



RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

FACULTY OF SCIENCE

DIRECTION NO. 7 OF 2013

DIRECTION GOVERNING THE EXAMINATION LEADING TO

ONE YEAR POST GRADUATE DIPLOMA IN

DIGITAL AND CYBER FORENSIC AND RELATED LAW

(Issued under Section 14(8) of the Maharashtra Universities Act, 1994)

Whereas, the Maharashtra Universities Act No. XXXV has come into force with effect from 22nd July, 1994, and further amended by Maharashtra Universities (Amendment and Continuance) Act, 2003, hereinafter referred as 'Act' has come into force from 8th August 2003.

AND

Whereas, the Higher & Technical Education Department, Government Resolution No. NGC-2011/ (20/11) M. Shi-4 dated 22nd July 2011, issued the orders to start the course of **One Year Post Graduate Diploma in Digital and Cyber Forensic and Related Law** from the academic session 2011-12.

AND

Whereas, the respective Ad-hoc Board of Studies in the Faculty of Science in its meeting held on 21-07-2011 vide item No. 1 have approved the syllabi and Scheme of Examination for the **One year P.G. Diploma in Digital and Cyber Forensic and Related Law**, One year diploma course in the university from the academic session 2011-2012 in the Faculty of Science, in terms of the norms as prescribed by U. G. C.

AND

Whereas, the Vice Chancellor has accepted the recommendations of Ad-hoc Board of Studies in Forensic Science in the Faculty of Science and on behalf of the Academic Council and Management Council under section 14(7) of the M.U. Act 1994.

AND

Whereas, the same course should be implemented by way of issuing appropriate direction under section 14(8) of Maharashtra University Act 1994, by the Hon'ble Vice Chancellor.

AND

Whereas, the university under its power and duties is expedient to make provision for research and for the advancement and dissemination of knowledge in various branches of studies. The proposal in this regard being recommended by the respective Board of Studies, Faculties and Academic Council are to be approved by the Management Council for the institution of such Degrees, Diplomas Certificates and other academic distinctions by giving effect to it by virtue of promulgating suitable Ordinances and syllabus for the respective courses to be started from the academic session 2011-12 and onwards.

AND

Whereas, it is expedient to provide an Ordinance for the purposes of prescribing Examination leading to the **One Year Post Graduate Diploma in Digital and Cyber Forensic and Related Law** in the Faculty of Science, indicating therein the Syllabus and the Scheme of Examination.

AND

Whereas, the Hon'ble Vice Chancellor has already issued the Direction No. 12/2011 in this regard and notified on 2nd of August and was put to execution from the academic session 2011-12 itself.

AND

Whereas, during execution, certain ambiguity was identified in the clauses with respect to the standard of passing and eligibility criteria for admission to the said course, and needs immediate intervention to rectify it for proper execution of the course herein after 2012-13.

Whereas, the framing of an ordinance as required under provision of the Act is a time consuming process.

Now, therefore, I, V. S. Sapkal, the Vice Chancellor of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of the powers conferred upon me in under section 14(8) of the Maharashtra University Act of 1994 do hereby issue the following direction:

1. Title of the Direction:

This direction may be called "**Direction Governing the Examination leading to One Year Post Graduate Diploma in Digital and Cyber Forensic and Related Law in the Faculty of Science**". This direction shall come into force with effect from the date of its issuance.

2. Nature of the Course:

This **One Year Post Graduate Diploma in Digital and Cyber Forensic and Related Law** course shall be a full time regular course.

3. Eligibility Criteria:

- a. The student seeking admission to this course should have the eligibility:

Bachelor Degree in Science (Excluding Life Sciences), Law with computer knowledge, Engineering IT computer Science, B. C. A., B.C.S., M. C. M., B.Com. (Computer Application), M. C. A. with passing percentage 45 for open and 40% for reserved category candidates.

b. Candidates from other than Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur will have to obtain eligibility certificate from this University.

c. Intake Capacity: 40 (Reservation as per State Government Norms)

4. Teachers Qualifications:

As per the U.G.C./State Government norms and experts from Forensic Science and related/relevant field and related industry with minimum 3 years of experience

5. Application of Other Ordinances and Directions of University:

The students admitted to this Diploma course shall be governed by the general Ordinances of the University which are applicable to all the regular or ex-students. These Ordinances includes complete as well as relevant provision of Ordinance No. 1, 2, 6, 7-A, 9, 10, 19, Ordinance No. 30 of 2006, (amended Ordinance No. 4 of 1996), Ordinance No. 6 of 2010, Direction 5 of 2004 wherever applicable accordingly.

6. Fee Structure:

- I. Tution Fee: The tution fee for the said course will be decided by the State Government for the Government Institutions whereas the fees will decided by the University for the affiliated colleges.
- II. Examination Fee: The examination fee for the said course will be decided by the University.

