

## Course Syllabus

- 1. Course Title:** Solid Waste Management and Treatment
- 2. Course Code:** SWMT434110
- 3. Credit Units:** 3 (3/0/6) (3 units of theory/ 0 unit of practice/ 6 units of self-study)  
Duration: 15 weeks (3 hours of theory+0 hours of practice, and 6 hours of self-study per week)
- 4. Course instructors**  
1/ MSc. Nguyen Ha Trang  
2/ Dr. Nguyen Thai Anh
- 5. Course Requirements**  
Preresquisite courses : None  
Previous course : None  
Parallel course : None
- 6. Course Description**  
The course focuses on 5 main parts: control of generation, storage, collection, transport or transfer, processing and disposal of solid waste. SWMT also provides participants with basic methods of calculation and design about management system of solid waste.
- 7. Course Goals**

Goals	Goal Description	Programme Expected learning outcome (ELOs)
G1	Apply the specialized knowledge in solid waste management and treatment	ELO3
G2	The ability to solve socio-economic problems in solid waste management	ELO4 ELO6
G3	The ability to conceive ideas and plan a collection system	ELO13
G4	The ability to design municipal solid waste treatment plant	ELO14

## 8. Course Learning Outcomes (CLOs)

CLOs		CLO Description	Programme ELOs
G1	CLO1	Calculate the weight of solid waste which is discharged in a urban area	ELO3
	CLO2	Sort garbage based on characteristics	
	CLO3	Select municipal waste treatment technology	
G2	CLO4	Analyze the collection system	ELO4
	CLO5	Calculate the cost of the solutions	ELO6
G3	CLO6	Plan to collect solid waste in a urban area	ELO13
G4	CLO7	Design processing of municipal solid waste	ELO14

## 9. Learning Resources

- Textbooks:

[1] William A. Worrell et.al., Solid Waste Engineering - 2nd edition, Cengage Learning - USA

- References:

[2] George Tchobanoglous, Frank Kreith (2002), Handbook of Solid waste management - 2nd edition, McGRAW-HILL

[3] John Pichtel (2005), Waste management practices - Municipal, Hazardous, and Industrial, Taylor & Francis Group

## 10. Student Assessment

- Grading scale: **10**

- Assessment plan:

Type	Content	Timeline	Assessment method	CLOs	Rate (%)
<b>Processing Assessment</b>					<b>50</b>
BT#1	Assignment: Review and select composting methods and technologies from organic waste	Week 3	Assignment	<b>CLO3</b>	10
PRJ#1	Project 1: manufacture and compost from organic waste	Week 8	Assignment	<b>CLO2</b> <b>CLO3</b>	20
BT#2	Online test	Week 12	Municipal test	<b>CLO1</b> <b>CLO2</b> <b>CLO3</b>	20

<b>Final exam</b>					<b>50</b>
PRJ#2	Project 2: Assess current collection systems in Thu Duc district and plan improvement.		Writing test	<b>CLO4</b> <b>CLO5</b> <b>CLO6</b> <b>CLO7</b>	50
<b>Total</b>					<b>100</b>

## 11. Course Content

Week	Content	CLOs
1-2	<b>Chapter 1: Integrated solid waste management (9,0,18)</b>	
	<b>A/ Content and pedagogical methods in class: (9h)</b> <b>Content:</b> 1.1 Solid waste in history 1.2 Definitions 1.3 Municipal solid waste generation 1.4 Municipal solid waste characteristics 1.5 Materials flow 1.6 The need for integrated solid waste management  <b>Pedagogical methods:</b> + Presentation of lecture + Focus group discussion	<b>CLO1</b> <b>CLO2</b> <b>CLO3</b>
	<b>B/ Self-study content: (18h)</b> + BT#1	
3-6	<b>Chapter 2: Collection system (16,0,32)</b>	
	<b>A/ Content and pedagogical methods in class: (16h)</b> <b>Content:</b> 2.1 Definitions 2.2 Refuse collection systems 2.3 Transfer stations 2.4 Collection of recyclable materials 2.5 Litter and street cleanliness  <b>Pedagogical methods:</b> + Presentation of lecture + Group exercises + Discussion	<b>CLO2</b> <b>CLO4</b> <b>CLO5</b> <b>CLO6</b>

	<b>B/ Self-study content: (32h)</b> + Homework + PRJ#1	
7-10	<b>Chapter 3: Landfill (16,0,32)</b>	
	<b>A/ Content and pedagogical methods in class: (16h)</b> <b>Content:</b> 3.1. Biochemical processes 3.2. Definitions 3.3. Planning, siting and permitting of landfill 3.4. Landfill processes 3.5. Landfill design 3.6. Landfill operations 3.7. Post – closure care and use of old landfills <b>Pedagogical methods:</b> + Presentation of lecture + Group exercises	<b>CLO3</b> <b>CLO5</b> <b>CLO6</b> <b>CLO7</b>
	<b>B/ Self-study content:</b> + Review the content of chapter 1,2,3 to prepare for online test (32h)	
11-13	<b>Chapter 4: Incineration (9,0,4)</b>	
	<b>A/ Content and pedagogical methods in class: (9h)</b> <b>Content:</b> 4.1 Heat value of refuse 4.2 Materials and thermal balances 4.3 Combustion Hardware 4.4 Undesirable effects of combustion 4.5. Convert to energy <b>Pedagogical methods:</b> + Presentation of lecture + Power point presentation + Focus group discussion	<b>CLO3</b> <b>CLO4</b> <b>CLO5</b> <b>CLO7</b>
	<b>B/ Self-study content: (18h)</b> + Review	
14-15	<b>Presentation PRJ#1</b>	

**12. Learning Ethics**

Students must do homework by themselves. If plagiarism is found students will get zero point.

**13. Date of first approval:** August 1<sup>st</sup>, 2012**14. Approved by:****Dean****Head of Department****Compiler****Prof. Nguyen Van Suc****MSc Nguyen Thi Minh Nguyet****MA Nguyen Thi Tinh Au****15. Date and Up-to-date content**

<b>1<sup>st</sup> time</b> August 25 <sup>th</sup> , 2015 - Update content and structure of the programme adjusted in: - Content and assessment method	<b>Instructor:</b>  Nguyen Ha Trang <b>Head of Department:</b>  Dr Tran Thi Kim Anh
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