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Universitas Tarumanagara

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RENCANA PEMBELAJARAN SEMESTER (RPS)

Fakultas	Teknologi Informasi
Program Studi	Sistem Informasi

Nama Dosen Koordinator Penguembang RPS	10301014 – Lina
Ketua Program Studi	– Dedi Trisnawarman

Kode Mata Kuliah/SKS	SI34011/4 SKS
Semester	20202 – Genap 2020

Nama Mata Kuliah	Artificial Intelligence
Mata Kuliah Prasyarat	-

CPL-PRODI (Capaian Pembelajaran Lulusan Program Studi) yang dibebankan pada Mata Kuliah	
CPL3	Menguasai teori dan konsep yang mendasari ilmu komputer, memahami konsep-konsep bahasa pemrograman, dapat mengidentifikasi model-model bahasa pemrograman, serta membandingkan berbagai solusi yang dibutuhkan untuk merancang, menerapkan dan menganalisis algoritma untuk menyelesaikan masalah.
CPL5	Mampu membangun aplikasi perangkat lunak yang berkaitan dengan pengetahuan ilmu komputer.
CPL8	Memiliki sikap untuk belajar seumur hidup (life-long learning), mampu mendemonstrasikan kemampuan komunikasi lisan dan tulisan yang berkaitan dengan aspek teknis dan non-teknis, berpikir kritis, mengidentifikasi akar masalah dan pemecahannya secara komprehensif, serta mengambil keputusan yang tepat berdasarkan analisis informasi dan data.
CPMK (Capaian Pembelajaran Mata Kuliah)	
CPMK 1	Understand the concept, algorithms, and applications of artificial intelligence
CPMK 2	Understand the concept, algorithms, and applications of machine learning
CPMK 3	Understand the concept, algorithms, and applications of deep learning
CPMK 4	Be familiar with the AI mainstream development frameworks in the industry



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CPMK 5	Grasp the principles of Huawei's MindSpore AI development framework
CPMK 6	Grasp the principles of Huawei's Atlas AI computing platform
CPMK 7	Be familiar with Huawei open AI platform and cloud enterprise
CPMK 8	Be able to present a project on AI applications
Deskripsi Matakuliah	Mankind is welcoming the fourth industrial revolution represented by intelligent technology. New technologies such as Artificial Intelligence (AI), Internet of Things (IoT), 5G and bioengineering are integrated into all aspects of human society. As the world's leading provider of information and communication (ICT) infrastructure and smart terminals, Huawei actively participates in the transformation of artificial intelligence and proposes Huawei's full-stack and full-scenario AI strategy. This course introduces AI overview, technical fields and application fields of AI, Huawei's AI development strategy, and future prospects of AI. This course follows Huawei's AI module and helps students prepare for the Huawei Certified ICT Associate (HCIA) – AI exam.
Referensi	
Utama	Pendukung
1. Huawei AI Certification Training Module, 2020. 2. Huawei AI Certification Training Lab Guide, 2020.	1. Goodfellow, I., Bengio, Y., and Courville, A., "Deep Learning", MIT Press, 2016. 2. Journal papers
Perangkat Keras	Perangkat Lunak
1. Computer	1. MS Teams 2. MS Powerpoint

		Bahan Kajian		Waktu		Penilaian
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Pertemuan Ke	Kemampuan Akhir yang Diharapkan (Sub-CPMK)	(Materi Pembelajaran)	Bentuk dan Metode Pembelajaran		Pengalaman Belajar Mahasiswa	Kriteria dan Bentuk	Indikator	Bobot
1	Understand the concept, algorithms, and applications of artificial intelligence (CPMK 1)	Introduction: - Overview - AI fundamentals - Relation between artificial intelligence with other computer science courses Reference: Huawei AI Certification Training Module, 2020. Chapter 1.	Lecture	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be able to understand the concept, algorithms, and applications of artificial intelligence	Kriteria: Verbal test to random individual attendees Bentuk Non- Test: Active participation in class	70% of questions are answered correctly	2
2	Understand the concept, algorithms, and applications of artificial intelligence (CPMK 1)	AI overview: 1. Concept 2. Latest research hotspots of AI 3. Algorithm	Lecture	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be able to understand the concept algorithms,	Kriteria: Verbal test to random individual attendees	70% of questions are answered correctly	2



