Rules and Regulations of SUTIC Graduate Programs

(MSc Students)

Vice Chancellor of Academics & Research

01.11.2017

Sharif University of Technology

International Campus (SUTIC), Kish Island

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Rules and Regulations of MSc Programs at SUTIC

This document contains the rules and regulations for MSc programs at SUTIC. These rules and regulations along with the educational and research rules and regulations of Sharif University of Technology (SUT) for MSc students, provided by the university Graduate Studies Office at SUT, must be considered as the guidelines for MSc programs. The internal guidelines of MSc programs at SUTIC have been drawn up according to SUT regulations for the MSc program. The enforcement of the internal rules and regulation of MSc programs at SUTIC is the responsibility of SUTIC Graduate Studies Committee (SUTIC–GSC).

In this document, hereafter, the Sharif University of Technology, International Campus is referred to as "SUTIC", and the Sharif University of Technology is referred to as "SUT". The faculty member supervising the student in the thesis project and research, hereafter, is entitled as the "Supervisor". Graduate students can solicit the required information regarding the compulsory, fundamental, and elective courses as well as the academic programs and other administrative procedures from the head of the academic group. In this document, the "Master thesis program" is a research-based program in which the student needs to submit a thesis at the end of the MSc program, and the "Master non-thesis program" is a course-based MSc program.

Article 1.

Admission of MSc Students

1. Students may be admitted to an MSc program through the nation-wide university entrance exam held by the SANJESH organization, or by submission of an online application form on the SUTIC website.

    1.1. The applicant must submit the application form together with the required documents to the SUTIC Graduate Studies Office (SUTIC–GSO) in accordance to the set of guidelines for admission provided on the SUTIC and the SUT websites.

    1.2. The entrance exam and an interview are administered by SUTIC for MSc applicants.

    1.3. The evaluation of MSc applications is based on the student's English test score, entrance exam results, and academic background. The academic groups evaluate and confirm the MSc applications; the final admissions must be approved by the Education and Admission Committee at SUT.

2. The admitted students must enroll on the designated date and participate in the MSc orientation day at SUTIC.

Article 2.

MSc Program Duration and Commitments

1. The head of the academic group in which the applicants are accepted provides the students with information regarding the academic and administrative processes. All questions and requests of students must be discussed with the head of the academic group. All requests by students addressed to the SUTIC–GSO must be approved by the head of the academic group, otherwise they will not be considered.
2. Students must register online for courses at the beginning of each semester through the SUTIC website using their private username and password.
3. MSc students are required to complete 28 to 32 semester credits. The minimum pass grade for each course is 12 out of 20, and the minimum pass GPA is 14 out of 20 in each semester.

   Note 1. The MSc programs are offered as a "Master thesis program" or "Master non-thesis program". The "Master thesis program" is a research-based program in which the student must take a 6–credit thesis research course. The "Master non-thesis program" is a course-based program.

   Note 2. A student who has been admitted in the "Master non-thesis program" and wants to change the program to a "Master thesis program" may submit a request to the SUTIC–GSO if the student's GPA for the first and second semesters is higher than the average of fellow students. The SUTIC–GSC makes the final decision based on the rules and regulations of the "Program Status Change".
4. The maximum number of credits per semester is 12 and the minimum number of credits is 8. In the "Master thesis program", a student who is registered in the thesis research course is considered as a full-time student and does not need to take the minimum 8 credits.
5. The compulsory and elective courses must be registered following the guidelines of the head of the academic group. Since all MSc courses are not offered regularly in each semester, the student must take the courses under the guidelines of the head of the academic group in order to pass all required courses and the seminar by the end of the 3rd semester, and have sufficient time to conduct the research thesis in the 2nd academic year.

   Note 1. The compulsory MSc courses must be registered directly from the corresponding academic group. An MSc student may take the maximum of two elective courses from other academic groups at SUTIC. Registration for elective courses is subject to approval by the supervisor and the head of the academic group.

Note 2. An MSc student cannot transfer an additional course passed at the BSc level to the MSc program, even if it is an MSc course.

Note 3. The head of the academic group may assign the maximum number of 12-credit compensation courses for the MSc student, if necessary. Assignment of compensation courses to the student is decided by the academic group based on the academic background of MSc student. Passing the assigned compensation courses is a prerequisite to graduation. In the case of assignment of the minimum number of 8-credit compensation courses or more, the duration of studies can be extended by one semester. If the duration of the MSc program extends to a 6^{th} semester, approval is required from the 'Exceptional Cases Committee' (ECC) at SUT. The compensation courses must be registered and passed in the first and second semesters of the MSc program. The compensation courses are not included in the ceiling of required course credit hours taken each semester. These courses are not subject to withdrawal.

Note 4. The MSc student who registers for the Kish Compensation English Proficiency courses 1 and/or 2 together with the MSc core courses is allowed to take a minimum number of 6-credit courses and a maximum number of 9-credit courses in that semester.

Note 5. BSc courses that are registered and passed by the MSc student as compensation courses will be included in the transcripts but will not be included in the total number of course credits or the GPA. The MSc student is allowed to take PhD courses with the approval of the head of the academic group and the faculty member teaching the course; this course is regarded as an elective course.

