

JOINING INSTRUCTIONS

NUST STUDENTS (POSTGRADUATE SESSION 2010)

INTRODUCTION

General

1. Military College of Signals (MCS) is a constituent College of National University of Sciences and Technology (NUST). Commandant Military College of Signals (MCS) congratulates you on your meritorious selection as postgraduate student and welcomes you to join this institution. MCS is one of the premier training institutions of the Pakistan Army and is the most prestigious place of learning in the field of Telecommunications, Software Engineering and Information Security. Since its inception, it has passed through a number of transitions and has kept the pace with the ever expanding field of Electronics, Computers, Telecommunication and Information Security.

Location / Address

2. **Location.** MCS is located on Humayun Road, Rawalpindi Cantonment at a distance of approximately 7 kilometers from Benazir International Airport and 4 kilometers from Rawalpindi Railway station. The campus houses administrative & academic blocks, college buildings, library, cafeteria and laboratories. A sketch showing the location of MCS and the Cadets Hostel is attached as **Annex A** to these instructions.

3. **Postal Address.** Military College of Signals, Humayun Road, Rawalpindi Cantonment, Rawalpindi, postal code 46000, email: mcs@nust.edu.pk.

4. **Contact Telephone Numbers**

	<u>Office</u>	<u>Residence</u>	<u>Mobile No</u>
a. Chief Instructor, Engineering Wing	9270283	561-30721	0321-5176531
b. Head of Computer Sciences Department	9270284	561-30256	0321-5109216
c. Head of Electrical Engineering Department	9272948	561-33853	0321-5017066
d. Head of Information Security Department	561-52-3216	561-34317	0333-4442725
e. Commanding Officer Cadets Cell	051-4346410	561-30626	0334-5112109
f. Staff Officer (NUST Affair)	9272097	561-32363	0333-5243175
g. Cadets Mess (Jinnah Company)	561-52-3149	-	-
h. Transport Officer	561-52-3003	-	0321-6410006

5. **Reporting on Arrival.** All students should report at Military College of Signals, Humayun Road Rawalpindi, at 0900 hrs on **20 September 2010.** Reception plan for the new arrivals is attached as **Annex B** to these instructions. Please do not forget to bring your selection letter & CNIC.

6. **Inability to Join on Due Date.** In case a selected student is unable to join on the due date because of unavoidable circumstances, he/she must inform the College immediately on address/telephone mentioned at para 3 & 4.

ORGANIZATION AND FACULTY/STAFF

7. **College Organization.** MCS is organized into four divisions, Administration Wing, Combat Wing, Engineering Wing and Research & Development Wing. Engineering Wing is responsible to undertake academic studies under NUST programmes.

8. **Faculty and Staff.** The faculty members are selected on the basis of their professional acumen and skill. The administrative staff ensures smooth administration of the students and the faculty. List of faculty and administrative staff is attached as **Annex C.**

DOCUMENTATION

9. **Documents to be Brought Along.** Students are required to bring following documents with them:-

- a. 4 x Passport-size colour Photographs attested by a Class-1 Gazetted Officer.
- b. Original Matric/FSc/BSc/BE Certificate alongwith 4 x Photocopies duly attested by a Class-1 Gazetted Officer.
- c. 4 x Photocopies of National Identity Card duly attested.
- d. Certificate for not involving in political / Sectarian activities (specimen at **Annex D**).

10. **Filling of Personal Data.** Two copies of personal particulars proforma (specimen attached as per **Annex E** duly filled /completed be brought by all students.

11. **Admission Conditions.** On completion of above requirements, a student will be admitted in Military College of Signals on provisional basis. The confirmation of admission is subject to verification of original degrees/certificates from the awarding authorities. Students are hereby cautioned that if at any stage, the documents submitted by them are found to be false/forged, he/she will be expelled from the college with forfeiture of all the dues. The student shall also be liable to legal action deemed necessary by the college.

12. **Duration of Courses.** The total duration of the course is 79 weeks (1- ½ calendar years). The course organization is as follows:-

1 st Semester	-	18 Weeks
Semester Break	-	02 Weeks
2 nd Semester	-	18 Weeks
Semester Break	-	01 Week
3 rd Semester	-	10 Weeks
Semester Break	-	03 Weeks
<u>Thesis Semester</u>	-	<u>27 Weeks</u>
<u>Total</u>	-	<u>79 Weeks</u>

Note. Choice for optional subjects for three semesters must be obtained through website before joining.

