


## RENCANA PEMBELAJARAN SEMESTER

	<b>INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)</b> <b>FAKULTAS TEKNOLOGI INDUSTRI DAN REKAYASA SISTEM</b> <b>DEPARTEMEN TEKNIK SISTEM DAN INDUSTRI</b> <b>PROGRAM STUDI SARJANA TEKNIK INDUSTRI</b>					<b>Kode Dokumen</b>
<b>RENCANA PEMBELAJARAN SEMESTER</b>						
<b>MATA KULIAH (MK)</b>	<b>KODE</b>	<b>Rumpun MK</b>	<b>BOBOT (sks)</b>		<b>SEMESTER</b>	<b>Tgl Penyusunan</b>
Ergonomi Industri <i>Computer Algorithms and Programming</i>	TI 184411	General Studies	T=2	P=1	3	27 Januari 2019
<b>OTORISASI</b>	<b>Pengembang RPS</b>		<b>Koordinator RMK</b>		<b>Ketua PRODI</b>	
					<b>Nurhadi Siswanto, S.T., MSIE., Ph.D.</b>	
<b>Capaian Pembelajaran (CP)</b>	<b>CPL-PRODI yang dibebankan pada MK</b>					
	CPL-1	<p>Mampu menunjukkan sikap dan karakter yang mencerminkan: ketakwaan kepada Tuhan Yang Maha Esa, etika dan integritas, berbudi pekerti luhur, peka dan peduli terhadap masalah sosial dan lingkungan, menghargai perbedaan budaya dan kemajemukan, menjunjung tinggi penegakan hukum, mendahulukan kepentingan bangsa dan masyarakat luas, melalui kreatifitas dan inovasi, eksekusi, kepemimpinan yang kuat, sinergi, dan potensi lain yang dimiliki untuk mencapai hasil yang maksimal.</p> <p><i>Able to demonstrate attitudes and characters that reflect: piety to God Almighty, ethics and integrity, virtuous character, sensitive and concerned about social and environmental issues, respecting cultural differences and pluralism, upholding high law enforcement, prioritizing the interests of the nation and the wider community, through creativity and innovation, excellence, strong leadership, synergy, and other potentials to achieve maximum results.</i></p>				
	CPL-2	<p>Mampu mengkaji dan memanfaatkan ilmu pengetahuan dan teknologi dalam rangka mengaplikasikannya pada bidang rekayasa sistem industri, serta mampu mengambil keputusan secara tepat dari hasil kerja sendiri maupun kerja kelompok dalam bentuk laporan tugas akhir atau bentuk kegiatan pembelajaran lain yang luarannya setara dengan tugas akhir melalui pemikiran logis, kritis, sistematis dan inovatif.</p> <p><i>Able to carry out a study that utilizes science and technology to the field of industrial systems engineering and able to make appropriate decisions from the results of their own work or group work in the form of final project reports or other forms of learning activities whose output is equivalent to the final project through logical thinking, critical thinking, systematic, and innovative.</i></p>				

	CPL-3	Mampu mengelola pembelajaran diri sendiri, dan mengembangkan diri sebagai pribadi pembelajar sepanjang hayat untuk bersaing di tingkat nasional, maupun internasional, dalam rangka berkontribusi nyata untuk menyelesaikan masalah dengan mengimplementasikan teknologi informasi dan komunikasi dan memperhatikan prinsip keberlanjutan serta memahami kewirausahaan berbasis teknologi. <i>Able to manage self-learning and develop oneself as a personal lifelong learner to compete at national and international levels, in order to make a real contribution to solve problems by implementing information and communication technology based on the principles of sustainability and technology-based entrepreneurship.</i>
	CPL-4	Mampu untuk memahami prinsip-prinsip keteknikan secara menyeluruh berdasarkan pengetahuan basic science, ilmu pengetahuan alam, dan/atau material, teknologi informasi dan keteknikan lainnya <i>Able to fully understand engineering principles based on basic science, natural sciences, and/or materials, information technology, and other engineering fields.</i>
	CPL-5	Mampu untuk merencanakan, menyelesaikan, dan mengevaluasi suatu proyek dengan memperhatikan batasan yang diberikan untuk mencapai efisiensi dan efektivitas yang optimum. <i>Able to plan, complete, and evaluate a project by taking into account the given limits to achieve optimum efficiency and effectiveness.</i>
	CPL-6	Kemampuan untuk menyelesaikan permasalahan kompleks melalui perancangan sistem industri terintegrasi yang terdiri dari manusia, material, informasi, peralatan, modal, dan energi dalam perspektif supply chain dengan mempertimbangkan prinsip keberlanjutan. <i>Able to solve complex problems through the design of integrated industrial systems consisting of people, materials, information, equipment, capital, and energy in a supply chain perspective by considering the principles of sustainability</i>
	CPL-7	Mampu untuk bekerja dalam tim multidisiplin dan multibudaya <i>Able to work in multidisciplinary and multicultural teams.</i>
	<b>Capaian Pembelajaran Mata Kuliah (CPMK)</b>	
	CPMK-1	Students know the understanding of the algorithm and its description with a flowchart
	CPMK-2	Students know the purpose and elements of a programming language
	CPMK-3	Students understand the properties of variables
	CPMK-4	Students can implement repetition
	CPMK-5	Students are able to make a simple algorithm with repetition
	CPMK-6	Students recognize floating point, char, string and one-dimensional array data types
	CPMK-7	Students are able to make simple algorithms by looping with the use of arrays
	CPMK-8	Students are able to decompose by function
	CPMK-9	Students are able to use multi-dimensional arrays
	<b>Matrik CPL – CPMK</b>	

