

## SYLLABUS:

**Date / Revision** April 2017/September 2017/IT  
**Faculty** Engineering  
**Study Program** Computer Science

## SUBJECT: COMPUTER SCIENCE SYSTEM DESIGN - 2

### 1 Basic Information

<b>1.01</b>	<b>Subject Name</b>	<b>COMPUTER SCIENCE SYSTEM DESIGN - 2</b>
<b>1.02</b>	<b>Semester</b>	6
<b>1.03</b>	<b>Level</b>	2
<b>1.04</b>	<b>SKS</b>	2
<b>1.05</b>	<b>Mandatory / Curriculum</b>	D-06
<b>1.06</b>	<b>Subject Code</b>	CSSD
<b>1.07</b>	<b>Subject Code</b>	CSE-D-CSSD-217
<b>1.08</b>	<b>Year</b>	2017
<b>1.09</b>	<b>Quality Control</b>	Final Test, see evaluation
<b>1.10</b>	<b>Limitations</b>	Min 12 and Max 32 students in one class
<b>1.11</b>	<b>Combined with</b>	
<b>1.12</b>	<b>Pre-requisite</b>	
<b>1.13</b>	<b>Responsible</b>	
<b>1.14</b>	<b>Revision</b>	September 2017

### 2 Description of Subject

This course is the extension of Computer Science System Design 1, which focus on improvement existing real computer system. The goal of this course is to provide knowledge about improvement methodology and to find a correct framework to accompany the process of improvement. Student is directed to a value engineering approach that give the inside philosophy of the value of improvement.

### 3 Objectives

To provide the student with the capability to improve a large system that involve computer science knowledge and to understand the relationship with other discipline of knowledge

### 4 Competency

- To be able to analyze the opportunity of improvement of a computer system
- To be able to improve the performance of given computer system
- To be able to apply system improvement methodology through value engineering approach

### 5 Learning Approach / Methodology

- Lectures/ Class contact (time-tabled) supplemented with interactive questions and answers;
- Student Study Effort: homework/assignment; preparation for test/quizzes/ examination.

### 6 Evaluation

5.1	Absence maximum	25%
5.2	Participation in Discussion	05 Points
5.3	Homework / Classwork	05 Points
5.4	Presentation /Simulation	10 Points
5.5	Daily Quiz	20 Points
5.6	Final Examination	60 Points
	<b>Total</b>	100 Points

### 7 Text Book and Reference

1	<b>Main Text Book:</b> <ul style="list-style-type: none"> <li>• None – Only Class Notes</li> </ul>
2	<b>Supplement Textbooks:</b> <ul style="list-style-type: none"> <li>• The Art of Computer Systems Performance Analysis, Raj Jain, Wiley India Private Limite, 2008 (1<sup>ed</sup> 1991)</li> <li>• Value Engineering Synergies with Lean Six Sigma Combining Methodologies for Enhanced Results, Jay Mandelbaum, et al., CRC Press, 2012</li> </ul>

8 Content / Topics of Lecture

Week	Content/Topics of Lecturing	Text Book Chapter	Remark
1	<p>Introduction :Rule Of The Projects, General System Design 2 Deliverable</p> <p>THE VALUE ENGINEERING (VE) METHODOLOGY: Orientation Phase, Information Phase, Function Analysis Phase, Creative Phase, Evaluation Phase, Development Phase, Presentation Phase, Implementation Phase</p>	Jay Mandelbaum Ch 2.	
2	<p>System Improvement Framework, Methodology and Metrics</p> <p>LEAN SIX SIGMA (LSS)METHODOLOGY The DMAIC Methodology, The Design for Six Sigma (DFSS) Methodology, COMPARISON OF VE AND LSS METHODOLOGIES VE and LSS Cross Reference, How VE Can Benefit from LSS, How LSS Can Benefit from VE</p>	Jay Mandelbaum Ch 3 & 4	
3-4	<p>Presentation Phase 1 : Improvement Intention, Conceptual Framework, Improvement Methodology</p>		
5	<ul style="list-style-type: none"> <li>COMMON MISTAKES IN PERFORMANCE EVALUATION A Systematic Approach To Performance Evaluation</li> <li>TECHNIQUES AND METRICS Selecting An Evaluation Technique, Selecting Performance Metrics, Commonly Used Performance Metrics, Utility Classification Of Performance Metrics, Setting Performance Requirements</li> </ul>	Raj jain Chapter 2 & 3	
6	<p>MEASUREMENT TECHNIQUES AND TOOLS</p> <ul style="list-style-type: none"> <li>TYPES OF WORKLOADS Addition Instruction, Instruction Mixes, Kernels. Synthetic Programs, Application Benchmarks, Popular Benchmarks</li> <li>THE ART OF WORKLOAD SELECTION Services Exercised , Level Of Detail, Representativeness, Timeliness, Other Considerations In Workload Selection</li> </ul>	Raj jain Chapter 4 & 5	
7	<p>Presentation Phase 2 : Performance Evaluation Proposal</p>		
8	Midterm Break		

9-10	<ul style="list-style-type: none"> <li>• CAPACITY PLANNING AND BENCHMARKING Steps In Capacity Planning And Management, Problems In Capacity Planning, Common Mistakes In Benchmarking, Benchmarking Games, Load Drivers. Remote-Terminal Emulation, Components Of An Rte, Limitations Of Current RTEs</li> <li>• THE ART OF DATA PRESENTATION Types Of Variables, Guidelines For Preparing Good Graphic Charts, Common Mistakes In Preparing Charts, Pictorial Games, Gantt Charts, Kiviat Graphs, Chumacher Charts, Decision Maker Games</li> <li>• RATIO GAMES Choosing An Appropriate Base System, Using An Appropriate Ratio Metric, Using Relative Performance Enhancement, Ratio Games With Percentages, Strategies For Winning A Ratio Game, Correct Analysis</li> </ul>	Raj jain Chapter 9, 10 & 11	
11	Presentation Phase 3: Performance Analysis Result		
12	Class Discussion on alternative solutions		
13 - 14	Final Presentation :System Improvement Solution		
15	Final Examination		