13. **Examination and Grading Systems.** Military College of Signals, like other leading institutions, follows Semester System which is more challenging than the Annual Systems. In this system, the students are expected to study regularly throughout the semester as they have to take a number of tests for each subject in a semester. Students are evaluated on Relative Grading System/Grade Point Average (GPA) based on the cluster of performance of the class. In this system, semester GPA is computed on grade/points obtained in each semester and cumulative GPA is calculated basing on all the grade points and the credits of the completed courses. The passing grade in each subject is 'C' and minimum cumulative GPA 3.00/4.00 is required to qualify the course work. MS Thesis is also graded and grade contributes towards final cumulative GPA.

14. **Policy on MS Leading to PhD.** The student will first complete the course work of MS programme at Post Graduate (PG) level in the related area. After successful completion of course work (24 credit hours) student will be evaluated by Faculty Board of Studies (FBS), including the Dean, Head of Department (HoD), respective supervisor and all faculty members who taught him/her during Post Graduate course work. The FBS will recommend his/her suitability for PhD or otherwise. If a student is recommended for PhD, he/she will continue course work for PhD to complete the requirement of 48 credits of 800/900 level course or equivalent to become eligible for PhD qualifying exam. If the student is not recommended for PhD, he/she will complete his/her master thesis (6 credit hrs) as per existing rules of MS.

15. **Tuition Fee.** MS leading to PhD students (less sponsored students who have to pay full tuition fee) will pay only Rs. 6000/- per month. Sponsored student's fee will be paid by the sponsors directly to the University.

16. The student will have to sign an agreement/bond to serve NUST for three years as lecturer on completion of MS Degree Programme and five years as Assistant Professor in case of PhD. In such a case students need not deposit remaining fee for the duration of their study. Unwilling/non-qualifying students will have to re-imburse full Tuition Fee (Rs. 6000/- per month) before being awarded final degree. The students are required to pay 10% of tuition fee as off campus fee during their off campus research period.

17. **College Transport.** Pick and drop facility on payment is available through hired transport through contractors. Separate application along with home address be provided to Officer Commanding Cadets Cell (OC Cadets Cell) Military College of Signals.

18. **Class Rooms/ Lecture Halls.** All class rooms/ lecture halls are air conditioned and adequately furnished.

19. **Library.** MCS has a well stocked library with internet facility. The library houses more than 50,000 books and journals on subjects relating to Electronics, telecommunications, computers etc. In addition the college subscribes to over 70 technical journals, periodicals, magazines and newspapers from home and abroad. A brief on library

will be included as part of orientation visit on arrival.

20. **Laboratories.** Well equipped and state of the art labs are available for quality engineering education. The labs at MCS stand second to none.

21. **Auditorium.** College auditorium (Nawaz Shaheed Auditorium)/Seminar Hall has a seating capacity of approximately 450 personnel. It is used for organizing various activities like movie shows, college functions including convocation, open house and declamation contests etc.

22. **Reproduction Facilities.** Reproduction cell co-located with cafeteria undertakes printing and publishing work with the following facilities available:-

- a. Photocopier
- b. CD Writer
- c. Printer
- d. Miscellaneous Stationery items

23. **Photographer.** Round the clock facility is available in the college.

24. **Internet.** A 24 hours internet service is provided to all the faculty members and students both at campus as well as their residences.

25. **Extracurricular Activities.** A variety of recreational facilities are available including Literary Club, Debating society, Photography Club and Dramatics Club.

CONDUCT OF TRAINING/BRIEFING

26. **Conduct of Training at MCS.** A detailed briefing will be given about the conduct of training, examinations/tests and associated regulations to the students at the start of the course.