	CPL-1	CPL-2	CPL-3	CPL-4	CPL-5	CPL-6	CPL-7
CPMK-1	*						
CPMK-2	*						
CPMK-3	*						
CPMK-4	**		**		**		
CPMK-5	*		**		**		
CPMK-6	*						
CPMK-7	*	***	***	*			
CPMK-8	*		*		**		
Cpmk-9	*		*				

Note :

Relationship between CPL and CPMK (PLO – CLO Matrix):

- \* low relationship
- \*\* medium relationship
- \*\*\* strong relationship

**Percentage of relationship between CPMK and CPL**

	CPL-1	CPL-2	CPL-3	CPL-4	CPL-5	CPL-6	CPL-7
CPMK-1	5%						
CPMK-2	5%						
CPMK-3	5%						
CPMK-4	5%		5%		5%		
CPMK-5	5%		5%		5%		
CPMK-6	5%						
CPMK-7	5%	5%	5%	5%			
CPMK-8	5%		5%		10%		
CPMK-9	5%		5%				

<b>Deskripsi Singkat MK</b>	This course contains an introduction to problem solving techniques using a structured programming approach. At the beginning of the learning section, students learn problem solving techniques by representing algorithms in the form of flow charts and pseudocodes. In the second part students learn a programming language that implements simple algorithms with direct structured, branched, and repetitive techniques.	
<b>Bahan Kajian: Materi Pembelajaran</b>	<ol style="list-style-type: none"> <li>1. Prolog: prolog, teks algoritma; Struktur teks algoritma, Tipe</li> <li>2. Harga, Assignment, Input, Output, Ekspresi</li> <li>3. Analisa kasus</li> <li>4. Fungsi</li> <li>5. Prosedur</li> <li>6. Pengulangan</li> <li>7. Skema pemrosesan sekuensial</li> <li>8. Array/ Tabel/ Larik (1)</li> <li>9. Array/ Tabel/ Larik (2): Searching</li> <li>10. Array/ Tabel/ Larik(3): Sorting</li> <li>11. Mesin abstrak</li> <li>12. Rekursif</li> <li>13. Arsip sekuensial</li> </ol>	
<b>Pustaka</b>	<b>Utama :</b>	
	<ol style="list-style-type: none"> <li>1. Paul Deitel and Harvey Deitel, C How to Program, 6th Edition, Pearson Education, Inc., 2010.</li> <li>2. Thomas H. Cormen, et.al., Introduction to Algorithms, 3rd Edition, MIT Press, 2009.</li> </ol>	
	<b>Pendukung :</b>	
	-	
<b>Dosen Pengampu</b>		
<b>Matakuliah syarat</b>	No prerequisite courses required	

## RENCANA DAN STRATEGI PEMBELAJARAN

Minggu / Week	CPMK	Topik	Sub Topik (pustaka)	Capaian pembelajaran (sub CPMK)	Metode Pembelajaran	Sarana Pembelajaran	Bentuk Asesment
1	CPMK 1 CPMK 2	Introduction to algorithms and programming				<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi <input checked="" type="checkbox"/> Quiz	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas <input checked="" type="checkbox"/> Short Quiz untuk mengevaluasi pemahaman peserta di akhir pertemuan
2	CPMK 2 CPMK 3 CPMK 4	Algorithm with direct structure and branched structure			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas <input checked="" type="checkbox"/> Quiz/Class Assignment
3	CPMK 2 CPMK 3 CPMK 4	Algorithm with looping structure			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
4	CPMK 2 CPMK 5	Exercise about Flowchart and Pseudocode			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
5	CPMK 2 CPMK 3 CPMK 4	Programming C: Branching			<input checked="" type="checkbox"/> Small Group Discussion	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note	<input checked="" type="checkbox"/> Monitoring keaktifan peserta


