

## SYSTEMS ENGINEERING MASTERS EARLY RESEARCH PROGRAM (MERP)

### Summary of Features

- 1 No modification of B.S. degree requirements.
- 2 Students apply for MERP on February 15<sup>th</sup> of their third year. Faculty sponsorship is required for admission.
- 3 Admission to MERP does not guarantee admission to the M.S. program. Students apply for the M.S. program just before the start of the 4<sup>th</sup> year. Students who are not admitted to the M.S. Program may be dropped from MERP and be assigned a standard Capstone section.
- 4 MERP students will be permitted to define, under the supervision of the research advisor, a Capstone project oriented toward the student's research objective.
- 5 MERP students will also be permitted to propose an M.S. thesis at the end of the fourth year.
- 6 Admission to the MERP program in no way alters the courses required for the Systems and Information Engineering (SIE) Undergraduate major.

## SYSTEMS ENGINEERING MASTERS EARLY RESEARCH PROGRAM (MERP)

### Program Description

The Masters Early Research Program (MERP) exists to encourage third year undergraduates in Systems Engineering in SEAS to enter graduate studies. The program is oriented toward those students who wish to contribute to the advancement of knowledge through independent, original research. The program prepares students for careers as both practicing and research systems engineers and serves as a stepping-stone towards the doctorate.

The Program encourages and assists the student in initiating graduate studies at an early stage by offering financial support and academic credit for summer research that makes it possible for qualified students to earn the B.S. and M.S. degrees in five calendar years. The program also makes our undergraduate program even more attractive to highly motivated students, such as Rodman or Jefferson Scholars.

### Admission Procedures

MERP is designed to allow students to make progress toward the M.S. degree while earning their B.S. degree. Because students apply for the Program substantially before the end of their undergraduate studies, admission to the MERP does not constitute a guarantee of admission to graduate school.

Identification of a tentative research topic and a commitment from a faculty member, to serve as research advisor and to provide financial support for the student, are prerequisites for admission to the Program. Outstanding academic achievement, motivation, and ability are also required of successful applicants. In order for the MERP to be of real value to the student and faculty advisor, the student must ultimately be successful in obtaining admission to the Graduate Program in Systems Engineering. Hence, potential for successful admission to the Graduate Program is an important criterion in evaluating MERP applicants.

The MERP admission process is as follows:

1 Students apply for the Program in their sixth semester of study. Each student must find a faculty sponsor/advisor who, provisionally, is to be their thesis advisor. The student will then submit to the MERP admissions committee by February 15th an application for the program that shall include a letter of recommendation from the advisor. The letter from the advisor must indicate that financial support for the following summer and beginning the summer after their fourth year unless the student notes on the application that he/she will be self supporting. The MERP Admissions Committee will meet during the third week of February to decide admission into the Program.

Post-admission Actions

1 Letters of acceptance will be mailed to successful applicants by the end of February. Students will be asked to accept or decline the offer of admission by March 15<sup>th</sup>. In accepting admission to the Program, the student agrees to work in Charlottesville during the coming summer under faculty supervision for no less than eight weeks and to sign up for SYS 495 Supervised Project (3 hours) and one systems graduate course. The student agrees that he or she is fully cognizant of the fact admission to MERP does not guarantee admission to the Graduate Program.

2 Unless the student will be self supporting, the advisor will arrange for support of the student through a grant, contract, or other source of funds, in a research position for the coming summer for eight weeks (320 hours) at the going rate of pay for undergraduates. However, a student who is self funded may participate in the Program even if financial support from the supervising faculty for the summer is unavailable. It is also to be understood that the student's advisor will be available to supervise the student's third summer's work, which is to be regarded as the first step towards the B.S. and M.S. theses. Any student who will not be starting that summer will need pre-approval from the sponsoring faculty member.

Admission to Graduate School

Each MERP student should apply for admission to the Graduate Program by August 20<sup>th</sup>, immediately preceding the start of his or her fourth academic year. The student should follow the standard application procedure for admission to the M.S. program. At this time, the student also submits a brief research plan, based primarily on the work done that summer, to the MERP Committee. This plan should outline a research path that will take the student through both the B.S. and M.S. theses. A statement from the advisor commenting on the feasibility of the research and student's progress to date must accompany the plan. Students who either fail to obtain admission the Graduate Program or who are judged by the MERP Committee to have an unsatisfactory research plan will be removed from the Program before the start of the academic year.

Plan of Study

The nominal plan of study for MERP is shown below. A full-time student should be able to fulfill the degree requirements for the B.S. in the Spring Semester of the 4<sup>th</sup> year and the M.S. in the spring semester of the 5<sup>th</sup> year.

4<sup>th</sup> Year Nominal Plan of Study

Summer before 4 <sup>th</sup> year Credit			
SYS 495	Supervised Project	3	
SYS XXX		3	
		6	Total
Seventh Semester			
XXXXXX	Unrestricted Elective	3	
SYS 421&L	Linear Statistical Models	4	
SYS 453	Systems Design I	3	
SYS 455	Colloquium	1	
XXXXXX	Application Elective	3	
STS 401	Western Technology & Culture	<u>3</u>	
		17	Total

Eighth Semester		
XXXXXX	Application Elective	3
XXXXXX	Unrestricted Elective	3
SYS 454	Systems Design II	4
XXXXXX	Graduate Elective	3
STS 402	The Engineer, Ethics and Society	<u>3</u>
		16
		Total

### Capstone Program and M.S. Proposal

MERP students who are admitted to the Graduate Program will be permitted to define, under the supervision of the research advisor, a custom Capstone experience that may be research oriented and/or an individual project. These students will also be permitted to propose an M.S. thesis at the end of the 4<sup>th</sup> year.

### Graduate Study

A complete description of the requirement for the M.S. degree in Systems Engineering can be found in the Graduate Record. MERP students must fulfill these requirements to receive the M.S. degree. Note that MERP students normally will have completed the M.S. thesis proposal prior to matriculating in the M.S. program.

Given the graduate course work done as an undergraduate, a MERP student might follow the nominal plan of study for the M.S. degree shown below.

### Graduate Year Nominal Plan of Study (5<sup>th</sup> year)

Graduate credit from MERP	Credit
XXXXXX Graduate Elective	3
XXXXXX Graduate Elective	3
	6 Total
Summer before 5th year	
XXXXXX Graduate Elective	3
SYS 898 Thesis	3
	6 Total
Ninth Semester	
SYS 601 Introduction to Systems Engineering	3
SYS 603 Mathematical Programming	3
SYS 605 Stochastic Systems	3
SYS 796 Systems Engineering Seminar	1
	10 Total
Tenth Semester	
XXXXXX Graduate Elective	3
XXXXXX Graduate Elective	3
SYS 898 Thesis	3
SYS 796 Systems Engineering Seminar	1
	10 Total
Minimum number of credit hours	32 Total credit hours