SYLLABUS

Date/ Revision	March 31, 2017 / 1.0
Faculty	Engineering
Approval	Dean Faculty of Engineering

SUBJECT : SCHEDULING (SCHE-3120)

1. Identification of Subject:

Name of Subject	: SCHEDULING
Code of Subject	: SCHE-3120
SKS / ECTS	: 3
Semester	: 5
Study Program	: INE
Lecturer	: TO BE APPOINTED

2. Competency

After having the course, students are expected to:

a) understand scheduling problem of combination of machines/resources
b) understand scheduling criteria and model
c) apply scheduling aspect on factory

3. Description of Subject:

This is a quiet advance course. The course discusses about scheduling. The algorithm for scheduling problems, job scheduling, cyclic scheduling, steady-state scheduling, load scheduling, etc. Leaning combination of machine/resource combinations.

4. Learning Approach

Approach	: combination of expository
Method	: discussion, q&a, case study
Student Task	: presentation, project
Media	: LCD projector

5. Evaluation

a)	Absence maximum	: 25%
b)	Participation in discussion	: 10 points
c)	Homework, Classwork	: 10 points
d)	Prsentation, Simulation	: 10 points
e)	Daily Quiz	: 10 points
f)	Final Examination	: 60 points
	Total	: 100 points

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6. Contents/ Topics of Lecturing:

Week	Topics	Content	Remark
1	On the Complexity of Scheduling	Introduction. Scheduling Models. Processor Scheduling. Easy and Hard Problems. Complexity Classification	Chapter 1
2	Approximation Algorithm for Scheduling Problems	Introduction. A Fully Polynomial-Time Approximation Scheme. Introduction to Precedence Constraints. Introduction to Communication Delays.	Chapter 2
3	Job Scheduling	Introduciton. Single Machine Problems. Makespan Problems on Parallel Machines. Completion Time Problems on Parallel Machines.	Chapter 4
4,5	Cylic Scheduling	Introduction. Cylic Scheduling and Uniform Constraints. Periodic Schedules of Uniform Task Sytstems. Earliest Scheduli of Uniform Task Systems. Periodic Schedulies of Uniform Task Systems with Resource Constraints. Dynamic Schedules.	Chapter 5
6,7	Steady-State Scheduling	Introduction. Problem Formulation. Compact Description of a Schedule. From Allocations and Valid Patterns to Schedules. Problem Solving in the General Case. Toward Compact Linear Program	Chapter 7
8	Mid term qualification		
9	Divisible Load Scheduling	Introduction. Divisible Load Approach. Extensions of the Divisible Load Model	Chapter 8
10	Multi-Objective Scheduling	Motivation. What is Multi-Objective Optimization? Overiew of Various Existing Approaches. Zenith Approximation on MAX AND SUM. Pareto Set Approximation on EFFICIENT RELIABLE	Chapter 9
11	Comparison of Stochastic Task-Resource Systems	Motivation. Task-Resource Model. Stochastic Orders. Applications to Static Problems. Applications to Dynamic Systems.	Chapter 10
12	The Influence of Platform Models on Scheduling Techniques	Introduction. Platform Modeling. Scheduling Divisible Load. Iterative Algorithms on a Virtual Ring. Data Redistribution.	Chapter 11
13, 14,15	Review		
16, 17	Final Examination		

7. Book Reference:

a) Yves Robert, Frederic Vivien, Introduction to Scheduling, Chapman Hall / CRC, 2010, ISBN 978-1-4200-7273-0

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