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		<p>4. Application trends</p> <p>Reference: 1. Huawei AI Certification Training Module, 2020. Chapter 1. 2. Goodfellow, I., Bengio, Y., and Courville, A., "Deep Learning", MIT Press, 2016. Chapter 1.</p>			and applications of artificial intelligence	Bentuk Non- Test: Active participation in class		
3	Understand the concept, algorithms, and applications of machine learning (CPMK 2)	<p>Machine Learning overview (1):</p> <ol style="list-style-type: none">1. Concept2. Classifications3. Overall process <p>Reference: Huawei AI Certification</p>	Lecture	<p>PB: 1x(4x50')</p> <p>TS: 1x(4x60')</p> <p>KM: 1x(4x60')</p>	Upon completion of this course, the students will be able to understand the concept algorithms, classification types and overall process of machine learning	<p>Kriteria: Verbal test to random individual attendees</p> <p>Bentuk Non- Test: Active</p>	70% of questions are answered correctly	1



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		Training Module, 2020. Chapter 2.				participation in class		
4	Understand the concept, algorithms, and applications of machine learning (CPMK 2)	Machine Learning overview (2): 1. Common algorithms 2. Applications 3. Case study Reference: Huawei AI Certification Training Module, 2020. Chapter 2.	Lecture	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be able to understand the common algorithms and case studies of machine learning applications	Kriteria: Verbal test to random individual attendees Bentuk Non- Test: Active participation in class	70% of questions are answered correctly	2
5	Understand the concept, algorithms, and applications of deep learning (CPMK 3)	Deep Learning overview (1): 1. Concept 2. Classifications 3. Development history Reference: 1. Goodfellow, I., Bengio, Y., and	Lecture	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be able to understand the concept, classifications and development history of deep learning	Kriteria: Verbal test to random individual attendees Bentuk Non- Test: Active	70% of questions are answered correctly	1



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		<p>Courville, A., “Deep Learning”, MIT Press, 2016. Chapter 8, 9.</p> <p>2. Huawei AI Certification Training Module, 2020. Chapter 3.</p>				participation in class		
6	<p>Understand the concept, algorithms, and applications of deep learning (CPMK 3)</p>	<p>Deep Learning overview (2):</p> <ol style="list-style-type: none">1. Common algorithms2. Applications3. Case study <p>Reference:</p> <ol style="list-style-type: none">1. Goodfellow, I., Bengio, Y., and Courville, A., “Deep Learning”, MIT Press, 2016. Chapter 8, 9.	Lecture	<p>PB: 1x(4x50’)</p> <p>TS: 1x(4x60’)</p> <p>KM: 1x(4x60’)</p>	<p>Upon completion of this course, the students will be able to understand the common algorithms and case studies of deep learning applications</p>	<p>Kriteria: Verbal test to random individual attendees</p> <p>Bentuk Non- Test: Active participation in class</p>	<p>70% of questions are answered correctly</p>	2



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		2. Huawei AI Certification Training Module, 2020. Chapter 3.						
7	Grasp the principles of AI, Machine Learning, Deep Learning (CPMK 1, CPMK 2, CPMK 3)	Review & Quiz: - AI - Machine learning - Deep learning Reference: 1. Goodfellow, I., Bengio, Y., and Courville, A., "Deep Learning", MIT Press, 2016. Chapter 1, 8, 9. 2. Huawei AI Certification Training Module, 2020. Chapter 1,2,3.	Lecture	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	This meeting contains material reviews and quiz.	Kriteria: Quiz Bentuk Non- Test: Active participation in class	70% of questions are answered correctly	10