Minggu / Week	CPMK	Topik	Sub Topik (pustaka)	Capaian pembelajaran (sub CPMK)	Metode Pembelajaran	Sarana Pembelajaran	Bentuk Asesment
					<input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Video Simulasi	<p>dalam diskusi kelas</p> <input checked="" type="checkbox"/> Quiz/Class Assignment untuk mengevaluasi pemahaman peserta di akhir pertemuan
6	CPMK 2 CPMK 3 CPMK 4	Programming C: Iteration			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas <input checked="" type="checkbox"/> Short Quiz untuk mengevaluasi pemahaman peserta di akhir pertemuan
7	CPMK 5 CPMK 6	Demo (Programming Tasks)			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
8	CPMK 1 CPMK 2 CPMK 3 CPMK 4 CPMK 5 CPMK 6	Mid Term Examination			<input checked="" type="checkbox"/> Mid Exam	<input checked="" type="checkbox"/> Mid Exam	<input checked="" type="checkbox"/> Mid Exam
9	CPMK 2 CPMK 4 CPMK 5	Modular programming with functions			<input checked="" type="checkbox"/> Small Group Discussion	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas

Minggu / Week	CPMK	Topik	Sub Topik (pustaka)	Capaian pembelajaran (sub CPMK)	Metode Pembelajaran	Sarana Pembelajaran	Bentuk Asessment
					<input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Video Simulasi	
10	CPMK 2 CPMK 4 CPMK 5 CPMK 7	Recursion Function			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
11	CPMK 3 CPMK 4 CPMK 7 CPMK 8	Programming exercises			<input checked="" type="checkbox"/> Kuliah Umum	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas <input checked="" type="checkbox"/> Short Quiz untuk mengevaluasi pemahaman peserta di akhir pertemuan
12	CPMK 5 CPMK 7 CPMK 8	1 Dimension Array			<input checked="" type="checkbox"/> Small Group Discussion <input checked="" type="checkbox"/> Role-Play & Simulation <input checked="" type="checkbox"/> Discovery Learning	<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
13	CPMK 5 CPMK 7 CPMK 8	Searching, Sorting, 2-Dimensional Array				<input checked="" type="checkbox"/> Slide Ajar <input checked="" type="checkbox"/> Lecture Note <input checked="" type="checkbox"/> Video Simulasi	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas <input checked="" type="checkbox"/> Short Quiz

Minggu / Week	CPMK	Topik	Sub Topik (pustaka)	Capaian pembelajaran (sub CPMK)	Metode Pembelajaran	Sarana Pembelajaran	Bentuk Asessment
14	CPMK 5 CPMK 6 CPMK 7 CPMK 8	Exercises	<input checked="" type="checkbox"/> Presentation		<input checked="" type="checkbox"/> Presentasi Progress Tugas Besar	<input checked="" type="checkbox"/> Hasil sementara pengerjaan tugas besar	<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
15	CPMK 2 CPMK 3 CPMK 4 CPMK 5 CPMK 6 CPMK 8	Review (self study)	-				<input checked="" type="checkbox"/> Monitoring keaktifan peserta dalam diskusi kelas
16	CPMK 5 CPMK 6 CPMK 7 CPMK 8	Final Term Examination	<input checked="" type="checkbox"/> Presentation		<input checked="" type="checkbox"/> Output Tugas Besar <input checked="" type="checkbox"/> Presentasi Tugas Besar	<input checked="" type="checkbox"/> Output Tugas Besar <input checked="" type="checkbox"/> Presentasi Tugas Besar	<input checked="" type="checkbox"/> Output Tugas Besar, <input checked="" type="checkbox"/> Presentasi Tugas Besar



## RENCANA TUGAS (RT) – ASSIGNMENT PLANNING

	<b>INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)</b> <b>FAKULTAS TEKNOLOGI INDUSTRI DAN REKAYASA SISTEM</b> <b>DEPARTEMEN TEKNIK SISTEM DAN INDUSTRI</b>				
Mata Kuliah (MK)	Kode	RMK	Bobot (sks)	Semester	Waktu Review
<i>Computer Algorithms and Programming</i>		General Studies	2	3	Januari 2019

Bentuk assignment dan assessment serta keterkaitannya dengan CPMK (*Assessment Method and CLO*)

No.	Evaluation Type	Weight (%)	Learning objectives are evaluated									
			CPMK 1	CPMK 2	CPMK 3	CPMK 4	CPMK 5	CPMK 6	CPMK 7	CPMK 8	CPMK 9	
1	Preliminary and Activities	10	√									
2	Mid Term Examination	35	√	√	√	√	√					
3	Programming Tasks	15				√	√					
4	Final Term Examination	40			√	√		√	√	√	√	√

*Note: check the evaluated learning objectives section*