6. The seminar course is a 2-credit compulsory course for the MSc program. It is offered by a faculty member in each academic group and consists of: the presentation of research methodologies, preparation of proposal, thesis and article preparation, principles of holding seminars, etc. The coursework includes attending and conducting scientific seminars discussing the research topics being conducted at SUTIC. Furthermore, the MSc student must select the research topic of MSc thesis under the supervision of a faculty member from the academic group and prepare a written report on the topic of the research in order to obtain the course score according to the academic processes of the academic group.

Note 1. The mentioned report for the "Master thesis program" is considered as a "research proposal" that must be prepared according to the instructions and guidelines of Article 6. Registration of MSc thesis is subject to approval of the research proposal by the academic group and the SUTIC–GSC.

Note 2. The mentioned report for the "Master non-thesis program" is considered as an "essay" reporting the studies of a topic agreed on by the student and the faculty member teaching the course.

7. A student in the "Master thesis program" must register for the MSc thesis in the 3rd semester. If the research proposal is not approved by the end of the 3rd semester registration period, the student is not allowed to register for the thesis course. To be allowed to register for the thesis at the beginning of 3rd semester, the following steps must be taken following the timeline announced by the SUTIC–GSO:

   a) Submitting the "Supervisor Request" form and the approval of the supervisor to the head of the academic group,

   b) Submitting the "Thesis Research" form together with the research proposal to the head of the academic group,

   c) Completing the online "Thesis Research" form on the SUTIC website and submitting it to the supervisor,

   d) Submitting the online "Thesis Research" form through the supervisor to the SUTIC–GSO,

   e) Receiving permission for registration in the MSc thesis course by the Graduate Studies Office at SUT.

   Note 1. A student not able to pass the required courses in the first and second semesters must register for the remaining courses together with the MSc thesis course in the 3rd semester.

   Note 2. The student who must register for three 3-credit courses in the 3rd semester for any reason is not allowed to register for the MSc thesis course. In such case, the student must submit the research proposal for approval in the 3rd semester and takes the MSc thesis course in the fourth semester.

   Note 3. The student must register for a zero-credit thesis research course each semester until graduation following the initial registration for the course. In case of failure to register, continuation of the program is subject to the approval and permission from the Graduate Studies Office at SUT.

   Note 4. Students are not allowed to register for the MSc thesis course in the first and second semesters.

8. Registration for the MSc thesis course can be extended to the commencement of the 4th semester. In this case, the duration of the MSc program for conducting research and preparing the thesis is the same as for other students who registered without a delay. If the student fails to register for the course at the beginning of the 4th semester, the student is considered in the "Master non-thesis program".

9. An MSc student may take additional courses from SUTIC or SUT in addition to the required credit courses for graduation in the third and fourth semesters. Taking additional courses is subject to the approval of the supervisor on the basis of research topic and the approval of the head of the academic group from SUTIC–GSC.

Note. MSc students are not allowed to register for the "self-study" course offered to PhD students.

10. Registering for a 5th semester of the MSc program is subject to the approval of the Graduate Studies Office at SUT.
11. The minimum duration of studies for the "Master non-thesis program" is three semesters, and it is four semesters (excluding summer) for the "Master thesis program" according to the approval of the academic group.
12. An MSc student is not allowed to apply for a leave of absence in the first semester. Requests for an absence leave can be considered from the second semester following the submission of justifiable reasons with the approval of the supervisor and the head of the academic group to the SUTIC–GSC.

Article 3.

MSc Thesis Defense

1. The interval between the approval of the research proposal and the defense session cannot be less than two semesters from the initial registration for the MSc thesis course.
2. The interval between the submission date of the "defense session request" form and receiving permission for holding the session is a minimum of two weeks. The MSc student must submit the MSc thesis to the SUTIC–GSO for administrative processing two weeks prior to the requested date of the defense session. A list of MSc students who are prepared for their defense together with a list of recommended internal and external members of the defense examiners committee must be submitted to the SUTIC–GSO a month prior to the defense session by the head of each academic group.
3. A thesis defense without permission from the Graduate Studies Office at SUT is unofficial. Holding the session in this manner does not grant any rights to the student or have any financial commitments on SUTIC.
4. The MSc thesis defense steps are as follows:

    4.1. Completing the online recommended examiners form through the supervisor and its submission to SUTIC–GSO a month prior to the defense session. The recommended members must be approved by the SUTIC–GSO,

    4.2. Applying for a defense session permit from the Graduate Studies Office at SUT through the SUTIC–GSO,

    4.3. Submitting invitation letters to the internal and external examiners through the SUTIC–GSO,

    4.4. Submitting copies of the thesis to the SUTIC–GSO and examiners at least two weeks prior to the defense session. Articles (if any) must be submitted before the defense session.

Note 1. Invitation letters are prepared following the defense permission from the Graduate Studies Office at SUT.

Note 2. If a student fails to meet the deadline of thesis submission to the SUTIC–GSO and the examiners, the ceiling for evaluation will only be "very good" according to item 3 of Article 4.

4.5. Holding the defense session at the designated time and date.

4.6. Completing and submitting the "Defense Session Report" form, "visiting Examiners Contract" forms, and the thesis final score to SUTIC–GSO through the supervisor after the defense session.

Note. As the "Defense Session Report" form must be submitted to the Graduate Studies Office at SUT no later than two weeks after the defense, it must be submitted to SUTIC–GSO within a week after the session.

