

## Curriculum Description

**Table 5.1.1** Curriculum Structure

Curriculum Component		Number of Courses	Total Number of Credit Hours
Required Courses	College Requirement Courses	5	27
	Technical Electives	4	
Extra non-credit courses may be required by the supervisory committee (if Applicable)			
Thesis		1	33
Total:		10	60

## List of Courses

**Table 5.2.1** List of Required General Core Courses

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		New Course (Yes/ No)
			Theo.	Lab.	
DENG-620	Applied Research Methodology	3	3	0	No
DENG-621	Graduate Seminar	3	3	0	No
<b>Choose only any THREE course of the following basket:</b>					
DENG-622	Advanced Numerical Techniques	3	3	0	No
DENG-623	Advanced Probability and Statistical Methods	3	3	0	Yes
DENG-624	Innovation and Technology Management	3	3	0	No
DENG-625	Sustainable Development	3	3	0	Yes
DENG-626	Modeling and Simulation	3	3	0	Yes

**Table 5.2.2** List of Thesis course

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
DENG-699	PhD Thesis	33	33	0			No

**Table 5.2.3** *List of Elective courses for Civil Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	Nb. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
CVE 500	Special Topic I	3	3	0			Yes
CVE 501	Special Topic II	3	3	0			Yes
CVE 505	Theory of Plates and Shells	3	3	0			Yes
CVE 506	Advanced Geo-mechanics	3	3	0			Yes
CVE 507	Traffic Engineering	3	3	0			Yes
CVE 509	Traffic Safety Analysis	3	3	0			Yes

**Table 5.2.3** *List of Elective courses for Electrical Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	No. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
ELEC 551	Special Topic I	3	3	0			Yes
ELEC 552	Special Topic II	3	3	0			Yes
ELEC 553	Advanced Course in Digital Transmission	3	3	0			Yes
ELEC 556	Communication Networks	3	3	0			Yes
ELEC 559	Time-Frequency Signal Processing	3	3	0			Yes
ELEC 554	Power Systems dynamics and control	3	3	0			Yes

**Table 5.2.3** *List of Elective courses for Mechanical Engineering Concentration(Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	No. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
MME 581	Special Topic I	3	3	0			Yes
MME 583	Special Topic II	3	3	0			Yes
MME 585	Advanced Thermodynamics	3	3	0			Yes
MME 588	Energy Conversion	3	3	0			Yes
MME 594	Finite Element Analysis	3	3	0			Yes
MME 589	Solar Energy Utilization	3	3	0			Yes

**Table 5.2.3** *List of Elective courses for Materials Science and Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	No. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
MSE 551	Special Topic I	3	3	0			Yes
MSE 590	Special Topic II	3	3	0			Yes
MSE 591	Corrosion Engineering	3	3	0			Yes
MSE 592	Failure Analysis and Prevention	3	3	0			Yes
MSE 596	Nanotechnology	3	3	0			Yes
MSE 595	Advanced Physical Metallurgy	3	3	0			YES
MSE 597	Coatings and Surface Engineering	3	3	0			YES

**Table 5.2.3** *List of Elective courses for Industrial and Systems Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
MIE 551	Special Topic I	3	3	0			Yes
MIE 552	Special Topic II	3	3	0			Yes
MIE 554	Decision Techniques and Data Analysis	3	3	0			No
MIE 556	Supply Chain and logistics	3	3	0			No
MIE 557	Systems Analysis and Design	3	3	0			No
MIE 558	Robotics and Automation Technology	3	3	0			Yes

**Table 5.2.3** *List of Elective courses for Engineering Management Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	No. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
MEM 551	Special Topic	3	3	0			Yes
MEM 552	Process Improvement Techniques	3	3	0			No
MEM 553	Enterprise Information Analysis and Business Applications	3	3	0			No
MEM 555	Production and Operations Management	3	3	0			No
MEM 556	Decision Techniques and Data Analysis	3	3	0			No
MEM 557	Service Operations Management	3	3	0			No

**Table 5.2.3** *List of Elective courses for Environmental Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	No. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
MEE 551	Special Topics	3	3	0			Yes
MEE 552	Environmental transport and water resources	3	3	0			No
MEE 553	Environmental systems and modelling	3	3	0			No
MEE 554	Physico-chemical Processes in environmental systems	3	3	0			No
MEE 555	Solid Waste Management	3	3	0			No
MEE 556	Clean Energy Resources	3	3	0			No

**Table 5.2.3** *List of Elective courses for Chemical Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
CHME-650	Special Topic I	3	3	0			Yes
CHME-651	Special Topic II	3	3	0			Yes
CHME-652	Transport Phenomena	3	3	0			Yes
CHME-653	Advanced Process Dynamics and Control	3	3	0			Yes
CHME-661	Principles of Bioprocess Engineering	3	3	0			Yes
CHME-662	Advanced Chemical Engineering Thermodynamics	3	3	0			Yes