7. Syllabus:

The syllabus for this course as prescribed by the Board of Studies in terms of Annual pattern

8. Medium of Instruction / Examination:

The medium of instructions and writing of examination shall be in English only.

9. Conduct of Examination:

The examination leading to the course of **One Year Post Graduate Diploma in Digital and Cyber Forensic and Related Law** shall be held once in a year only (i.e. summer) at such places and on such dates as may be decided by the University.

10. Standard of Passing:

- i. Candidate who secures minimum 35% in each subject/paper will be declared to have passed the examination.
- ii. A candidate who fails to secure 35% in subject/paper will be allowed to reappear in that subject/paper.
- iii. Successful examinee obtaining 60% or more marks in the aggregate at the examination shall be placed in the First division and those obtaining less than 60% but not less than 45% of aggregate marks shall be placed in the Second division and those obtaining less than 45% marks of aggregate but not less than 35% aggregate of marks shall be placed in Third division.
- iv. The candidate, who is successful at an examination and achieves not less than 75% of the total marks prescribed in a subject, shall be declared to pass the examination with Distinction in that subject.

- v. An examinee, who is unsuccessful at the examination, will be eligible for admission to the next written examination on payment of fresh fees prescribed for the examination together with an ex-student fee as applicable and on compliance of the conditions of the ordinance enforced from time to time.
- vi. For being eligible for exemption in a paper, dissertation work, the candidate must have obtained not less than 35% of marks.
- vii. Provision of Ordinance No. 7-A relating to the condonation of deficiency of marks for passing the examination and of Ordinance No. 10 relating to the exemptions and compartments shall apply to the examination under this ordinance.

11. Scheme of Examination:

- i. The Scheme of Examination shall be as per **Appendix-A** (Annual pattern). However, the Scheme of Examination reflects the basic structure of Theory, Practical Training and Project Work. The details/title of the theory papers can be suitably modified in future considering the need of the subject without disturbing the main structure.

- ii. **Practical Training and Project Work:**

The Practical Training shall be assessed by the external examiner and the internal examiner. The project work shall be assessed by the project guide as an internal examiner. However, final marks shall be awarded by external examiner. The examinations of practical training and project work shall be held separately.

- The examiners will evaluate the Experimental Project Work taking into account the 1) Coverage of subject matter, 2) Arrangement and presentation

3) Reference and 4) Critical application and original experimental contribution of the candidate.

Every student is required to carry out Experimental/Field Based Project Work on related topic of the subject/course. On the basis of this work, student must submit the Project Report (Typed and properly bound) in two copies at least one month prior to commencement of the final Practical/Lab Examination of Semester VI. The project report shall comprise of Introduction, Material and Method, Result and Discussion, Summary and Conclusions, Future Prospects and References along with the declaration by the candidate that the work is original and not submitted to any University or Organization for award of the degree and certificate by the supervisor and forwarded through Head/Course- Coordinator/Director/Principal of College. The examinations of practical training and project work shall be held separately.

12. Other Rules:

- i. As soon as possible after the examination, but not later than 30th June, next following in case of examination held in April, the Management Council shall publish the list of successful examinees. The names of First Three examinees passing the examination in first attempt with more than 60% marks in the minimum prescribed being arranged in order of merit.
- ii. Notwithstanding anything contrary to the contents of this ordinance, no person shall be admitted to this examination, if he/she has already passed this examination or an equivalent examination of any other statutory University.

13. Award of Diploma:

A successful examinee shall be awarded Post Graduate Diploma in prescribed form signed by the Vice-Chancellor of the University.

14. With the issuance of this Direction, the Direction No. 13 of 2011 shall stand repealed.

Nagpur

Date : 28.3.2013.

Sd/-

(Dr. V.S. Sapkal)

Vice-Chancellor

APPENDIX-A

Syllabus for P.G. Diploma in DIGITAL AND CYBER FORENSIC AND RELATED LAW

Scheme of Examination and Course Structure

Paper	Title of Paper	Maximum marks	Minimum marks	Lectures/Practical training (1 hr duration)	
				Per Week	Per Course
I	Basics of Computer and Internet Security	100	35	04 (L)	90 (L)
II	Advanced Computer Security Techniques	100	35	04 (L)	90 (L)
III	Cyber Crimes and Investigation Procedures	100	35	04 (L)	90 (L)
IV	Regulations of Cyberspace	100	35	04 (L)	90 (L)
V	Practical Training*	100	35	04 (P) per batch***	90 per batch***
VI	Project Work**	100	35	04 (P) per batch***	90 per batch***
		600	210		