4.7. Submission of the online transfer form "J" by the supervisor. The form must be sent from SUTIC–GSO to the Graduate Studies Office at SUT within two months after the defense. The MSc thesis research course is labeled "P" (passed) or "F" (failed) in the transcripts if delayed.

4.8. Submission of the finalized MSc thesis together with the approval of the supervisor and SUTIC Language Centre no later than 6 months after the defense.

Article 4.

MSc Thesis Assessment

1. The supervisor(s) and the internal and external examiners assess and score the MSc thesis after reading the thesis and attending the defense session.

   Note. The Graduate Studies Director or a representative can attend the defense to observe the session but is not allowed to be involved in the assessment and scoring process.

2. The MSc thesis is scored by the following assessment criteria;

   a. 18.0–marks for the scientific quality together with the written and oral presentation of the thesis,

   b. 1.0–mark for active involvement of the student in the research process based on the assessment of the academic group (the criteria consist of acceptable performance confirmed by the supervisor, submission of periodic progress reports, conducting seminars for the faculty members and fellow students, attending their seminars and being committed to the thesis research timeline and deadlines),

   c. 1.0–mark for the scientific article as follows;

      i. Accepted article in a reputed scientific conference with the full acceptance and publication of the article in the conference proceedings (up to 0.5–mark)

ii. Accepted or published article in a reputed journal (up to 2.0–marks)

d. The thesis is assessed and scored by taking into account the article prepared from the thesis according to the defense examiners committee through filling the assessment sheets provided separately at the defense session. The supervisor computes the final score in descriptive format based on the following table;

Excellent	19.0 – 20
Very good	18.0 – 18.99
Good	16.0 – 17.99
Satisfactory	14.0 – 15.99
Unsatisfactory (Fail)	Under 14.0

Note. If the student officially has two supervisors, the item 2(a) of this article (18.0–marks) is the average of the supervisors' scores.

Article 5.

Defense Examiners committee

The supervisor recommends the internal and external examiners for the thesis defense to the SUTIC–GSO. Following the approval, the supervisor submits the online "Defense Examiners Committee" form to the SUTIC–GSO.

Note 1. The examiners must be considered scholars in the field of research.

Note 2. The internal and external examiners must be appropriately distributed in each academic group and their invitation must be approved by the SUTIC–GSC.

Article 6.

MSc Proposal Preparation

The research proposal must include the thesis title, the name of student, the name of supervisor, academic year, introduction, research questions, research objectives, review of literature, research methodology, research hypothesis, research objectives, timetable and list of sources and references. The proposal must be prepared in English and in accordance with the proposal preparation guidelines provided on the SUTIC website.

Article 7.

MSc Thesis Preparation

The MSc thesis must be prepared in English and in accordance with the guidelines provided on the SUTIC website.

MSc Program Timeline

1st semester	○ Participating in the MSc Program Orientation Day to become familiar with the rules and regulations, ○ Registering for courses, ○ Attending classes, ○ Taking final exams.
2nd semester	○ Registering for courses, ○ Attending classes, ○ Participating in the department seminars, ○ Seeking consultancy and advice from the department faculty member regarding a research topic and a supervisor, ○ Finalizing a research topic with the supervisor, ○ Preparing the research proposal under the supervision of the supervisor, ○ Taking final exams.
3rd semester	○ Registering for the 3-credit or 6-credit thesis research course for the "Master thesis program" together with any remaining required courses, ○ Registering for elective courses found necessary by the supervisor for thesis research, ○ Conducting research under the supervision of the supervisor.
4th semester	○ Registering for the zero-credit (if the 6-credit course is taken in the 3rd semester), or the 3-credit thesis research course, ○ Preparing a thesis under the supervision of the supervisor, ○ Conducting a seminar for new students according to academic procedure of the academic group, ○ Defending the thesis according to the regulations of SUT and the SUTIC–GSO.

MSc Defense and Graduation Process

- Passing the compensation, fundamental and elective courses according to the guidelines of the academic group,
- Do not be labeled as a “conditional” student for two semesters according to the Graduate Studies Regulations at SUT,
- Preparing and submitting a thesis to the supervisor and following the approval of the supervisor to the SUTIC–GSO,
- Submitting the required forms for the defense session by the student and supervisor together with the list of recommended internal and external examiners to the SUTIC–GSO,
- Approval of the recommended examiners by the SUTIC–GSC, and receiving the defense permit from the Graduate Studies Office at SUT,
- Submitting the invitation letters together with a copy of the thesis and the article (if any) to the examiners two weeks prior to the defense session,
- Holding the defense session,
- Submitting the transfer form “J” to the SUTIC–GSO by the supervisor,
- Revising and finalizing the thesis based on the comments made by examiners during the defense. Complete the graduation process no later than 6 month after the defense session,
- Preparing the copies of the finalized approved thesis,
- Settle the financial commitments with SUTIC and SUT no later than 6 months after the defense session.

Appendix 1.

Assigning the MSc student to a Supervisor

The MSc students at Sharif University of Technology, International Campus will be assigned to SUTIC faculty members, SUT visiting faculty members, and faculty members of other universities who cooperate with SUTIC. Supervision of the MSc student by the above faculty members is performed as follows;

MSc thesis supervisor	Maximum number of Students		
	Assistant Professor	Associate Professor	Professor
SUTIC faculty member	3	4	5
SUT faculty member (Giving lecture at SUTIC)	2	3	4
SUT faculty member (with no lecture at SUTIC)	1	1	1
Faculty member of other universities (Giving lecture at SUTIC)	1	1	1

Note 1. A Supervisor is assigned to the MSc student following the approval of the thesis research proposal by the SUTIC Graduate Studies Committee (SUTIC–GSC) and the registration of student for the thesis course.