**Table 5.2.3** *List of Elective courses for Computer Science Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
CMPT-542	Computer Security	3	3	0			No
CMPT-564	Storage Area Networks	3	3	0			No
CMPT-571	Advanced Algorithm Design and Analysis	3	3	0			No
CMPT-581	Special Topics in Computing	3	3	0			No
CMPT-583	Special Topics in Network Systems	3	3	0			No
CMP -507	Advanced Operating Systems	3	3	0			No

**Table 5.2.3** *List of Elective courses for Computer Engineering Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
CMPT-541	Advanced Computer Networks	3	3	0			No
CMPT-543	Wireless Communication	3	3	0			No
CMPT-567	Wide Area Digital Networking	3	3	0			No
CMPT-581	Special Topics in Computing	3	3	0			No
CMPT-583	Special Topics in Network Systems	3	3	0			No
CMPT-546	Telecommunications Policies and Regulations	3	3	0			No

**Table 5.2.3** *List of Elective courses for Architecture Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
PHAP 701	Participatory Design and Planning.	3	3	0			Yes
PHAP 702	Architecture and Urbanism of Globalized Cities.	3	3	0			Yes
PHAP 710	Building Performance Assessments and Measurements.	3	3	0			Yes
PHAP 715	Special Topic I	3	3	0			Yes
PHAP 716	Special Topic II	3	3	0			Yes
PHAR 711	History, Theory, and Criticism in Architecture	3	3	0			Yes
PHAR 712	Energy and Buildings	3	3	0			Yes

**Table 5.2.3** *List of Elective courses for Urban Planning Concentration (Required 4 Courses)*

Course Id.	Course Title	No. Credit Hours	Nb. Contact Hours		Prerequisites	Co-Requisites	New Course (Yes/ No)
			Theo.	Lab.			
PHAP 701	Participatory Design and Planning.	3	3	0			Yes
PHAP 702	Architecture and Urbanism of Globalized Cities.	3	3	0			Yes
MUPD 600	Planning Theory	3	3	0			No
PHUP 751	Special Topic I	3	3	0			Yes
PHUP 752	Special Topic II	3	3	0			Yes
PHUP 753	Sustainable Urbanism	3	3	0			Yes
MUPD 652	Theory of Urban Form and Design	3	3	0			No

## 5.6 Study Plan

<b>FIRST YEAR ([ 24 ] credit hours)</b>			
<b>Fall Semester [12 credit hours]</b>			
Course #	Course Title	Cr Hrs.	New?
<b>DENG-699</b>	<b>PhD Thesis</b>	<b>2</b>	<b>No</b>
<b>DENG 620</b>	<b>Applied Research Methodology</b>	<b>3</b>	<b>No</b>
<b>DENG-XXX</b>	<b>Course from College requirements</b>	<b>3</b>	<b>Yes</b>
<b>DENG- 621</b>	<b>Graduate Seminar</b>	<b>1</b>	<b>Yes</b>
<b>DENG-XXX</b>	<b>Course from College requirements</b>	<b>3</b>	<b>Yes</b>
Total Credit Hours in Fall [ 12 ]			
<b>Spring Semester[ 12 credit hours]</b>			
Course #	Course Title	Cr Hrs.	New?
<b>DENG-699</b>	<b>PhD Thesis</b>	<b>2</b>	<b>No</b>
<b>DENG-621</b>	<b>Graduate Seminar</b>	<b>1</b>	<b>Yes</b>
<b>DENG-XXX</b>	<b>Course from college requirements</b>	<b>3</b>	<b>Yes</b>
<b>YYYY-XXX</b>	<b>Course from Concentration area</b>	<b>3</b>	<b>Yes</b>
<b>YYYY-XXX</b>	<b>Course from Concentration area</b>	<b>3</b>	<b>Yes</b>
Total Credit Hours in Spring [12 ]			
<b>SECOND YEAR ([18 ] credit hours)</b>			
<b>Fall Semester [9 credit hours]</b>			
Course #	Course Title	Cr Hrs.	New?
<b>DENG-699</b>	<b>PhD Thesis</b>	<b>2</b>	<b>No</b>
<b>DENG-621</b>	<b>Graduate Seminar</b>	<b>1</b>	<b>Yes</b>
<b>YYYY-XXX</b>	<b>Course from Concentration area</b>	<b>3</b>	<b>yes</b>
<b>YYYY-XXX</b>	<b>Course from Concentration area</b>	<b>3</b>	<b>yes</b>
Total Credit Hours in Fall [9]			
<b>Spring Semester [ 9 credit hours]</b>			
Course #	Course Title	Cr Hrs.	New?
<b>DENG-699</b>	<b>PhD Thesis</b>	<b>9</b>	<b>No</b>
Total Credit Hours in Spring [9]			
<b>THIRD YEAR ([ 18] credit hours)</b>			
<b>Fall Semester [9 credit hours]</b>			
Course #	Course Title	Cr Hrs.	New?
<b>DENG-699</b>	<b>PhD Thesis</b>	<b>9</b>	<b>No</b>
Total Credit Hours in Fall [9]			
<b>Spring Semester [ 9 credit hours]</b>			
Course #	Course Title	Cr Hrs.	New?
<b>DENG-699</b>	<b>PhD Thesis</b>	<b>9</b>	<b>No</b>
Total Credit Hours in Spring [9]			