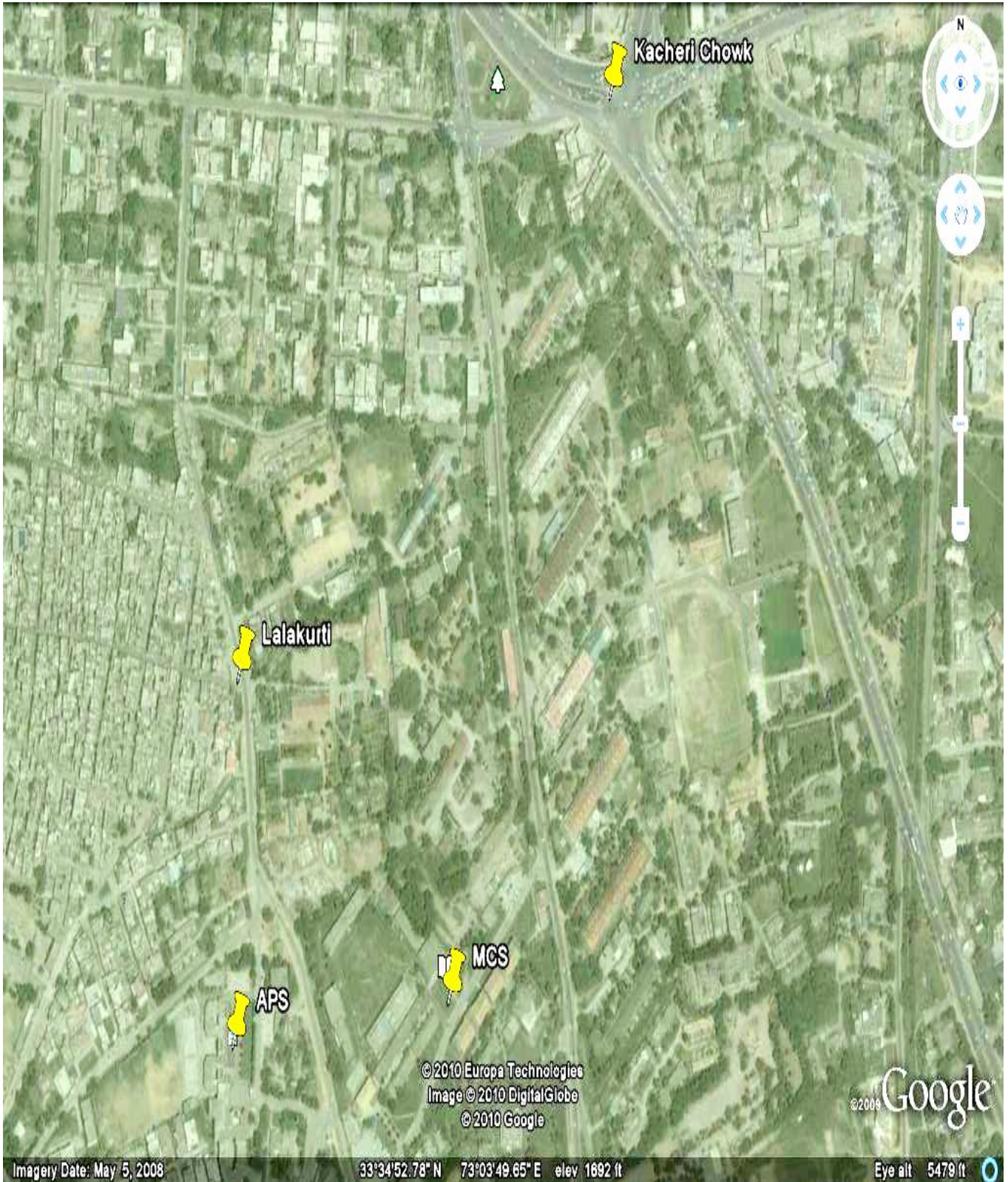
27. **Discipline.** Every individual is required to abide by all instructions contained in this booklet or passed on from time to time in college through circulars / instructions from college authorities.

28. **Cafeteria.** Separate student cafeteria for gents / ladies is also available.
29. **Scope of Study/Curriculum.** The Scope of study / Outline Syllabus of Telecommunication Engineering Course is attached as **Annex-F**, Software Engineering is attached as **Annex-G** and Information Security is attached as **Annex-H**.

CONCLUSION

30. The College welcomes you to a challenging life of learning, discipline, self-motivation and mission accomplishment. Best of luck.