Note 2. Assigning the student to a SUTIC faculty member is the priority.

Note 3. An assistant professor who is a faculty member at SUTIC is required to successfully supervise and graduate one MSc thesis project in order to meet the criteria for the maximum number of students to supervise.

Note 4. A visiting assistant professor who is a faculty member of SUT or another university is considered for the supervision of MSc thesis at SUTIC if the faculty member has successfully supervised and graduated at least one MSc student.

Note 5. If a faculty member of SUTIC or SUT has achieved significant research titles, including the distinguished researcher or professor for publishing articles in reputed scientific journals and has guided postgraduate students through successful graduation, the faculty member may apply to supervise an extra MSc student. This request is discussed by the SUTIC–GSC.

Appendix 2.

MSc Programs at SUTIC

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65510	Adv. Eng. Mathematics	3	Fundamental	65600	Seminar	2	Fundamental
65405	Viscous Flow	3	Fundamental	65815	Subsonic Aerodyn.	3	Fundamental
65830	CFD 1	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective		Elective course 6	3	Elective
	Elective course 4	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65510	Adv. Eng. Mathematics	3	Fundamental	65600	Seminar	2	Fundamental
65405	Viscous Flow	3	Fundamental	65815	Subsonic Aerodyn.	3	Fundamental
65830	CFD 1	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65560	Thesis	3	Compulsory	65560	Thesis	3	Compulsory
	Elective course 2	3	Elective		Elective course 4	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
65620	Advanced Turbomachinery	3
65605	Advanced Thermodynamics	3
65641	Radiation Heat Transfer	3
65951	Multiphase Flow	3
65645	Advanced Propulsion Principles	3
65615	Gas Dynamics 1	3
65616	Gas Dynamics 2	3
65630	Combustion Instability	3
65640	Advanced Heat Transfer	3
65820	Unsteady Aerodynamics	3
65816	Supersonic Aerodynamics	3
65817	Hypersonic Aerodynamics	3
65402	Helicopter Aerodynamics	3
65748	Nonlinear Systems Analysis	3

Code	Course	Cr.
65810	Turbulence	3
65635	Acoustics	3
65813	Turbulence Simulation	3
65825	Grid/Mesh Generation Methods	3
65831	CFD 2	3
65832	Finite Elements Method in Fluids	3
65622	Numer. Meth. in Turbomachines	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65510	Adv. Eng. Mathematics	3	Fundamental	65600	Seminar	2	Fundamental
65520	Continuum Mechanics	3	Fundamental	65905	Adv. Structural Anal.	3	Fundamental
65920	Finite Elements Method 1	3	Fundamental	65925	Adv. Structural Design	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65510	Adv. Eng. Mathematics	3	Fundamental	65600	Seminar	2	Fundamental
65520	Continuum Mechanics	3	Fundamental	65905	Adv. Structural Anal.	3	Fundamental
65920	Finite Elements Method 1	3	Fundamental	65925	Adv. Structural Design	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65560	Thesis	3	Compulsory	65560	Thesis	3	Compulsory
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
65525	Perturbations Theory	3
65530	Energy Methods	3
65531	Vibrations of Continuous Systems	3
65532	Nonlinear Vibrations	3
65545	Advanced Dynamics	3
65910	Aero-elasticity	3
65921	Finite Elements Method 2	3
65923	Boundary Elements Method	3
65930	Advanced Composite Materials	3
65935	Fracture, Fatigue, Creep	3
65940	Metallurgy in Manufacturing	3
65945	Advanced Machine Design	3
65946	Advanced Computational Dynamics	3
65947	Shell & Plate Theory	3

Code	Course	Cr.
65950	Advanced Optimization	3
65955	Structural Dynamics	3
65960	Adv. Materials & Manuf. Proc.	3
65965	Viscoelasticity	3
65970	Jig & Fixture Design	3
65999	Special Topics in Aerospace Struct	3

Aerospace Engineering Department
Flight Dynamics and Control

SUTIC
School of Science and Engineering

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental Course 1	3	Fundamental	65600	Seminar	2	Fundamental
	Fundamental Course 2	3	Fundamental		Fundamental Course 4	3	Fundamental
	Fundamental Course 3	3	Fundamental		Fundamental Course 5	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental Course 1	3	Fundamental	65600	Seminar	2	Fundamental
	Fundamental Course 2	3	Fundamental		Fundamental Course 4	3	Fundamental
	Fundamental Course 3	3	Fundamental		Fundamental Course 5	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65560	Thesis	3	Compulsory	65560	Thesis	3	Compulsory
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Fundamental Courses

Code	Course	Cr.
65510	Advanced Engineering Mathematics	3
65715	Guidance & Navigation 1	3
65710	Advanced Automatic Control	3
65705	Advanced Flight Dynamics 1	3
65747	Aerospace Dynamic Systems Model	3
65733	Advanced Aircraft Design	3
65736	Advanced Concepts in Aircraft Des.	3

