Master of Science in Software Engineering (MSSE) Scheme of Study (2018 onwards)

This is the scheme of study of MS Software Engineering (30 Cr. Hrs, 24 credit hours of study and 6 credit hour of thesis work), applicable on all MSSE batches inducted in Fall 2018 semester and onwards. Upon the recommendation of Board of Studies and Board of Faculty, the Academic Council of the IIUI has approved this scheme in its 75th (Emergency) meeting held on Friday, 25th January 2019.

This new scheme conforms to HEC's National Curriculum of Computer Science, Software Engineering, and Information Technology revised in year 2017.

1.1 Admission Eligibility Criteria

The requirements for admission in the Master of Science in Software Engineering of Science is that enrolled student has passed as BSSE/BSIT/BSCS degree (Sixteen years of education) with a minimum CGPA of 2.0 (on a scale of 4.0).

1.2. Degree Requirements

To become eligible for award of MS degree, a student must satisfy the following requirements:

- Must have studied and passed any deficiency courses recommended by the Department, after considering the educational background and knowledge of the candidate.
- Must have studied and passed all the prescribed courses, totalling at least 30 credit hours, including 6 credit hours of Research Work/Thesis.
- Must have earned CGPA (Cumulative Grade Point Average) of at least 3.0 on a scale of 4.0
- Must have studied and passed all courses Degree core and Degree electives courses with letter grade C+.
- Must have passed University Hifz test as required by IIUI.

<u>1.3. Course Registration Requirements</u>

- For Fall/Spring semesters, student would not be allowed to register more than a total of twelve credit hours of workload.
- For Summer semester, student would be allowed to register only those courses that they have failed in previous semesters and up to a maximum of total six credit hours of course load.
- A core course is a course that must be studied. In case a student has failed this course he/she may not be able to study an alternative course against it and must repeat it to improve the grade.
- Students who have failed an elective course may choose to study any other elective from the offered courses (from the given list or recommended by department) to complete the number of credit hours in that course group.
- Any course that has been passed by student in letter grade C+ cannot be registered again to improve the grade.

<u>1.4. Master of Science in Software Engineering Degree Courses</u>

The degree program has two major course groups, Core courses and Electives courses. The course division follows HEC's guidelines. Course to study are categorised with credit hours as following:

Grouping	Credit Hours	% of Total Courses		
Core Courses	12	40%		
Electives*	12	40%		
Research Thesis (core)	6	20%		
Total credit hours	30			
*Minimum credit hours from the electives offered by department				

1.4.1 Core Courses (12 Credit hours)

Enrolled students have to pass all the listed courses with letter grade C+ from this group.

Course Code	Course Title	Cr. Hrs.
SE 511	Advanced Requirements Engineering	3
SE 571	Software Testing and Quality Assurance	3
SE 531	Advanced Software System Architecture	3
SE 601	Research Methods in Software Engineering	3

1.4.2 Degree Elective Courses (Minimum 12 Credit hours)

Enrolled student has to pass all a **minimum of 12 credit hours** from the listed courses of this group. This is a not an exhaustive list and Department of CS & SE may offer other courses as electives.

Course Code	Course Title	Cr. Hrs.
SE 501	Global Software Development	3
SE 502	Software Design Patterns	3
SE 504	Agile Software Development Methods	3
SE 505	Empirical Software Engineering	3
SE 506	Advanced Software Project Management	3
SE 551	Software Development Processes	3
SE 552	Enterprise Resource Planning Systems	3
SE 553	Advanced Formal Methods	3
SE 561	Software Measurement and Metrics	3
SE 563	Continuous Integration & DevOPs	3
SE 572	Component Based Software Engineering	3
SE 591	Software Costing and Estimation	3
SE 592	Software Engineering Project Management	3
SE 601	Usability Engineering	3
SE 671	Model-Based Software Testing	3
SE 672	Cloud Computing	3
SE 681	Advanced Human-Computer Interaction	3
SE 682	Empirical research in Software Engineering	3
SE 689	Advance research topics in Software Engineering	3
CS 545	Distributed Databases	3
CS 546	Advance Data Mining	3

1.4.3 Research Thesis (06 Credit hours)

The research thesis is an essential part of MSSE degree. This would be a research thesis based on research work conducted by student under supervision. The supervisor must be permanent faculty members of the DCS&SE and may take a faculty member/industrial researcher partner. IIUI's has a define workflow for thesis registration and examination that must be adhered to.

Student should start working on Research Thesis proposal in their second semester and should present it to Graduate Research Committee (GRC) of DCS&SE. Student can only register SE 700 once GRC has approved the proposal.

Course Code	Course Title	Cr. Hrs.	Pre-requisite Course/Details
SE 700	Research Thesis	6	SE 601 Research Methods in Software Engineering & Research proposal's approval by GRC.

<u>1.5. Tentative Semester wise course offering plan (MSSE)</u>

Tentative course offering plan for MS Software Engineering degree offered from Fall 2018 is given below in a semester wise format. This is a plan and it could vary while actual offering to the batch.

1 st Semes	ter - Fall	
Code	Course Title	Cr. Hrs
SE 511	Advanced Requirements Engineering	3
SE 571	Software Testing and Quality Assurance	3
SE	Elective - I	3
SE	Elective - II	3
	Total Credit Hrs	12

2nd Semester - Spring

Code	Course Title	Cr. Hrs
SE 601	Research Methods in Software Engineering	3
SE 531	Advanced Software System Architecture	3
SE	Elective - III	3
SE	Elective - IV	3
	Total Credit Hrs	12

Total Credit Hrs

3rd & 4th Semester - Fall

Code	Course Title	Cr. Hrs
SE 700	Research Thesis	6
	Total Credit Hrs	6

30 Grand Total