MCS GUIDE MAP



RECEPTION PLAN – MSEE-16, MSCS-17 / MSIS-9**20 SEPTEMBER 2010**

S/No	Details	Time	RV
1.	Arrival Reception	0900-1000	Nawaz Shaheed Auditorium
2.	Briefing about MCS	1000-1015	Nawaz Shaheed Auditorium
3.	Filling of Forms / Registration,	1015-1100	Nawaz Shaheed Auditorium
4.	Visit of Labs/Library	1100 onward	Computer Software, Electrical Engineering Departments and Library

FACULTY AT MCS

S/No	Designation	Name
1.	Professor	Dr. Ashraf Masood
2.	Associate Professor	Dr. Saeed Murtaza
3.	Associate Professor	Dr. Farooq Ahmed Bhatti
4.	Assistant Professor	Dr. Awais Majeed
5.	Assistant Professor	Dr. Faisal Bashir Hussain
6.	Assistant Professor	Dr. Sajjad Hussain
7.	Assistant Professor	Dr. Imran Ahmed Siddiqi
8.	Assistant Professor	Dr. Sajjad Hussain
9.	Assistant Professor	Dr. Sanam Shehla Rizvi
10.	Assistant Professor	Dr. Hammad Afzal
11.	Assistant Professor	Dr. Seemab Latif
12.	Assistant Professor	Dr. Muhammad Arif Wahla
13.	Assistant Professor	Dr. Fahim Arif
14.	Assistant Professor	Dr. Muhammad Hanif
15.	Assistant Professor	Dr. Imran Tauqeer
16.	Assistant Professor	Dr. Asif Masud
17.	Assistant Professor	Dr. Naveed Iqbal Rao
18.	Assistant Professor	Dr. Adnan Ahmed Khan
19.	Assistant Professor	Dr Abdul Ghafoor
20.	Assistant Professor	Dr. Adnan Rashdi
21.	Assistant Professor	Dr. Adil Masood Sadiqui
22.	Assistant Professor	Engr Raja Iqbal
23.	Assistant Professor	Engr Syed Javed Hussain
24.	Assistant Professor	Engr Fazal Ahmed
25.	Assistant Professor	Engr Zaka Ul Mustafa
26.	Assistant Professor	Engr Imtiaz Ahmed Khokhar
27.	Assistant Professor	Engr Syed Athar Mohsin Zaidi
28.	Assistant Professor	Engr Naveed Sarfraz Khattak
29.	Assistant Professor	Engr Attiq Ahmed
30.	Assistant Professor	Engr Asif Mehmood
31.	Assistant Professor	Muhammad Naeem
32.	Assistant Professor	Engr Syed Zulqarnain Ahmed Gilani
33.	Regular Visiting Faculty	Engr Muhammad Khan Minhas
34.	Regular Visiting Faculty	Umar Farooq
35.	Regular Visiting Faculty	Engr Tariq Hussain Sheikh
36.	Regular Visiting Faculty	Talib Hussain Masood
37.	Regular Visiting Faculty	Engr Muhammad Saleem
38.	Regular Visiting Faculty	Muhammad Akram
39.	Regular Visiting Faculty	Muhammad Bashir Bilal Siddiqi