Elective Courses

65745	Flight Simulation	3
65765	Optimal Control 1	3
65720	Flight Test Principles	3
65540	Aerospace Technology Management	3
65716	Guidance & Navigation 2	3

Elective Courses

Code	Course	Cr.
65419	Avionics	3
65725	Missile Flight Dynamics	3
65780	Spacecraft Dynamics & Control	3
65755	Digital Control	3
65760	Adaptive Control	3
65750	Multivariable Control	3
65735	Fuzzy Control	3
65755	Artificial Neural Networks	3
65766	Optimal Control 2	3
65734	Missile Configuration Design	3
65706	Advanced Flight Dynamics 2	3
65730	Control Systems Design	3
65740	Helicopter Flight Dynamics	3
65748	Nonlinear Systems Analysis	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65510	Adv. Eng. Mathematics	3	Fundamental	65600	Seminar	2	Fundamental
65405	Viscous Flow	3	Fundamental	65615	Gas Dynamics 1	3	Fundamental
65830	CFD 1	3	Fundamental	65610	Adv. Fuel & Combustion	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65510	Adv. Eng. Mathematics	3	Fundamental	65600	Seminar	2	Fundamental
65405	Viscous Flow	3	Fundamental	65615	Gas Dynamics 1	3	Fundamental
65830	CFD 1	3	Fundamental	65610	Adv. Fuel & Combustion	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
65560	Thesis	3	Compulsory	65560	Thesis	3	Compulsory
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
65620	Advanced Turbomachinery	3
65605	Advanced Thermodynamics	3
65641	Radiation Heat Transfer	3
65951	Multiphase Flow	3
65645	Advanced Propulsion Principles	3
65616	Gas Dynamics 2	3
65630	Combustion Instability	3
65640	Advanced Heat Transfer	3
65815	Subsonic Aerodynamics	3
65820	Unsteady Aerodynamics	3
65816	Supersonic Aerodynamics	3
65817	Hypersonic Aerodynamics	3
65402	Helicopter Aerodynamics	3
65748	Nonlinear Systems Analysis	3

Code	Course	Cr.
65810	Turbulence	3
65635	Acoustics	3
65813	Turbulence Simulation	3
65825	Grid/Mesh Generation Methods	3
65831	CFD 2	3
65832	Finite Elements Method in Fluids	3
65622	Numer. Methods in Turbomachines	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53014	Adv. Eng. Mathematics	3	Fundamental	53850	Seminar	2	Fundamental
53138	Theory of Elasticity	3	Fundamental	53149	Finite Element Meth I	3	Fundamental
53153	Dynamics of Structures	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective		Elective course 6	3	Elective
	Elective course 4	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53014	Adv. Eng. Mathematics	3	Fundamental	53850	Seminar	2	Fundamental
53138	Theory of Elasticity	3	Fundamental	53149	Finite Element Meth I	3	Fundamental
53153	Dynamics of Structures	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53910	Thesis	3	Compulsory	53910	Thesis	3	Compulsory
	Elective course 2	3	Elective		Elective course 4	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Credit
53133	Theory of Plates and Shells	3
53151	Stability of Structures	3
53117	Fracture Mechanics	3
53147	Finite Element Method II	3
53118	Inelastic Analysis of Structures	3
53148	Numerical Methods in Structural	3
53142	Theory of Plasticity	3
53166	Design of Earthquake Resistant Structures	3
53135	Mechanics of Composite Materials	3
53251	Bridge Design	3
53195	Design Optimization	3
53165	Advanced Earthquake Engineering	3
58192	Advanced Engineering Mathematics II	3
----	Dynamics of Structures II	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53014	Adv. Eng. Math.	3	Fundamental	53850	Seminar	2	Fundamental
53165	Adv. Earthquake Eng.	3	Fundamental	53166	Des Equak Res Struct	3	Fundamental
53153	Dynamics of Structures	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective		Elective course 6	3	Elective
	Elective course 4	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53014	Adv. Eng. Math.	3	Fundamental	53850	Seminar	2	Fundamental
53165	Adv. Earthquake Eng.	3	Fundamental	53166	Des Equak Res Struct	3	Fundamental
53153	Dynamics of Structures	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53910	Thesis	3	Compulsory	53910	Thesis	3	Compulsory
	Elective course 2	3	Elective		Elective course 4	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Credit
53133	Theory of Plates and Shells	3
53151	Stability of Structures	3
53117	Fracture Mechanics	3
53147	Finite Element Method II	3
53118	Inelastic Analysis of Structures	3
53148	Numerical Methods in Structural	3
53142	Theory of Plasticity	3
53166	Design of Earthquake Resistant Structures	3
53135	Mechanics of Composite Materials	3
53251	Bridge Design	3
53195	Design Optimization	3
53165	Advanced Earthquake Engineering	3
58192	Advanced Engineering Mathematics II	3
----	Dynamics of Structures II	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53303	Contract Princip & Regul	3	Fundamental	53850	Seminar	2	Fundamental
53307	Project Control & Manag	3	Fundamental	53302	Manag of Const Mach	3	Fundamental
53306	Construction Methods I	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective		Elective course 6	3	Elective
	Elective course 4	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53303	Contract Princip & Regul	3	Fundamental	53850	Seminar	2	Fundamental
53307	Project Control & Manag	3	Fundamental	53302	Manag of Const Mach	3	Fundamental
53306	Construction Methods I	3	Fundamental		Elective course 1	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53910	Thesis	3	Compulsory	53910	Thesis	3	Compulsory
	Elective course 2	3	Elective		Elective course 4	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Credit
53562	Operational Research	3
53305	System Analysis and Design	3
53212	Site Safety and Management	3
----	Advanced Concrete Technology	3
----	Computer Aided Construction Management	3
----	Project Cost Estimation	3
----	Rehabilitation of Structures	3
----	Construction Methods II	3
----	Advanced Construction Materials	3
----	Financial and Accounting Management of Projects	3
----	Advanced Engineering Economics	3
----	Statistical Methods and Reliability	3
----	Research Methods	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53014	Adv. Eng. Mathematics	3	Fundamental	53850	Seminar	2	Fundamental
53604	Princ Processes Env Eng	3	Fundamental	53605	Water/Wastewater Treat	3	Fundamental
-	Compuls. Elect Course 1	3	Fundamental	-	Compuls. Elect Course 2	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Compuls. Elect Course 3	3	Elective		Elective course 3	3	Elective
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53014	Adv. Eng. Mathematics	3	Fundamental	53850	Seminar	2	Fundamental
53604	Princ Processes Env Eng	3	Fundamental	53605	Water/Wastewater Treat	3	Fundamental
-	Compuls. Elect Course 1	3	Fundamental	-	Compuls. Elect Course 2	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
53910	Thesis	3	Compulsory	53910	Thesis	3	Compulsory
	Compuls. Elect Course 3	3	Fundamental		Elective course 2	3	Elective
	Elective course 1	3	Elective				
	Total	9			Total	6	