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8	Mid Term	Mid Term Test	Written Test	PB: 1x(4x50') TS: - KM: -	Submit the correct answers on the answer sheets within the time limit.	Kriteria: Correct answers within the time limit	70% of questions are answered correctly	30
9	Be familiar with the AI mainstream development frameworks in the industry (CPMK 4)	The AI mainstream development frameworks in the industry: - PyTorch - TensorFlow - Basic operations and common modules of TensorFlow - MNIST data Reference: Huawei AI Certification Training Module, 2020. Chapter 4.	Lecture	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be able to: - Know mainstream deep learning frameworks - Know the features of PyTorch - Know the features of TensorFlow - Master the basic syntax and common modules of TensorFlow	Kriteria: Verbal test to random individual attendees Bentuk Non- Test: Active participation in class	70% of questions are answered correctly	2



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10	Grasp the principles of Huawei's MindSpore AI development framework (CPMK 5)	Huawei's MindSpore AI development network: <ul style="list-style-type: none">- Structure- Concept- Features- Issues- Development & application process in MindSpore Reference: Huawei AI Certification Training Lab Guide, 2020. Chapter 5.	Lecture & Practice	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be familiar with the Huawei's MindSpore AI development network.	Kriteria: Verbal test to random individual attendees Bentuk Non- Test: Active participation in class	70% of questions are answered correctly	2
11	Grasp the principles of Huawei's Atlas AI computing platform (CPMK 6)	Huawei's Atlas AI computing platform: <ul style="list-style-type: none">- Chips- Architecture	Lecture & Practice	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be familiar with the	Kriteria: Verbal test to random individual attendees	70% of questions are answered correctly	2



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		<ul style="list-style-type: none">- Full stack scenario in Ascend AI chips <p>Reference: Huawei AI Certification Training Lab Guide, 2020. Chapter 6.</p>			Huawei's Atlas AI computing platform	Bentuk Non- Test: Active participation in class		
12	Be familiar with Huawei open AI platform and cloud enterprise (CPMK 7)	<p>Huawei open AI platform for smart devices:</p> <ul style="list-style-type: none">- The usage of HiAI platform- Tools for developers <p>Reference: Huawei AI Certification Training Lab Guide, 2020. Chapter 7.</p>	Lecture & Practice	<p>PB: 1x(4x50')</p> <p>TS: 1x(4x60')</p> <p>KM: 1x(4x60')</p>	Upon completion of this course, the students will be familiar with the Huawei open AI platform for smart devices	<p>Kriteria: Verbal test to random individual attendees</p> <p>Bentuk Non- Test: Active participation in class</p>	70% of questions are answered correctly	2



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13	Be familiar with Huawei open AI platform and cloud enterprise (CPMK 7)	Huawei cloud enterprise intelligence application platform: - The Huawei cloud EI ecosystem and services - ModelArts platform - ModelArts operations Reference: Huawei AI Certification Training Lab Guide, 2020. Chapter 8.	Lecture & Practice	PB: 1x(4x50') TS: 1x(4x60') KM: 1x(4x60')	Upon completion of this course, the students will be familiar with the Huawei cloud enterprise intelligence application platform	Kriteria: Verbal test to random individual attendees Bentuk Non- Test: Active participation in class	70% of questions are answered correctly	2
14	Be able to present a project on AI applications (CPMK 8)	Present a project on AI applications Reference:	Project Presentation	Perancangan: 1x(2x170')	Upon completion of this course, the students will be able to present a project on AI applications	Kriteria: Presentation	Clear presentation and the assignment is submitted	5



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		Journal/Conference papers			and conduct group discussions	Bentuk Non- Test: Active participation in class	within the time limit.	
15	Be able to present a project on AI applications (CPMK 8)	Present a project on AI applications Reference: Journal/Conference papers	Project Presentation	Perancangan: 1x(2x170')	Upon completion of this course, the students will be able to present a project on AI applications and conduct group discussions	Kriteria: Presentation Bentuk Non- Test: Active participation in class	Clear presentation and the assignment is submitted within the time limit.	5
16	Final Project (CPMK 4, CPMK 5, CPMK 6, CPMK 7, CPMK 8)	Final Project	Project review submission	PB: 1x(2x50') TS: - KM: -	Submit a project review on the presented AI application	Kriteria: Submit a project review	The project review is submitted within the time limit.	30