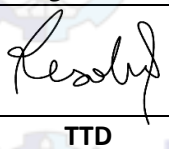
MODULE HANDBOOK
ASSISTIVE AND WELFARE TECHNOLOGIES

BACHELOR DEGREE PROGRAM
DEPARTMENT OF BIOMEDICAL ENGINEERING
FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

ENDORSEMENT PAGE

	MODULE HANDBOOK **Assistive and Welfare Technologies** **DEPARTMENT OF BIOMEDICAL ENGINEERING** **INSTITUT TEKNOLOGI SEPULUH NOPEMBER** **Number : 6818/IT2.IX.5.1.2/B/PP.03.00.00/2023**

Proses ***Process***	**Penanggung Jawab** ***Person in Charge***			**Tanggal** ***Date***
	Nama ***Name***	**Jabatan** ***Position***	**Tandatangan** ***Signature***	
Perumus *Preparation*	Dr. Achmad Arifin, S.T., M.Eng.	Dosen *Lecturer*		**November 18, 2022**
Pemeriksa dan Pengendalian *Review and Control*	Prof. Dr. Ir. Mohammad Nuh, DEA.	Tim kurikulum *Curriculum team*	**TTD**	**November 20, 2022**
Persetujuan *Approval*	Ir. Josaphat Pramudijanto, M.Eng.	Koordinator RMK *Course Cluster Coordinator*		**April 13, 2023**
Penetapan *Determination*	Dr. Achmad Arifin, S.T., M.Eng.	Kepala Departemen *Head of Department*		**April 17, 2023**

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MODULE HANDBOOK
ASSISTIVE AND WELFARE TECHNOLOGIES

Module name	**Assistive and Welfare Technologies**
Module level	Undergradute
Code	EB234904
Course (if applicable)	Assistive and Welfare Technologies
Semester	First Semester (Gasal)
Lecturer	1. Dr. Achmad Arifin, S.T.,M.Eng. 2. Eko Agus Suprayitno, S.Si., M.T. 3. Djoko Kuswanto, S.T., M.Biotech.
Language	Bahasa Indonesia and English
Relation to curriculum	Undergradute degree program, **specialization**.
Type of teaching, contact hours	Lectures, <60 students Tuesdays, 11.00-12.50 (GMT+7)
Workload	1. Lectures : 3 x 50 = 150 minutes per week. 2. Exercises and Assignments : 3x 50 = 150 minutes per week. 3. Private learning : 3 x 50 = 150 minutes per week.
Credit points	3 credit points (sks)
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.
Mandatory prerequisites	Biomedical Instrumentations System and Laboratory (Sudah pernah mengambil, Nilai Minimal D) Biomedical Signal Processing and Laboratory (Sudah pernah mengambil, Nilai Minimal D)
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) after completing this module,

	CLO 1: Students understand and are able to explain disabilities, the history and development of assistive and welfare technologies. CLO 2: Students understand and able to explain about assistive technology for deaf disabilities CLO 3: Students understand and are able to explain about assistive technology for mute disabilities CLO 4: Students understand and are able to explain about assistive technology for blind disabilities CLO 5: Students understand and are able to explain about assistive technology for the disabled. CLO 6: Students understand and are able to explain about assistive technology for mentally disabled people CLO 7: Students understand and are able to explain about Welfar technology for public facilities and social services, the latest issues and developments	PLO-02 PLO-05 PLO-05 PLO-03 PLO-03 PLO-05 PLO-06
Content	The Assistive Technology and Welfar courses aim to provide an understanding of assistive technology design for persons with disabilities (deaf, mute, blind, disabled and mentally disabled) and Welfar technology for public facilities and social services, issues and the latest developments in assistive technology and welfar. Students are expected to be able to implement this knowledge in developing assistive devices to improve or maintain the lives of people with permanent or temporary disabilities.	
Study and examination requirements and forms of examination	● In-class exercises ● Assignment 1, 2, 3, 4, 5, 6, 7 ● Mid-term examination ● Final examination	
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.	
Reading list	Main :	

	1. Marion Hersh, Michael A Johnson, “Assistive Technology for the Hearing-impaired, Deaf and Deafblind”, Springer-Verlag London, 2003 2. Marion Hersh, Michael A Johnson, “Assistive Technology for Visually Impaired and Blind People”, Springer-Verlag London, 2008 **Supporting :** 1. Giulio Lancioni, Nirbhay N. Singh, “Assistive Technologies for People with Diverse Abilities”, Springer-Verlag New York, 2014 2. Tohru Ifukube,“Sound-Based Assistive Technology”, Springer International Publishing, 2017

I. Rencana Pembelajaran Semester / *Semester Learning Plan*

	INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS) **FACULTY OF INTELLIGENT ELECTRICAL AND INFORMATICS TECHNOLOGY** **DEPARTMENT OF BIOMEDICAL ENGINEERING**	**Document Code**

SEMESTER LEARNING PLAN

MATA KULIAH (MK) ***COURSE***	**KODE** ***CODE***	**Rumpun MK** ***Course Cluster***	**BOBOT (sks)** **Credits**		**SEMESTER**	**Tgl Penyusunan** ***Compilation Date***
Teknologi Asistif dan Welfar ***Assistive and Welfare Technologies***	EB234904	Teknik Biomedik *Biomedical Engineering*	T=3	P=0	Specialization	Nov 19, 2022
OTORISASI / PENGESAHAN ***AUTHORIZATION / ENDORSEMENT***	**Dosen Pengembang RPS** ***Developer Lecturer of Semester Learning Plan***		**Koordinator RMK** ***Course Cluster Coordinator***		**Ka DEPARTEMEN** ***Head of Department***	
	(Nada Fitrieyatul Hikmah, S.T, M.T)		**(Ir. Josaphat Pramudianto, M.Eng)**		**(Dr. Achmad Arifin, S.T., M.Eng.)**	
	CPL-PRODI yang dibebankan pada MK					

