

NIELIT Ropar Deemed to be University

M.Tech in Cyber Forensics and
Information Security

Information Brochure

Cyber Forensics
and
Information Security



National Institute of Electronics and Information Technology

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Introduction to Cyber Forensics and Information Security

Technological advancements have witnessed remarkable growth, particularly in the realm of Cyber Forensic and Information Security. The inception of electronic components in this domain has evolved to address the increasing challenges posed by cyber threats and information breaches. The introduction of cybersecurity measures started with the implementation of firewalls, antivirus programs, and encryption protocols, laying the foundation for further developments.

The impetus for technological advancements in Cyber Forensic and Information Security arises from a dual source—Customer demand for robust protection against cyber threats and the imperative Legislative Push to enhance cybersecurity measures. As the digital landscape becomes more intricate, the demand for cybersecurity solutions has surged. This trend has propelled the Global Cyber Forensic and Information Security market, according to industry reports. The proliferation of digital devices and the increasing volume of sensitive data make cybersecurity a critical aspect of contemporary technological ecosystems.

With a surge in the number of cyber incidents and the sophistication of hacking techniques, the overall expenditure on cybersecurity is anticipated to grow steadily. By 2030, it is projected that cybersecurity expenditures will constitute a significant portion of the overall IT budget, reflecting the paramount importance of securing digital assets. The Asia Pacific region is expected to play a pivotal role in driving the global growth of Cyber Forensic and Information Security, given the region's rapid digitization and increasing reliance on digital platforms.

The introduction of advanced technologies such as blockchain, artificial intelligence, and machine learning has become instrumental in bolstering cybersecurity measures. Legislative mandates and heightened awareness among customers are propelling the adoption of new technologies across various sectors, including government agencies, financial institutions, and businesses. Emerging technologies like threat intelligence, behavioral analytics, and security automation are becoming integral components of cybersecurity strategies.

As the digital landscape evolves, the complexity of cybersecurity challenges also increases, necessitating a workforce with specialized skills in Cyber Forensic and Information Security. There is a current shortage of qualified professionals equipped with comprehensive skills in digital forensics, ethical hacking, and cybersecurity management. The need for skilled human resources in this field is anticipated to grow in tandem with the evolving threat landscape. Consequently, there is a compelling need for a unique training program in Cyber Forensic and Information Security with a focus on securing digital systems. The M.Tech program in Cyber Forensic and Information Security is meticulously designed to meet these industry demands and equip professionals with the necessary expertise to safeguard digital assets and combat cyber threats effectively.

Program Educational Objectives (PEOs):

In Cyber Forensics in order to present evidence in the court of law a postgraduate candidate of the course would recover, analyze, and preserve computer and related materials in an uncorrupted manner by following a proper chain of custody thus lending a helping hand to the law enforcement agencies to crack cybercrimes that have taken place.

- The diverse course contents would enable the enrolled student to undertake Identification of the objective of the cybercrime and revelation of the cyber culprit.
- The curriculum would help to inculcate in depth, concepts related to Data Acquisition and Duplication thus enabling the enrolled candidate to recover, from digital media deleted files and partitions that may be used as a valid evidence against the criminals.
- The curriculum covers a plethora of other conventional subjects related to IT, cloud, Cybercrime, Ethical Hacking et al that will be taught to enrolled candidates so as to develop a holistic technical view of Information Technology as well along with Cyber Forensics and Information Security to the enrolled student.

Program Outcomes of Course offered

- Attain advanced education, equipped with a deep understanding enriched by both academic and industrial skill sets.
- Achieve excellence in one's professional journey by mastering the ability to offer effective solutions to Information Technology challenges.
- Demonstrate leadership qualities and contribute actively within teams, serving as catalysts for change and innovation in organizations focused on product design and manufacturing.
- Showcase flexible and nimble skills in the specialized field of Information Science & Engineering to effectively tackle both technical and managerial challenges.

Course Curriculum

Semester-I						
S. No	Course Code	Course Name	L	T	P	C
1.	CIL601	Program Core-I Mathematics For Information Security and Cyber Forensics	3	0	0	3
2.	CIL602	Program Core-II Advanced Data Structures and Algorithms	3	0	0	3
3.	CIL***	Program Elective I	3	0	0	3

4.	CIL***	Program Elective II	3	0	0	3
5.	ACL601	Research Methodology and IPR	2	0	0	2
6.	ACL***	Audit course	2	0	0	0
7.	CIP601	Laboratory-I (Advanced Data Structures and Algorithms Lab)	0	0	4	2
8.	CIP***	Laboratory-II (Based on Electives)	0	0	4	2