***No of students per batch shall be 10-13.

Practical Training: *Distribution of marks			Project Work: **Distribution of marks		
Sr. No	Evaluation Type	Marks	Sr. No.	Evaluation Type	Marks
1	Long Experiment	50	1	Submission of Project Report and internal assessment	50
2	One/Two Short Experiment	25	2	Presentation and Viva (By External Examiner)	50
3	Journal (Assessment by Internal Examiner)	10			
4	Viva (by External Examiner)	15			
Total Marks		100	Total Marks		100

ANNEXURE V

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR



P.G. DIPLOMA IN DIGITAL AND CYBER FORENSIC AND RELATED LAW

**SCHEME OF
EXAMINATION AND SYLLABUS**

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

Syllabus for P.G. Diploma in Digital and Cyber Forensics and related law

Course Structure

PAPER	TITLE OF PAPER	MARKS	LECTURES (1 hr. duration
I	Basic of Computer and Internet Security	100	90
II	Advance Computer Security Techniques	100	90
III	Cyber Crimes and Investigation Procedures	100	90
IV	Regulations of Cyberspace	100	90
V	Practical Training	100	90
VI	Project Work	100	90

Syllabus for P.G. Diploma in Digital and Cyber Forensics and Related law

Paper I: Basic of Computer and Internet Security

Paper II: Advance Computer Security Techniques

Paper III: Cyber Crimes and Investigation Procedures

Paper IV: Regulations of Cyberspace

Paper V: Practical Training

Paper VI: Project Work

Paper I: Basic of Computer and Internet Security (Total 100 marks)

Unit I: Fundamentals of Computers

15 lectures

History Of computers

Areas of Application

Computers and its components

Advantages and Disadvantages of Computer

Application Software and System Software

The Memory Hierarchy and Cache Memory

Unit II: Operating System Overview

15 lectures

Introduction to Operating System

Operating System Objectives and Functions

Types of Operating System

1. Windows

2. Linux

Process Description and control

Unit III: Basics of Networks

15 lectures

Types of Networks

Networks Topology

OSI Model,

TCP/IP and Related Protocols

Related Terms (Terminologies)

Unit IV: Concept of Internet

15 lectures

Introduction to Internet

Application Areas of Internet

Working of Internet its Advantages and Disadvantages

Search Engines, Chat, E-mails and WWW

Internetworking Devices

Internet Service Provider

PAPER II

Advance Computers Security Techniques

(Total 100 marks)

Unit I: Concealment Techniques

15 lectures

Spoofting
Hijacked session attacks
Polymorphism
Stegnography
Reversing stegnographic process
Counter or anti forensics
Anti forensics: A View from the Edge
Cloaking Techniques (Data Hide and Seek),
Renaming and Manipulating File System,
Data Hiding on NTFS with Alternate data Stream

Unit II: Forensic speaker identification

15 lectures

Forensic-phonetic parameters:
Acoustic vs. auditory parameters
Linguistic vs. non-linguistic parameters
Principles of Forensic speaker identification
Characterizing forensic speaker identification:
Principles of Generation of speech and its uniqueness
Speaker recognition
Speaker identification and verification
Forensic significance: Phonemic structure

Unit III: Image processing techniques

15 lectures

Image Processing Fundamentals: Digital Image Processing and Computer Graphics
Various Image Enhancement Techniques
Image Enhancement in the Spatial Domain: Gray level transformations, Histogram processing,
Arithmetic and logic operations, Spatial filtering: Introduction, Smoothing and sharpening filters
Image Enhancement in the Frequency Domain: Frequency domain filters:
Smoothing and Sharpening filters, Homomorphic filtering

Unit IV: Computer Security

15 lectures

Computer Security:

Information Security Overview

Information Security Services

Types of Attacks

Goals for Security

Network Security:

Overview of Security threats

Hacking Techniques

Password Cracking

Insecure Network connections

Malicious Code

Email security: PGP and SMIME

Web Security: web authentication, SSL and SET

Database Security

Operating System Security

E-commerce Security

PAPER III:

CYBER CRIMES AND INVESTIGATION PROCEDURES

(Total 100 marks)

Unit I

15 lectures

Cyber Forensic and Computer Crimes:

Introduction

Conventional Crime

Cyber Crime

Reasons for Cyber Crime.

Classification of Conventional and Cyber Crime

Distinction between Conventional and Cyber Crime.

Cyber Criminal Mode and Manner of Committing Cyber Crime.

Computer crime prevention measures

Unit II:

15 lectures

Types of Cyber Crimes:

Crimes targeting Computers:

- Unauthorised Access
- Packet Sniffing
- Malicious Codes including Trojans, Viruses, Logic Bombs, etc

Online based Cyber Crimes:

- Phishing and its variants
- Web Spoofing and E-mail Spoofing
- Cyber Stalking
- Web defacement
- Financial crimes, ATM and Card Crimes etc
- Spamming
- Commercial espionage and Commercial Extortion online
- Software and Hardware Piracy
- Money Laundering
- Fraud & Cheating
- Other Cyber Crimes

Unit III

15 lectures

Provisions in Indian Laws in dealing with Cyber Crimes and its critical analysis

Information Technology Act, 2000.