S/No	Designation	Name
40.	Regular Visiting Faculty	Miss Safia Akram
41.	Lecturer	Engr Muhammad Irshad
42.	Lecturer	Muhammad Zeeshan Zahid
43.	Lecturer	Ahmed Raza Cheema
44.	Lecturer	Engr Miss Tabinda Waheed
45.	Lecturer	Miss Aisha Khalid Khan
46.	Lecturer	Bilal Rauf
47.	Lecturer	Miss Ayesha Naureen
48.	Lecturer	Khurram Shahzad
49.	Lecturer	Obaid Ullah Khalid
50.	Lecturer	Kamran Arif
51.	Lecturer	Safwat Irteza Butt
52.	Lecturer	Rehan Ashraf
53.	Lecturer	Miss Sana Javed
54.	Lecturer	Asad Raza
55.	Lecturer	Rabia Khan
56.	Lecturer	Mir Yasir Umair
57.	Lecturer	Raza Ahmed Bhatti
58.	Lecturer	Muhammad Umar Zulfiqar
59.	Lecturer	Maryam Akhtar Kiani
60.	Lecturer	Shaista Humaira
61.	Lecturer	Beenish Shahzad
62.	Lab Demonstrator	Ashfaq Ahmed
63.	Lab Demonstrator	Aiman Akif
64.	Demonstrator	Kabeer Ahmed
65.	Lab Engineer	Umar Mehmood
66.	Lab Engineer	Umair Nasir
67.	Lab Engineer	Hammad Kabir
68.	Lab Engineer	Intisar Rizwan-i-Haque
69.	Lab Engineer	Saad Islam
70.	Lab Engineer	Ijaz Ahmed
71.	Lab Engineer	Fazullah
72.	Lab Engineer	Shahela Saif
73.	Lab Engineer	Nausheen Majeed
74.	Lab Engineer	Mehreen Sirshar
75.	Lab Engineer	Mian Muhammad Waseem
76.	Lab Engineer	Sajjad Sarwar
77.	Lab Engineer	Muhammad Naeem

COLLEGE ADMINISTRATION

S#	Rank	Name	Designation	Telephone No
1.	Major General	Shahid Maqbool	Commandant MCS	051-561-34151
2.	Brigadier	Umar Farooq	Brigadier Coordination	051-561-30792
3.	Brigadier	Dr. Ashraf Masood	Dean Engineering	051-561-34155
4.	Lieutenant Colonel	Musawwir ur Rehman	Assistant Adjutant & Quarter Master General	051-561-34322
5.	Lieutenant Colonel	Muhammad Jamal Shah	Staff Officer-1 (Exams)	051-561-35443
6.	Lieutenant Colonel	Babar Sultan	General Staff Officer-I (Training)	051-561-33069
7.	Lieutenant Colonel	Muhammad Rafiq	Staff Officer-I (NUST)	051-9272097
8.	Major	Muhammad Ishaq Pervez	Transport Officer	051-561-52-3003
9.	Major	Muhammad Ashiq	General Staff Officer-II (Training)	051-561-33523
10.	Major	Wajid Mehmood Arshad	Adjutant	051-561-33642

Annex D**POLITICAL AFFILIATION CERTIFICATE**

It is certified that Mr/Mrs/Miss. _____ Son/Wife/ Daughter
of Mr. _____, Resident of _____
is neither affiliated with any political party nor involved in sectarian activities.

(Signature of Student)

Dated _____ **2010**

**(Signature of Class-1 Gazetted
Officer with Stamp)**

MILITARY COLLEGE OF SIGNALS
PERSONAL PARTICULARS OF NUST CADETS

Note: To be deposited by the civil (NUST) Cadets on joining Military College of Signals Rawalpindi.

1. No _____ (To be allotted by MCS on joining)
2. Name _____
3. National Identity Card No. _____
4. Father's Name: _____
5. Father's Occupation _____
6. Father's Address _____
7. Permanent Home Address: _____
8. Tel No/Cell No/Email address: _____
9. Institution Attended

S/No	Institution	From	To	Class	Division
10. **Detail of Marks** **Obtained** **Total** **Percentage**
 - a. Matric
 - b. FSc
11. Any distinction/position: _____
12. Games which you can play: _____
13. Participation in any Tournament: _____
14. Membership of any Social/Cultural Club: _____
15. Participation in any competition (Divisional Level & Above) _____
16. Course/Diploma attended (other than Metric & FSc) _____
17. Any other remarks/details: _____

18. Detail of Brothers & Sisters _____

S/No	Name	Age	Marital Status	Address
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a.

b.

c.

19. Relatives in Rawalpindi and Islamabad (Name, Address, Telephone Number and Relationship)

a. _____

b. _____

(Form can also be downloaded from MCS website: (www.mcs.nust.edu.pk)).

