

# M.S. in Pharmaceutical Systems Management

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## Degree Requirements

A minimum of 30 credits beyond a B.S. degree is required. A thesis or independent research is optional.

### M.S. in Pharmaceutical Systems Management (courses only)

Code	Title	Credits
<b>Core Courses</b>		
EM 602	Management Science	3
EM 636	Project Management	3
IE 673	Total Quality Management	3
IE 618	Engineering Cost and Production Economics	3
PHEN 601	Principles of Pharmaceutical Engineering	3
PHEN 604	Validation and Regulatory Issues in the Pharmaceutical Industry	3
<b>Elective Courses</b>		
Select four of the following:		12
EM 634	Legal, Ethical and Intellectual Property Issues for Engineering Managers	
EM 635	Management of Engineering Research and Development	
IE 699	Special Topics in Industrial Engineering	
EM 637	Project Control	
IE 659	Supply Chain Engineering	
IE 621	Systems Analysis and Simulation	
MNE 601	Computerized Manufacturing Systems	
PHEN 605	Pharmaceutical Packaging Technology	
PHEN 602	Pharmaceutical Facility Design	
HRM 601	Managing Organizational Behavior in Technology-Based Organizations	
<b>Total Credits</b>		<b>30</b>

### M.S. in Pharmaceutical Systems Management (independent research)

Code	Title	Credits
<b>Core Courses</b>		
EM 602	Management Science	3
EM 636	Project Management	3
IE 673	Total Quality Management	3
IE 618	Engineering Cost and Production Economics	3
PHEN 601	Principles of Pharmaceutical Engineering	3
PHEN 604	Validation and Regulatory Issues in the Pharmaceutical Industry	3
<b>Independent Research</b>		
PHEN 725	Independent Study	3
<b>Elective Courses</b>		
Select three of the following:		9
EM 634	Legal, Ethical and Intellectual Property Issues for Engineering Managers	
EM 635	Management of Engineering Research and Development	
IE 699	Special Topics in Industrial Engineering	
EM 637	Project Control	
IE 659	Supply Chain Engineering	
IE 621	Systems Analysis and Simulation	
MNE 601	Computerized Manufacturing Systems	
PHEN 605	Pharmaceutical Packaging Technology	
PHEN 602	Pharmaceutical Facility Design	

HRM 601

Managing Organizational Behavior in Technology-Based Organizations

**Total Credits****30****M.S. in Pharmaceutical Systems Management (Master's thesis)**

<b>Code</b>	<b>Title</b>	<b>Credits</b>
<b>Core Courses</b>		
EM 602	Management Science	3
EM 636	Project Management	3
IE 673	Total Quality Management	3
IE 618	Engineering Cost and Production Economics	3
PHEN 601	Principles of Pharmaceutical Engineering	3
PHEN 604	Validation and Regulatory Issues in the Pharmaceutical Industry	3
<b>Thesis</b>		
PHEN 701B & 701B or PHEN 701C	Master's Thesis and Master's Thesis Master'S Thesis	6
Select two of the following:		6
EM 634	Legal, Ethical and Intellectual Property Issues for Engineering Managers	
EM 635	Management of Engineering Research and Development	
IE 699	Special Topics in Industrial Engineering	
EM 637	Project Control	
IE 659	Supply Chain Engineering	
IE 621	Systems Analysis and Simulation	
MNE 601	Computerized Manufacturing Systems	
PHEN 605	Pharmaceutical Packaging Technology	
PHEN 602	Pharmaceutical Facility Design	
HRM 601	Managing Organizational Behavior in Technology-Based Organizations	
<b>Total Credits</b>		<b>30</b>