UNIVERSITY OF HYDERABAD (UoH)
School of Computer and Information Sciences
(SCIS)

Jointly with

CR RAO ADVANCED INSTITUTE OF MATHEMATICS, STATISTICS AND COMPUTER SCIENCE (AIMSCS)

BROCHURE

M.Tech.
in
INFORMATION SECURITY*
(2 Years Full Time Programme)

***A New Academic Programme from year 2018-19**

[Approved by AICTE]

Master of Technology (M.Tech) in Information Security
[with "Cyber Security" as Specialized Stream]
(2 Years Full Time Programme)

About the Program

Information security refers to protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction. The goals include protecting the confidentiality, integrity and availability of information. Information security is one of the cornerstones for the continued expansion and acceptance of the information society. At the same time it is also a fundamental research discipline within computer science, with many basic open problems, both theoretical and applied.

One of the main paradigm shifts of the emerging information society is that information is stored and exchanged in electronic form. This electronic representation differs radically from traditional representations; for instance, electronic data can be copied without cost, it can be erased without leaving traces, and it can be communicated without effort over large distances. The downside of these features is that protecting information, which is of crucial importance for the information society, has become fundamentally more difficult. This is the problem that research in information security addresses, both in terms of finding solutions to pressing security problems and in terms of laying the foundations for developing a secure information infrastructure for the future.

All organizations, including governments, military, financial institutions, hospitals, and private businesses, gather and store a great deal of confidential information about their employees, customers, products, research, and financial operations. Most of this information is collected, processed and stored on electronically and transmitted across networks to other computers. Protecting confidential information is a business requirement, and in many cases also an ethical and legal requirement. For the individual, information security has a significant effect on privacy and identity theft.

In light of the depth and breadth of this problem, and the fact that information security plays such a fundamental role in so many areas of computer science today, this M.Tech program is being offered.

SCOPE

The course is designed to provide a balanced mixture of theoretical and professional training in Cryptology and Information Security so that the students, on successful completion of the course, may take up either

(a) a professional career in information security or specialised application areas

Or

(b) an academic career for further study and research in the theoretical and applied aspects of Cryptology and Information Security, and related disciplines.

Career Opportunities

Security is a major concern in all organisations. In particular, governments and industries worldwide have forecast a shortage of and high demand for information security professionals. One can expect good employment prospects with local and multinational businesses, governments, financial and banking institutions, and consulting firms as IT security specialists, IT security auditors, network and systems specialists, and IT security product developers and solution providers.

Objectives

A Full-time 2 year M.Tech Programme in Information Security is being planned that will develop the skills of a professional in the following areas:

a. Analyze the network security threats
b. Analyze the network traffic
c. Knowledge of various attack methods
d. In-depth understanding of core system technologies in the security point of view
e. In-depth understanding of cryptography
f. In-depth understanding of security tools implementation and internals
g. Usage of security tools and technologies
h. Ability to analyze new security requirements and development of new tools

Duration

1. Regular Students: The duration of the programme is two years (2 semester course work and 2 semesters Dissertation).
2. Sponsored Students: The duration of the programme is two years (2 semester course work and 2 semesters Dissertation). However, these students will have an option to carry out their final dissertation (in the second year) in their respective institutes. The dissertation is to be submitted within stipulated time.

Programme Fees

Fees* [All Fees inclusive but without Academic Development Funds (ADF)]
Rs.18,770/semester for Regular Students [All Categories]
Rs.40,000/semester for Sponsored Students

NOTE * Additional amount towards ADF:

1. One time payment at the time of admission is Rs 50,000 (for Regular Students) [All Categories]
2. One time payment at the time of admission is Rs 1,00,000 (for Sponsored Students)

Minimum Qualification for Admission (any of the following)

- B.Tech (CSE/IT/EEE/ECE)
- MCA with Mathematics at 10+2 level or equivalent.
- M.Sc. (Mathematics/Applied Mathematics/Statistics)
- M.Sc.(Computer Science, IT, Electronics)

Note: The candidates must have secured a minimum of 55% marks in their qualifying examination.

Number of Seats: 18 (Eighteen) (Regular) + 5 (Five) Sponsored = 23. Breakup for Regular Seats, Category-wise reservation:

- Open 08
- Open-PwD 01
- SC 03
- SC-PwD 00
- ST 01
- ST-PwD 00
- OBC 05
- OBC-PwD 00

Admission Procedure

1. Applicants need to apply to the University as per the prescribed application form
2. Regular Seats: Admission to these seats is based on valid GATE scores in Computer Science and Information Technology only. AICTE GATE fellowship will be provided.
3. Sponsored Seats: Admission to these seats is based on Interview only. GATE scores are not required. Employees with a minimum 2 years of work experience in IT companies registered with STPI or NASSCOM or Central Government Organizations can apply for this programme.

Award of Degree

Degree will be awarded by the University of Hyderabad.

Contact Information

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Further Details

1. See Prospectus 2018-19 details. [http://acad.uohyd.ac.in/downloads/Pros2018.PDF]
2. About the University [http://www.uohyd.ac.in], About Academic and Examination Matters [http://acad.uohyd.ac.in/] and About the School and Curriculum details [http://scis.uohyd.ac.in]
3. About C R Rao Advanced Institute of Mathematics, Statistics and Computer Science [http://www.crraoaimscs.org/]
4. Reservation of Seats: The University follows the reservations strictly in accordance with GOI policy/rules and the guidelines of the UGC from time to time.

NOTE: Online applications are invited from GATE qualified candidates of 2016, 2017 and 2018 from 7-6-2018 to 30-6-2018. For further details please visit http://acad.uohyd.ac.in/

Course Structure

Code	Subjects	Credits		
		L	**T**	**P**
	Semester - I			
IS01	Mathematical Foundation for Information Security	4	0	0
IS02	Secure Operating System and Computer Organization	3	0	1
IS03	Computer Networks	3	0	1
IS04	Software Engineering and Databases	3	0	1
IS05	Laboratory: Reverse Engineering and Malware Analysis	1	0	2
	Elective-1/Optional core-1	3	0	0/1
Credits	**Min:22/Max:23**			
	Semester – II			
IS06	Principles and Standards of Information Security	4	0	0
IS07	Security Tools and Technologies	3	0	1
IS08	Computer and Network Security	3	0	1
IS09	Laboratory: Side Channel Analysis	1	0	2
	Elective-2 (*)/Optional core-2	3	0	0/1
	Elective-3//Optional core-3	3	0	0/1
Credits	**Min:21/Max:23**			
	Semesters – III and IV			
IS10/CS10	Dissertation	18	0	0
Total Credits	**61(Min) / 64 (Max)**			

IS (Information Security) Electives (BIN)	**CS (Cyber Security) Optional Cores (BIN)**
IS11 Introduction to Cryptography	CS11 Ethical Hacking & Computer Forensics
IS12 Finite Field Theory	CS12 Current trends in Web Security
IS13 Computational Complexity	CS13 Information System Control and Audit
IS14 Statistics and Probability	CS14 Cloud Computing and Security
IS15 Coding Theory and Information Theory	CS15 Big Data Security
IS16 Randomized Algorithms	
IS17 Advanced Cryptography	
IS18 Machine Learning	
IS19 Automata, Languages and Computation	