Total credits: 18

Semester-II

S.No	Course Code	Course Name	L	T	P	C
1.	CIL603	Program Core-III Digital Forensics and Cyber Crime Investigation	3	0	0	3
2.	CIL604	Program Core-IV Cloud Computing Security	3	0	0	3
3.	CIL***	Program Elective III	3	0	0	3
4.	CIL***	Program Elective IV	3	0	0	3
5.	CIL***	Audit Course	2	0	0	0
6.	CIL***	Laboratory-III (Digital Forensics and Cyber Crime Investigation Lab)	2	0	0	0
7.	CIP604	Laboratory-IV (Based on Electives)	0	0	4	2

Total Credits: 18

Semester-III

1.	CIL***	Program Elective-V	3	0	0	3
2.	OEL***	Open Elective	3	0	0	3
3.	CID701	Dissertation-I/ Industrial project	0	0	20	10

Total credit: 16

Semester-IV

S. No	Course Code		L	T	P	C
1.	AID702	Dissertation-II	0	0	32	16

Total credit: 16

Elective Courses

Sl. No.	Course code	Course Name	L	T	P	C
1.	CIL701	Basics of Forensics Psychology	3	0	0	3
2.	CIL702	Operating System Security	3	0	0	3
3.	CIL703	IOT and its Applications	3	0	0	3
4.	CIL704	Ethical Hacking	3	0	0	3

5.	CIL705	Cyber Law	3	0	0	3
6.	CIL706	Biometrics	3	0	0	3
7.	CIL707	Web and Database Security	3	0	0	3
8.	CIL708	Edge Computing	3	0	0	3
9.	CIL709	Information Security Audit	3	0	0	3
10.	CIL710	Data Privacy	3	0	0	3
11.	CIL711	Applied Cryptography	3	0	0	3
12.	CIL712	Malware Analysis	3	0	0	3
13.	CIL713	Image Forensics and Security	3	0	0	3
14.	CIL714	Data Analytics for Fraud Detection	3	0	0	3
15.	CIL715	Block Chain Technology	3	0	0	3

Audit Course						
Sl. No.	Course code	Course Name	L	T	P	C
1.	ACL701	English for Research Paper Writing	3	0	0	3
2.	ACL702	Disaster Management	3	0	0	3
3.	ACL703	Sanskrit for Technical Knowledge	3	0	0	3
4.	ACL704	Value Education	3	0	0	3
5.	ACL705	Constitution of India	3	0	0	3
6.	ACL706	Pedagogy Studies	3	0	0	3
7.	ACL707	Stress Management by Yoga	3	0	0	3
8.	ACL708	Personality Development through Life Enlightenment Skills.	3	0	0	3

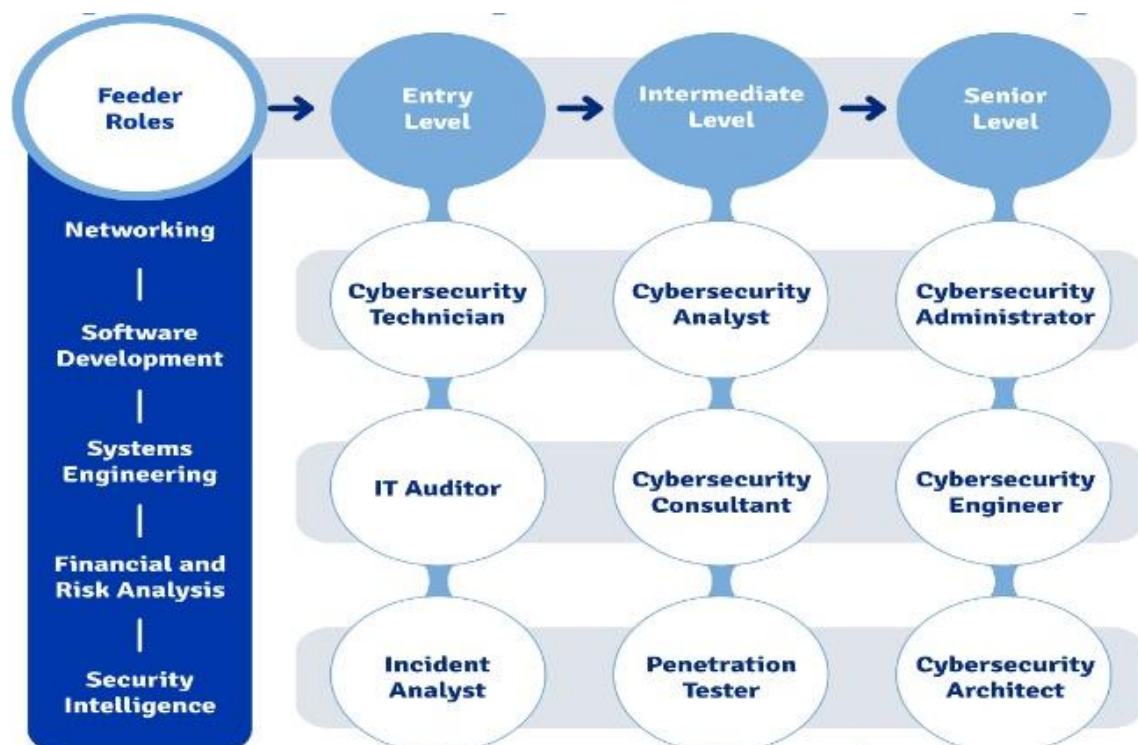
Open Electives						
Sl. No.	Course code	Course Name	L	T	P	C
9.	OEL701	Business Analytics	3	0	0	3
10.	OEL702	Industrial Safety	3	0	0	3
11.	OEL703	Operations Research	3	0	0	3
12.	OEL704	Cost Management of Engineering Projects	3	0	0	3
13.	OEL705	Composite Materials	3	0	0	3
14.	OEL706	Waste to Energy	3	0	0	3