SCOPE OF STUDY/CURRICULUMMASTER OF SCIENCE IN ELECTRICAL (TELECOMMUNICATION)
ENGINEERING

1. The curriculum has been designed on the lines of MSEE (Telecomm) program of Michigan State University (MSU), USA. The course contents effectively encompass Electrical Engineering, Signals and Systems, Optical Fibre Communication, Microwave theory, Stochastic Processes and Computer Networks. The students joining the new course must have a good working knowledge of computer language, MATLAB, calculus, linear algebra and signal processing.
2. **Probability and Statistics.** Probability and Statistics of intermediate mathematics with adv topics, Discrete/continuous and Un-variable Distributions, Random Variables, Normal Approximations, Sampling Distributions, Parameter Estimation and Element Array Test of Hypothesis etc.
3. **Introduction to Computers.** Application of Computers, and Programming, Introduction to C/C++, File Security etc. Introduction to Programming Languages, Integrated Development Environments (IDE) for editing, compiling and running programs. Procedural Programming Concepts (in C) Lexical Elements input/output and File Handling.
4. **Electro Magnetic Fundamentals.** Vector Calculus and analysis, Electromagnetic.
5. **Digital Signal Processing.** Fourier Transforms, Z Transforms, Discrete Signals.
6. **Engineering Mathematics.** Matrices, Determinants, Differentiation, Integrations.

OUTLINE SYLLABUS**MASTER OF SCIENCE IN ELECTRICAL (TELECOMMUNICATION)
ENGINEERING**

S#	Group	Course Code / Title	Cr Hrs
1.	Core Course	EE-867 Advance Digital Signal Processing	3+0
2.		EE-847 Advance Digital Communication Systems	3+0
3.		EE-829 Discrete Time Control Systems	3+0
4.		EE-869 Information Theory and Coding	3+0
5.		EE-855 Advance Digital Wireless Communications	3+0
6.		EE-876 Optical Devices and Communication	3+0
7.	Optional	EE-862 Analog/Digital Circuit and IC Design	3+0
8.		CS-826 Advance Computer Networks Design and Security System	3+0
9.		IS-831 Applied Mathematics	3+0
10.		CS-803 Computer Vision	3+0
11.		EE-864 Stochastic Processing	3+0
12.		EE-801 Artificial Neural Networks	3+0
13.		EE-850 Digital Image Processing	3+0
14.		EE-865 Semiconductor Fabrication Processes	3+0
15.		EE-863 Digital System Design	3+0
16.		EE-890 Communication Project Management	3+0
17.		EE891 Introduction to Nanotechnology	3+0
18.		Thesis Work	6+0

SCOPE OF STUDY/CURRICULUM**MASTER OF SCIENCE IN SOFTWARE ENGINEERING**

1. The curriculum has been designed on the lines of MSCS Programme of Michigan State University (MSU), USA. The course contents effectively encompass Software Engineering, Software Engineering Required Engineering, Software Design Architectures, Software Quality, SPM, Database Systems Algorithm Design and Analysis, Parallel Processing, Advanced Computer Architectures OS, Artificial Intelligence (AI) and Computer Network. The students joining the new course must have a good working knowledge of C Language, Window-2001 and XP environment.
2. **Introduction to Computers.** Application of Computers, Introduction to Windows Operating Environments and Familiarity with Windows-2001 and XP, Application Sharing Resources Over the NW and File Security, Hands-on Application Exercises for Programming Languages, Integrated Development Environments (IDE) for editing, compiling and running programmes. Procedural Programming Concepts in 'C' Language, Fundamentals Data Types, Arrays Strings and Functions, output and File Handling.
3. **Algorithm and Computing.** Computer Systems and Problem Solving, Software Development Structured Design and Implementation of Algorithm, Procedural and Object Oriented Programming, Compilation and Linking.
4. **Machine Organization & Hardware Algorithm.** Digital Logic and Sequential Machine Design, Computer Organization, Control Unit and ALU Implementation, Parallel Operations, Digital System Simulation.

