

## Syllabus for The International Summer School2018

(Please fill in the form. Thank you very much.)					
課程名稱 <b>Course name</b> <small>at least in English, additionally in Chinese preferred</small>	(中) : 廢熱回收與儲能裝置				
	(Eng) : Waste heat recovery and energy storage				
姐妹校老師所屬單位 <b>Offering dept. and university</b>	The University of Hong Kong				
開課時段 <b>Dates</b>	Dates July 09/ 11 /18 <table border="0" style="float: right;"> <tr> <td><input checked="" type="checkbox"/> Morning (9:00~12:00)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Afternoon (14:00~17:00)</td> </tr> </table>	<input checked="" type="checkbox"/> Morning (9:00~12:00)	<input checked="" type="checkbox"/> Afternoon (14:00~17:00)		
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課程開辦學校 <b>Hosting Department</b>	College of Engineering & Research Center for Sustainable Energy and Nanotechnology(RESEN)				
授課教師資料 <b>Offering teacher's information</b>	Name: <u>Shien-Ping Feng (馮憲平)</u> Tel. / mobile phone number: <u>+852)68064648</u> Email: <u>hpfeng@hku.hk</u> Website: <u>http://www.i-nanoeng.com/</u>				
學經歷 <b>Curriculum vitae</b>	Education: National Tsing-Hua University (BS, MS, Ph.D)				
	Professional appointment Assistant Professor (Start from 2011/10/2) / Dept of Mechanical Engineering The University of Hong Kong				
	Other qualification: Postdoctoral Associate (2009/5/1 – 2011/7/31) / Dept of Mechanical Engineering, Massachusetts Institute of Technology (M.I.T.)				
合作開課老師 <b>Cooperating teacher(s) in this course</b>	Name: _____ Contact no. _____ Email : _____				
學分數 <b>Credit(s)</b>	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <table border="0" style="float: right;"> <tr> <td><b>授課對象</b></td> <td><input checked="" type="checkbox"/> Undergraduate</td> </tr> <tr> <td><b>Target audience</b></td> <td><input checked="" type="checkbox"/> Postgraduate</td> </tr> </table>	<b>授課對象</b>	<input checked="" type="checkbox"/> Undergraduate	<b>Target audience</b>	<input checked="" type="checkbox"/> Postgraduate
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課程目標 <b>Goal of this course</b> <small>description within 150 words</small>	(1) Understand the waste heat recovery and its importance. (2) Identify the effective thermal energy conversion. (3) Understand the energy storage system.				
課程簡述 <b>Course description</b> <small>description within 350 words</small>	This is an introductory course by which students can understand the factors related to the recovery of waste heat and the effective use of energy storage, and can strengthen the knowledge of conserving and managing the use of energy.				
課程內容 / 授課大綱 <b>Course content / outline</b>	<b>1. Waste Heat Recovery and heat Pumps (6 hrs)</b> Sources and levels of waste heat; heat exchangers – classification, analysis, performance, industrial applications heat exchangers; other methods of waste heat recovery - heat pipes, heat pumps, recuperators, run-around coils, regenerators. <b>2. Thermoelectricity (6 hrs)</b> The introduction of thermoelectric material for Seebeck, Peltier and Thomson effects. Thermoelectric devices. The future trend for the development of thermoelectricity. <b>3. Energy storage technologies (6 hrs)</b> Thermal storage by sensible heat and latent heat; mechanical storage by flywheels; electrical storage by battery and supercapacitor; chemical storage by hydrogen production.				

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<p style="text-align: center;"><b>學習評量方式</b> <b>Assessment / grading policy</b></p>	<p>Each student is required to take an exam.</p> <table border="1" data-bbox="507 347 1528 801"> <thead> <tr> <th style="background-color: #92d050;">Course Grade</th> <th style="background-color: #92d050;">Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td>Exceptionally good performance demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, a skillful use of concepts and/or materials, and ability to analyze and evaluate problems.</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the course.</td> </tr> <tr> <td style="text-align: center;">C</td> <td>Adequate performance demonstrating an adequate understanding of the subject matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.</td> </tr> <tr> <td style="text-align: center;">D</td> <td>Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating deficiencies serious enough to make it inadvisable to proceed further in the field without additional work.</td> </tr> <tr> <td style="text-align: center;">F</td> <td>Unacceptable performance demonstrating unfamiliarity with the subject matter, and lack of capacity to deal with relatively simple problems, and also demonstrating deficiencies serious enough to make it advisable to retake the course.</td> </tr> </tbody> </table>	Course Grade	Description	A	Exceptionally good performance demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, a skillful use of concepts and/or materials, and ability to analyze and evaluate problems.	B	Good performance demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the course.	C	Adequate performance demonstrating an adequate understanding of the subject matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.	D	Minimally acceptable performance demonstrating at least partial familiarity with the subject matter and some capacity to deal with relatively simple problems, but also demonstrating deficiencies serious enough to make it inadvisable to proceed further in the field without additional work.	F	Unacceptable performance demonstrating unfamiliarity with the subject matter, and lack of capacity to deal with relatively simple problems, and also demonstrating deficiencies serious enough to make it advisable to retake the course.
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<p style="text-align: center;"><b>課程目標之教學方法</b> <b>Teaching methods for this course</b></p>	<p>lecture</p>												
<p style="text-align: center;"><b>教科書&amp;參考書目</b> <b>Textbook &amp; other reference</b></p>	<ol style="list-style-type: none"> <li>1. Aldo V. Da Rosa, "Fundamentals of Renewable Energy Processes", Elsevier 2<sup>nd</sup> Edition, 2008.</li> <li>2. R.A. Ristinen and J.J. Kraushaar , "Energy and the Environment," Wiley, 1999.</li> <li>3. Frank Kreith, D. Yogi Goswami, ""Energy Management and Concervation Handbook," CRC press, 2007.</li> </ol>												

**Thank you for your help!**