

## 107 The Class Curriculum planning of Ph. D. Program in Engineering Science

December 29, 1999 – Revision approved in the 5th Engineering Science Ph.D. Program meeting, First Semester of the 99th Academic Year.  
 April 20, 2011 – Revision approved in the First Curriculum Planning Committee meeting, Second Semester of the 99th Academic Year.  
 June 1, 2011 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 99th Academic Year.  
 April 10, 2012 – Revision approved in the First Curriculum Planning Committee meeting, Second Semester of the 100th Academic Year.  
 April 10, 2012 – Revision approved in the 3rd Engineering Science Ph.D. Program meeting, Second Semester of the 100th Academic Year.  
 May 20, 2013 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 101st Academic Year.  
 October 30, 2013 – Revision approved in the First Curriculum Planning Committee meeting, First Semester of the 102nd Academic Year.  
 May 15, 2014 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 102nd Academic Year.  
 May 6, 2015 – Revision approved in the First Curriculum Planning Committee meeting, Second Semester of the 103rd Academic Year.  
 June 9, 2015 – Revision approved in the 2nd Curriculum Planning Committee meeting, Second Semester of the 103rd Academic Year.  
 June 16, 2015 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 103rd Academic Year.  
 April 27, 2016 – Revision approved in the First Curriculum Planning Committee meeting, Second Semester of the 104th Academic Year.  
 June 21, 2016 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 104th Academic Year.  
 April 26, 2017 – Revision approved in the First Curriculum Planning Committee meeting, Second Semester of the 105th Academic Year.  
 June 6, 2017 – Revision approved in the 3rd Engineering Science Ph.D. Program meeting, Second Semester of the 105th Academic Year.  
 June 14, 2018 – Revision approved in the 2nd Curriculum Planning Committee meeting, Second Semester of the 106th Academic Year.  
 June 14, 2018 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 106th Academic Year.  
 April 24, 2019 – Revision approved in the First Curriculum Planning Committee meeting, Second Semester of the 107th Academic Year.  
 April 24, 2019 – Revision approved in the 2nd Engineering Science Ph.D. Program meeting, Second Semester of the 107th Academic Year.  
 June 11, 2019 – Revision approved in the 3rd Engineering Science Ph.D. Program meeting, Second Semester of the 107th Academic Year.

Required Courses	Research Fields	Professional Courses	
		1 <sup>st</sup> semester	2 <sup>nd</sup> semester
Construction Seminars (four semesters)	Internet of Things	<ul style="list-style-type: none"> <li>● Microwave Radio Frequency Circuit Design</li> <li>● WirelessNetwork</li> <li>● Cloud Computing and Program Design</li> <li>● Database System</li> </ul>	<ul style="list-style-type: none"> <li>● Mobile Communication Systems</li> <li>● Wireless AD Hoc and Sensor Networks</li> <li>● Techniques of Integrated Manufacturing and Networks</li> </ul>
Thesis Seminar( start at 3rd year )	Intelligent Energy and Control System	<ul style="list-style-type: none"> <li>● Linear System</li> <li>● Green Building Material</li> <li>● Control of Electric Energy Conversion</li> </ul>	<ul style="list-style-type: none"> <li>● Fuzzy Control</li> <li>● Artificial Neural Networks</li> <li>● Green Energy Material</li> <li>● Energy Engineering</li> </ul>

	Artificial Intelligence	<ul style="list-style-type: none"> <li>● Imaging System</li> <li>● Wavelet Transform and Its Applications</li> <li>● Computer Vision</li> <li>● Evolutionary Computation</li> <li>● Digital Signal Processing</li> </ul>	<ul style="list-style-type: none"> <li>● Multimedia System</li> <li>● Digital Filter</li> <li>● Machine Learning</li> <li>● Computer Algorithms</li> <li>● Pattern Recognition</li> <li>● Special Topics of Artificial Intelligence</li> <li>● Deep Learning</li> </ul>
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Note : 1. Required courses are not included in course credits for graduation.

2. Every student must complete at least 21 course credits for graduation.(Exclude Technical Writing in English.)