Compulsory Elective Courses

Code	Course	Cr.
53637	Air Pollution Control	3
---	Solid Waste Management	3
53672	Groundwater Pollution	3
53646	Water Resources Quality Management	3
53702	Environmental Hydrodynamics	3

Elective Courses

Code	Course	Cr.
53442	Environmental Geotechnics	3
53632	Industrial Wastewater Treat	3
53640	Nume. Meth. in Water & Env Eng.	3
53643	Industrial Wastewater Manag.	3
53644	Stochastic Hydrology	3
53645	Computational Hydraulics	3
53647	Water Resour. Systems Analysis I	3
53659	Advanced Groundwater Hydrology	3
53661	Numer Anal Water Mov. Soils/Rocks	3
53663	Chem & Microb Water/Wastewater	3
53671	Flow in Porous Media	3
---	Des. Natural Wastewater Treat Sys.	3
---	Measur. & Assess. of Air Pollution	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
52949	Adv. Network Security	3	Fundamental	52900	Seminar	2	Fundamental
52663	Distributed System	3	Fundamental	52693	Adv. Comp Networks	3	Fundamental
	Prerequisite course	3	Prerequisite	52657	Model & Anal Comp Net	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
52695	Stochastic Processes	3	Fundamental		Elective course 3	3	Elective
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
52949	Adv. Network Security	3	Fundamental	52900	Seminar	2	Fundamental
52663	Distributed System	3	Fundamental	52693	Adv. Comp Networks	3	Fundamental
	Prerequisite course	3	Prerequisite	52657	Model & Anal Comp Net	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
55810	Thesis	3		55810	Thesis	3	
52695	Stochastic Processes	3	Fundamental		Elective course 2	3	Elective
	Elective course 1	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
---	Multimedia Networks (Advanced Topics)	3
52632	Fault Tolerant Systems Design	3
52863	Network Based Processing	3
52883	Data Communication	3
---	Wireless Sensor Networks (Advanced Topics)	3
52824	Performance Evaluation of Computer	3
52626	Wireless Communication	3
52747	Embedded System Design	3
52638	Advanced Data Storage Systems	3
52227	Advanced Topics in Information Technology	3
52639	Dynamics of Complex Networks	3
52656	Computer Networks Management	3
52741	Green Computing (Advanced Topics)	3
---	Network Storage Systems (Advanced Topics)	3
52553	Advanced Operating Systems	3

Prerequisite courses
Operating Systems
Computer Networks
Data and Networks Security
Computer Architecture

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
55568	VLSI Design	3	Fundamental	55590	Seminar	2	Fundamental
55533	Adv Applied Program.	3	Fundamental	55563	Microprocessors 2	3	Fundamental
55558	Computer Interfacing	3	Fundamental	55155	Dig Signal Processing	3	Fundamental
	Prerequisite course	3	Prerequisite				
	Total	12			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
55568	VLSI Design	3	Fundamental	55563	Microprocessors 2	3	Fundamental
55533	Adv Applied Program.	3	Fundamental	55155	Dig Signal Processing	3	Fundamental
55558	Computer Interfacing	3	Fundamental	55590	Seminar	2	Fundamental
	Prerequisite course	3	Prerequisite				
	Total	12			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
55810	Thesis	3		55810	Thesis	3	
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	3	

Elective Courses

Code	Course	Credit
55262	Digital Electronics	3
55626	Vision In Man & Machine	3
55553	Computer Vision	3
55637	Robotics	3
55157	Digital Image Processing	3
55446	Fuzzy Logic & Applied	3
55443	Neural Networks	3
55556	Applied Digital Controllers	3
55540	Special Topics In Digital System	3
55570	Special Problems In Digital Systems	3

