elective-VI	Theory	3	1	0	40	60	100	4
Professional Elective Courses	LPEIT-XXX	Elective- V Laboratory	Practical	0	0	2	30	20	50	1
Seminar / Project	PRIT-107	Term Paper	Practical	0	0	2	50	0	50	1
Open Elective Courses	OEIT-XXX	Open Elective-III	Theory	3	0	0	40	60	100	3
Seminar/Project	PRIT-105	Project-II	Practical	0	0	6	120	80	200	3
Mentoring	MPD-104 [#]	Mentoring and Professional Development	Practical	0	0	1	100	0	100	1
Total				09	01	10+1[#]	420	280	700	16
Contact Hours=20+1[#]										

[#] There will be one period per week for Mentoring and Professional Development; final evaluation of this course will be done based on the combined assessment of odd and even semester of respective year of study.

Professional Electives for Choice-III (For those students who are opting Course Work during 7th & 8th Semester

Professional Elective-III

PEIT-115 Cloud Infrastructure and Services

LPEIT-115 Cloud Infrastructure and Services Laboratory

PEIT-116 Mobile Application Development

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LPEIT-116 Mobile Application Development Laboratory

PEIT-117 Augmented Reality and Virtual Reality

LPEIT-117 Augmented Reality and Virtual Reality Laboratory

PEIT-122X **

LPEIT-122 X**

**** Subject will be decided time to time as per Industry Need**

Professional Elective-IV

PEIT-123 Business Enterprise Application

PEIT-124 ICT in Agriculture and Rural Development

PEIT-125 Research Methodologies

PEIT-129X**

**** Subject will be decided time to time as per Industry Need**

Professional Elective-V

PEIT- 118 Software Process and Quality Assurance

LPEIT- 118 Software Process and Quality Assurance Laboratory

PEIT-119 Cyber Security

LPEIT-119 Cyber Security Laboratory

PEIT-120 Software Defined Networking

LPEIT-120 Software Defined Networking Laboratory

PEIT-121X **

LPEIT-121 X**

**** Subject will be decided time to time as per Industry Need**

Professional Elective-VI

PEIT-126 Enterprise Resource Planning

PEIT-127 Engineering Entrepreneurship

PEIT-130 Business Information System

PEIT-131X**

**** Subject will be decided time to time as per Industry Need**