Job Roles

Varied job roles exist in the field of Cyber Forensics and Information Security and the offered roles are flexible in nature as these encompass the very essence of the stream itself . Some of the significant e job roles are:

- Digital/computer forensic investigator
- Digital/computer forensic analyst
- Digital/computer forensic examiner
- Digital/computer forensic consultant
- Digital/computer forensic specialist
- Digital/computer forensic evaluator
- Network forensic analyst
- Multimedia forensic analyst

The highlight below also lends an insight as to how the career progression of a Cyber Security Enthusiast can actually take place if he attains industry oriented certifications also along with this program



Reference: <https://bootcamp.cvn.columbia.edu/blog/how-to-get-into-cybersecurity/>

Top Recruiters (In india)

- Accenture
- Wells Fargo
- Infosys
- NTT Data
- Tata Consultancy Services
- Cognizant Technology Solutions
- IBM
- Optum
- DXC Technologies
- Wipro

Walkthrough of Cyber Forensics and Information Security Lab

NIELIT Ropar Cyber Security lab intends to educate, make aware and enhance the posture of Cyber Security of individuals about their exposure to technology. The laboratory provides a whole gamut of courses from Cyber Security Awareness to Ethical Hacking and Penetration Testing and above all post-graduation in Cyber Forensics.



The post graduate course intends to inculcate the very essence of Cyber Forensics as it would help to recover, analyze and preserve computer and related materials in an uncorrupted manner (by preserving evidence) by following a proper chain of custody and using correct methods of data acquisition and duplication which would eventually help in producing an accurate computer forensic report, so that it eventually helps

In order to achieve the above the lab has the following equipment / tools



To be added after Procurement of the same



the gathered evidence to be admissible in the court of law.



Eligibility Criteria

Admission to M.Tech. (Data Engineering) shall be made on the basis of merit of GATE Score in respective discipline. The candidates seeking admission in M.Tech. course must have passed B.E./ B.Tech. in any branch of engineering with 50% (45% for SC/ST & Disabled Persons Categories) marks.

Course Fees

Fee-Structure for the Academic year (2024-25)

Sr. No.	Particulars	Sem 1	Sem 2	Sem3	Sem 4
1	Tuition and Lab Fees	65,000/-	65,000/-	65,000/-	65,000/-
2	Caution Money	6,500/-	Nil	Nil	Nil
	Sub Total	71,500/-	65,000/-	65,000/-	65,000/-

Number of Seats Available

Total number of 18 seats are available.

Hostel Facilities

NIELIT Ropar provides in-campus hostel accommodation for both boys and girls separately with a total capacity of 160 seats in each hostel, with modern amenities. The hostels are secured by round-the-clock security guards at the entry gates.

Other Facilities

- NKN Connectivity
- 24x 7 Wi-Fi Campus
- IEEE Online Access
- Shodh Ganga Access
- ACM Online Access

Our Location and How to reach to us?

SCAN ME



Please scan the code above to get the location detail wrt to NIELIT Ropar Campus

By Auto / Taxi from Ropar Bus Stand

<https://maps.app.goo.gl/eEcEqsxMyetwy5AA6>

By Auto / Taxi from Ropar Railway station

<https://maps.app.goo.gl/sf5pjKz3eiLWYRqi8>

From Airport

<https://maps.app.goo.gl/53SosBhBckNDXMdH8>

The nearest Airport is Shaheed Bhagat Singh International Airport Chandigarh which is situated at 55 kms away from the NIELIT Ropar Campus. One can reach the venue by hiring a taxi from the airport.

Important Dates

To be added later on

Important Contact Details

Important Contact Details

- 1) Raminder Singh, Scientist 'F', (9915922152), raminder@nielit.gov.in
- 2) Akash Sharan, Scientist 'B', (9653025211), akashsharan@nielit.gov.in