Prerequisite course
Microprocessor System Design

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental course 1	3	Fundamental	51915	Seminar	2	Fundamental
	Fundamental course 2	3	Fundamental		Fundamental course 4	3	Fundamental
	Fundamental course 3	3	Fundamental		Fundamental course 5	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 1	3	Elective		Elective course 4	3	Elective
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental course 1	3	Fundamental	51915	Seminar	2	Fundamental
	Fundamental course 2	3	Fundamental		Fundamental course 4	3	Fundamental
	Fundamental course 3	3	Fundamental		Fundamental course 5	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
51850	Thesis	3	Compulsory	51850	Thesis	3	Compulsory
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Fundamental Courses

Code	Course	Cr.
51138	Decision Making Theory	3
51723	Financial Engineering	3
51619	Supply Chain Planning	3
51534	Project Management and Planning	3
51661	Strategic Planning	3
51361	Total Quality Management	3
61627	Human Resources Management	3
51628	Pricing and Revenue Management	3
51233	Financial Management	3
51550	Enterprise resource Planning	3
51671	Special Topics on Eng. Management	3

Elective Courses

Code	Course	Cr.
51135	Advanced Engineering Economics	3
51137	Economic Analysis of Projects	3
51624	Supply Chain Management	3
51552	Advanced Inventory Control	3
51974	Management Information Systems	3
51977	Computer & Inform. Management	3
51529	Quality & Productivity Manage.	3
51342	Intelligent Manufacturing Systems	3
51542	Automatic Production Sys. Design	3
51517	Time Series Prediction & Anal.	3
51142	Regression Analysis	3
51530	Reliability-Based Maintenance	3
51528	Reliability Principles	3
51136	Decision Making Analysis	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58771	Adv. Eng. Mathematics	3	Fundamental	58040	Seminar	2	Fundamental
58779	Continuum Mechanics	3	Fundamental		Elective course 2	3	Elective
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 4	3	Elective		Elective course 7	3	Elective
	Elective course 5	3	Elective		Elective course 8	3	Elective
	Elective course 6	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58771	Adv. Eng. Mathematics	3	Fundamental	58040	Seminar	2	Fundamental
58779	Continuum Mechanics	3	Fundamental		Elective course 2	3	Elective
	Elective course 1	3	Elective		Elective course 3	3	Elective
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Thesis	3	Compulsory		Thesis	3	Compulsory
	Elective course 4	3	Elective		Elective course 6	3	Elective
	Elective course 5	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
58019	Control Systems Design	3
58409	Dynamic Systems	3
58022	Kinematics and Dynamics of Robots	3
55363	Power Electronics	3
58595	Nonlinear Control	3
58589	Fuzzy Control	3
58045	Advanced Automatic Control	3
58030	Smart Materials and Structures	3
58053	Continuous Vibrations	3
58025	Design Optimization	3
58549	Advanced Robotics	3
58009	Micro-nano Fluids	3
58046	Advanced Dynamics	3

Code	Course	Cr.
58551	Mechatronics	3
58036	Elasticity	3
58042	Finite Element Analysis	3
58583	Theory of Shells and Plates	3
58593	Fracture, Fatigue and Creep	3
58599	Fundamental of Smart Systems in Modeling and Control	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58771	Adv. Eng. Mathematics	3	Fundamental	58040	Seminar	2	Fundamental
58779	Continuum Mechanics	3	Fundamental	58037	Adv. Thermodynamics	3	Fundamental
	Elective course 1	3	Elective	58069	Adv. Fluid Mechanics	3	Fundamental
	Prerequisite course	3	Prerequisite				
	Total	12			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58043	Convec. Heat Transfer	3	Fundamental		Elective course 4	3	Elective
	Elective course 2	3	Elective		Elective course 5	3	Elective
	Elective course 3	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58771	Adv. Eng. Mathematics	3	Fundamental	58040	Seminar	2	Fundamental
58779	Continuum Mechanics	3	Fundamental	58037	Adv. Thermodynamics	3	Fundamental
	Elective course 1	3	Elective	58069	Adv. Fluid Mechanics	3	Fundamental
	Prerequisite course	3	Prerequisite				
	Total	12			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Thesis	3	Compulsory		Thesis	3	Compulsory
58043	Convec. Heat Transfer	3	Fundamental		Elective course 3	3	Elective
	Elective course 2	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
58607	Aerosol Transport	3
58016	Computational Fluid Dynamics	3
58606	Transport Phen. in Porous Media	3
58043	Conduction Heat Transfer	3
58609	Micro/Nano Flows	3
58175	Bio-Fluid Mechanics	3
58582	Viscous Flow	3
58089	Turbulence	3
58137	Solar Energy	3
58058	Direct Energy Conversion	3
58842	Finite Element Methods- Fluid	3