OUTLINE SYLLABUS**MASTER OF SCIENCE IN COMPUTER SOFTWARE ENGINEERING**

S#	Group	Course Code / Title	Cr Hrs
1.	Core Course	CS-860 Advanced Software Engineering	3+0
2.		CS-861 Software System Design & Architecture	3+0
3.		CS-862 Software Requirement Engineering	3+0
4.		CS-863 Software Quality Engineering	3+0
<u>Optional</u>			
5.	Software Engineering	CS-864 Team-Based Software Development	3+0
6.		CS-865 Human Computer Interface	3+0
7.		CS-866 Reverse Engineering	3+0
8.		CS-867 Formal Methods	3+0
9.		CS-868 Software Project Management	3+0
10.		CS-871 Business Process Re-engineering	3+0
11.	Web Engineering	CS-876 Web-Engineering	3+0
12.		CS-877 Software Development for Web	3+0
13.		CS-825 Adv Computer Network	3+0
14.		CS-826 Adv Computer Network Design & System Security	3+0
15.	Network	CS-827 Wireless Communication	3+0
16.		CS-828 Network Security	3+0
17.		CS-801 Artificial Neural Network	3+0
18.		CS-802 Pattern Recognition	3+0
19.	Artificial Intelligence	CS-803 Computer Vision	3+0
20.		CS-805 Adv Artificial Intelligence	3+0

21.		CS-807 Machine Learning	3+0
22.		CS-808 Bio Informatics System	3+0
23.	Data Structure & Algorithm	CS-830 Adv Algorithm Analysis	3+0
24.		CS-835 Adv Algorithmic Graph Theory	3+0
25.	Data Base	CS-880 Adv Database Systems	3+0
26.	Operating System	CS-812 Adv Operating Systems	3+0
27.		CS-813 Design of Parallel & Distributed Systems	3+0
28.		CS-814 Distributed Systems and Resources Optimization	3+0
29.	Computer Architecture	CS-820 Adv Computer Architecture	3+0
30.	Imaging	CS-850 Digital Image Processing	3+0
31.		CS-851 Wavelet Compression	3+0
32.		CS-(900-919) Selected topics in relevant Area	3+0
33.	Research	CS-898 Research Methodologies	3+0
34.		CS-899 Master's Thesis Research	6+0

SCOPE OF STUDY/CURRICULUM
MASTER OF SCIENCE IN INFORMATION SECURITY

1. The department of Information Security at Military College of Signals plays a key role in training the engineers and scientists at Postgraduate/Doctoral level and transforms them into efficient and competent professionals capable to design, develop, evaluate, maintain, operate and enhance information security policies, equipment and services. Objective of this programme is to provide a platform for the development of indigenous Information Security related technologies, policies and services and to develop expertise to face the challenges of modern threats to information.

2. Major Areas of this programme are given below:-

- a. **Applied Math.** A strong mathematical back ground is extremely essential for study / research in the area of Information Security. In depth knowledge of Discrete math and number theory are major mathematical tools needed.
- b. **Computer and NW Security.** To provide security to information at computer and NW level is the ultimate aim of this programme, Good knowledge of Operating system and Computer Networks is a prerequisite.
- c. **Cryptography.** Being a major thrust of this programme this area needs solid mathematical background coupled with good computer skills and insight of design and analysis of algorithms.

OUTLINE SYLLABUS**MASTER OF SCIENCE IN INFORMATION SECURITY**

S#	Group	Course Code/Title	Cr Hrs
1.	Core Course	IS-831 Applied Mathematics	3+0
2.		IS-869 Information Theory & Coding	3+0
3.		IS-872 Information Security Management	3+0
4.		IS-874 Computer Security	3+0
5.		IS-876 Advanced Network/ Web Security	3+0
6.		IS-882 Cryptography	3+0
7.	Electives	IS-801 Advanced Topics in Information Security	3+0
8.		CS-810 Parallel & Distributed Computing	3+0
9.		IS-812 Secure Coding	3+0
10.		IS-830 Design & Analysis of Computer Algorithms	3+0
11.		IS-832 Advanced Applied Mathematics	3+0
12.		EE-866 Digital Signal Processing	3+0
13.		IS-877 Information Security Project Management	3+0
14.		IS-878 Wireless Network Security	3+0
15.		IS-879 Organization Security Policy and Administration	3+0
16.		IS-883 Cryptanalysis	3+0
17.		IS-890 Computer Forensics	3+0
18.		IS-891 Biometrics	3+0
19.		IS-892 Artificial Intelligence with Applications	3+0
20.		IS-893 Advanced Simulation Modeling	3+0
21.	Research	IS-899 Research Thesis	6+0