Penalties Under IT Act

Offences Under IT Act

Offences Related With Digital Signature and Electronic Signature Under IT Act

Statutory Provisions

Establishment of Authorities under IT Act and their functions, powers, etc

- Controller
- Certifying Authorities
- Cyber Regulation Appellate Tribunal
- Adjudicating officer

Unit IV:

15 lectures

Investigation of Cyber Crimes: Investigation of malicious applications

Agencies for investigation in India, their powers and their constitution as per Indian Laws

Procedures followed by First Responders;

Evidence Collection and Seizure Procedures of Digital mediums

Securing the Scene, Documenting the Scene, Evidence Collection and Transportation

- Data Acquisition
- Data Analysis
- Reporting

PAPER IV:

REGULATIONS OF CYBERSPACE (Total 100 marks)

(International Perspective and Intellectual Property)

Unit I: 15 lectures

International Organizations and Their Roles

- ICANN
- URDP
- WTO and TRIPS
- UNICITRAL Model LAW

Unit II 15 lectures

- Evolution of IT Act; Genesis and Necessity
- Digital/ Electronic Signature- Analysis in the background of Indian Laws
- E-Commerce; Issues and provisions in Indian Law
- E-Governance; concept and practicality in India
- E-Taxation issues in Cyberspace

Unit III 15 lectures

Domain Names and Trademark Disputes

- Concept of Trademark/Domain Name
- Cybersquatting
- Reverse Hijacking
- Jurisdiction in Trademark Disputes

Unit IV 15 lectures

Concept of Copyright and Patent in Cyberspace

- Copyright in the Digital Medium
- Copyright in Computer Programmes
- Copyright and WIPO Treaties
- Concept of Patent Right
- Relevant Provisions of Patent Act 1970

Paper –V:
Practical Training (Total 100 marks)

(90 lectures)

1. Finding results of different logic gates & their combinations.
2. Working in Windows and Linux Environment
3. Use of Internet - Visiting websites with given URL, searching information using search engine.
4. Networking commands - like ping, IPConfig, etc. with various switches.
5. Tracing E - mail - Finding senders IP Address of received e - mail, tracing route of e - mail received using tools available on internet e.g. Visual Trace Route etc.
6. Study of Encase software and its uses
7. Study of WinHex software and its uses
8. Domain Name Registration
9. Creation and verification of Digital Signature, Study of Digital Certificate
10. Study of various commands in Linux like Encryption and Decryption, message digest etc.
11. Steganography using steganography tools (like Invisible Secret etc)
12. Concealment Techniques (Cloaking Techniques (Data Hide and Seek), Renaming Files, Manipulating File System, Data Hiding on NTFS

Paper VI: Project Work (Total 100 marks) (90 hours)

The project report submitted by the student will be evaluated jointly by the internal and external examiners during the practical examination. The distribution of marks will be as follows:

- 1. Dissertation 60 marks**
- 2. Presentation 20 marks**
- 3. Viva-voice 20 marks**

Recommended List of Books

1. Cyber Law in India by Farooq Ahmad- Pioneer Books
2. Information Technology Law and Practice by Vakul Sharma- Universal Law Publishing Co. Pvt. Ltd.
3. The Indian Cyber Law by Suresh T. Vishwanathan- Bharat Law House New Delhi
4. Guide to Cyber and E- Commerce Laws by P.M. Bukshi and R.K. Suri- Bharat Law House, New Delhi
5. Guide to Cyber Laws by Rodney D. Ryder- Wadhwa and Compney, Nagpur
6. The Information technology Act, 2000- Bare Act- Professional Book Publishers, New Delhi.
7. Computer Forensics: Principles and Practices by Linda Volonino, Reynaldo Anzaldua and Jana Godwin -Pearson Prentice-Hall 2007.
8. First Responder's Guide to Computer Forensics by Richard Nolan et al.- Carnegie Mellon, 2005.
9. Digital Evidence and Computer Crime, 2nd ed. By Eoghan Casey- Academic Press, 2004.
10. The Regulation of Cyberspace by Andrew Murray, 2006- Routledge -Cavendish.
11. Scene of the Cybercrime: Computer Forensics Handbook by Syngress.
12. Security and Incident Response by Keith J. Jones, Richard Bejtlich and Curtis W. Rose
13. List of Websites for more information is available on :
[Http://www.garykessler.net/library/forensicsurl.html](http://www.garykessler.net/library/forensicsurl.html)
14. Introduction to Forensic Science in Crime Investigation By Dr.(Smt) Rukmani Krishnamurthy