Prerequisite Course

Code	Course	Cr.
---	Energy Conversion	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58771	Adv. Eng. Mathematics	3	Fundamental	58040	Seminar	2	Fundamental
	Elective course 1	3	Elective		Elective course 2	3	Elective
	Prerequisite course 1	3	Prerequisite		Elective course 3	3	Elective
	Prerequisite course 2	3	Prerequisite		Elective course 4	3	Elective
	Total	12			Total	11	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58551	Mechatronics	3	Fundamental		Elective course 7	3	Elective
	Elective course 5	3	Elective		Elective course 8	3	Elective
	Elective course 6	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
58771	Adv. Eng. Mathematics	3	Fundamental	58040	Seminar	2	Fundamental
	Elective course 1	3	Elective		Elective course 2	3	Elective
	Prerequisite course 1	3	Prerequisite		Elective course 3	3	Elective
	Prerequisite course 2	3	Prerequisite		Elective course 4	3	Elective
	Total	12			Total	11	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Thesis	3	Compulsory		Thesis	3	Compulsory
58551	Mechatronics	3	Fundamental		Elective course 6	3	Elective
	Elective course 5	3	Elective				
	Total	9			Total	6	

Elective Courses

Code	Course	Cr.
58019	Control Systems Design	3
58409	Dynamic Systems	3
58022	Kinematics and Dynamics of Robots	3
55363	Power Electronics	3
58595	Nonlinear Control	3
58589	Fuzzy Control	3
58045	Advanced Automatic Control	3
58030	Smart Materials and Structures	3
58599	Fund. Smart Sys. in Modeling & Control	3
58053	Continuous Vibrations	3
58025	Design Optimization	3
58549	Advanced Robotics	3
58046	Advanced Dynamics	3
58042	Finite Element Analysis	3
58779	Continuum Mechanics	3

Prerequisite Courses

Code	Course	Cr.
	Statics & Strength of Materials	3
	Selected Topics in Dynamics	3
	---	---
	Electronics	3
	Mechatronics Systems	3

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
56146	Charact & Anal Nanomat	3	Fundamental	56825	Seminar	2	Fundamental
57152	Nano Materials 1	3	Fundamental	57157	Nano Materials 2	3	Fundamental
57153	Synth Process of Nanomat	3	Fundamental		Elective course 1	2	Elective
					Elective course 2	2	Elective
	Total	9			Total	9	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Elective course 3	2	Elective		Elective course 7	2	Elective
	Elective course 4	2	Elective		Elective course 8	2	Elective
	Elective course 5	2	Elective		Elective course 9	2	Elective
	Elective course 6	2	Elective				
	Total	8			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
56146	Charact & Anal Nanomat	3	Fundamental	56825	Seminar	2	Fundamental
57152	Nano Materials 1	3	Fundamental	57157	Nano Materials 2	3	Fundamental
57153	Synth Process of Nanomat	3	Fundamental		Elective course 1	2	Elective
					Elective course 2	2	Elective
	Total	9			Total	9	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
56500	Thesis	3	Compulsory	56500	Thesis	3	Compulsory
	Elective course 3	2	Elective		Elective course 5	2	Elective
	Elective course 4	2	Elective		Elective course 6	2	Elective
	Total	7			Total	7	

Elective Courses

Code	Course	Cr.
57156	Nano-Coatings and Thin Films	2
57159	Nanocomposites	2
57155	Nanostructured Ceramics	2
57160	Nano Biotechnology	2
56163	Nano Systems Modeling & Simul.	2
57158	Thermodynamics of Nanomaterials	2
56167	Nano-Magnetics	2
56161	Nano-Particles & Synthesis Proces.	2
56148	Adv. Princ. Chemistry in NanoTech.	2
56165	Nanometric Special Structures	2

Code	Course	Cr.
56149	Physics Principles in Nano Tech.	2
56031	Quantum Physics	2
56117	Nano Drug Delivery	2

Course Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental course 1	3	Fundamental	66329	Seminar	2	Fundamental
	Fundamental course 2	3	Fundamental		Fundamental course 4	3	Fundamental
	Fundamental course 3	3	Fundamental		Fundamental course 5	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental course 6	3	Fundamental		Elective course 2	3	Elective
	Fundamental course 7	3	Fundamental		Elective course 3	3	Elective
	Elective course 1	3	Elective				
	Total	9			Total	6	

Research Based Program

1st Semester				2nd semester			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
	Fundamental course 1	3	Fundamental	66329	Seminar	2	Fundamental
	Fundamental course 2	3	Fundamental		Fundamental course 4	3	Fundamental
	Fundamental course 3	3	Fundamental		Fundamental course 5	3	Fundamental
	Total	9			Total	8	
3rd Semester				**4th semester**			
Code	**Courses**	**Cr.**	**Type**	**Code**	**Courses**	**Cr.**	**Type**
66700	Thesis	3	Compulsory	66700	Thesis	3	Compulsory
	Fundamental course 6	3	Fundamental		Elective course	3	Elective
	Fundamental course 7	3	Fundamental				
	Total	9			Total	6	

Fundamental Courses

Code	Course	Cr.
66267	Advanced Numerical Mathematics	3
66499	Reservoir Fluid Phase Behavior	3
66504	Fluid Flow in Porous Media	3
66254	Geostatistics & Spacial Modeling	3
66839	Advanced Well Testing	3
66835	Fractured Reservoir Engineering	3
66252	Advanced Production Engineering	3
66832	Reservoir Simulation & Modeling	3
66836	EOR /IOR	3

Elective Courses

Code	Course	Cr.
66173	Adv. Drilling & Extraction Eng.	3
66207	Advanced Form Damage	3
66276	Multiphase Flow in Well	3
66209	Advanced Well Stimulation	3
66661	Special Topics in Petroleum Eng.	3