Capaian Pembelajaran ***Learning Outcomes***	***PLO Program Charged to The Course***	
	CPL-02 *PLO-02*	Mampu **menemukan**, **memahami**, **menjelaskan**, **merumuskan**, dan **menyelesaikan** permasalahan umum pada bidang Teknik dan permasalahan khusus pada bidang Teknik Biomedika yang meliputi instrumentasi biomedika cerdas, teknik rehabilitasi medika, pencitraan dan pengolahan citra medika, serta informatika medika. *Able to **find**, **understand**, **explain**, **formulate**, and **solve** general problems in the field of Engineering and special problems in the field of Biomedical Engineering which includes intelligent biomedical instrumentation, medical rehabilitation techniques, imaging and processing of medical images, and medical informatics*
	CPL-03 *PLO-03*	Mampu merancang dan melaksanakan eksperimen laboratorium dan/atau lapangan, menganalisa dan menginterpretasi data, serta menggunakan penilaian yang obyektif untuk menarik kesimpulan *Able to design and implement laboratory experiment and / or field experiments, analyze and interpret data, and use objective assessments to draw conclusions*
	CPL-05 *PLO-05*	Mampu mendesain komponen, sistem, dan proses dalam bidang Teknik Biomedika yang sistematis, logis, dan realistis sesuai dengan spesifikasi yang ditentukan dengan mempertimbangkan aspek keselamatan, sosial, budaya, lingkungan, dan ekonomi dengan mengenali/memanfaatkan sumber daya lokal dan nasional dengan wawasan global *Able to design components, systems, and processes in the field of Biomedical Engineering that are systematic, logical, and realistic appropriate with specified specifications by considering aspects of safety, social, cultural, environmental, and economic by recognizing / utilizing local and national resources with global insight*
	CPL-06 *PLO-06*	Mampu **menerapkan** ilmu pengetahuan, keterampilan, dan metode terkini dalam menyelesaikan permasalahan di bidang Teknik Biomedika *Able to apply the latest knowledge, skills and methods in solving problems in the field of Biomedical Engineering*
	Capaian Pembelajaran Mata Kuliah (CPMK)	

	Course Learning Outcome (CLO) - If CLO as description capability of each Learning Stage in the course, then CLO = LLO	
	CP MK 1 ***CLO 1***	Mahasiswa memahami dan mampu menjelaskan tentang disabilitas, sejarah dan perkembangan teknologi assistif dan welfar *Students understand and are able to explain disabilities, the history and development of assistive and welfare technologies*
	CP MK 2 ***CLO 2***	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna rungu *Students understand and able to explain about assistive technology for deaf disabilities*
	CP MK 3 ***CLO 3***	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna wicara. *Students understand and are able to explain about assistive technology for mute disabilities*
	CP MK 4 ***CLO 4***	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna netra Students understand and are able to explain about assistive technology for blind disabilities
	CP MK 5 ***CLO 5***	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna daksa. Students understand and are able to explain about assistive technology for the disabled.
	CP MK 6 ***CLO 6***	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna grahita Students understand and are able to explain about assistive technology for mentally disabled people
	CP MK 7 ***CLO 7***	Mahasiswa memahami dan mampu menjelaskan tentang teknologi welfar untuk fasilitas publik dan pelayanan social, isu dan perkembangan terkini Students understand and are able to explain about Welfar technology for public facilities and social services, the latest issues and developments

Peta CPL – CP MK

Map of PLO - CLO

	CPL-01	CPL-02	CPL-03	CPL-04	CPL-05	CPL-06	CPL-07	CPL-08	CPL-09	CPL-10	CPL-11	CPL-12
CPMK 1 / SUB CPMK 1 *CLO 1 / LLO 1*		√										
CPMK 2 / SUB CPMK 2 *CLO 2 / LLO 2*					√							
CPMK 3 / SUB CPMK 3 *CLO 3 / LLO 3*					√							
CPMK 4 / SUB CPMK 4 *CLO 4 / LLO 4*			√									
CPMK 5 / SUB CPMK 5 *CLO 5 / LLO 5*			√									
CPMK 6 / SUB CPMK 6 *CLO 6 / LLO 6*					√							
CPMK 7 / SUB CPMK 7 *CLO 7 / LLO 7*						√						

Diskripsi Singkat MK	Mata kuliah Teknologi Assistif dan Welfar ini bertujuan untuk memberikan pemahaman tentang disain peralatan asistif untuk penyandang disabilitas (tuna rungu, tuna wicara, tuna netra, tuna daksa dan tuna grahita) dan teknologi welfar untuk fasilitas publik dan pelayanan social, isu dan

Short Description of Course	perkembangan terkini dari teknologi assistif dan welfar. Mahasiswa diharapkan mampu mengimplementasikan pengetahuan tersebut dalam pengembangan peralatan asistif untuk memperbaiki atau mempertahankan hidup orang yang mengalami difabilitas permanen maupun sementara. *The Assistive Technology and Welfar courses aim to provide an understanding of assistive technology design for persons with disabilities (deaf, mute, blind, disabled and mentally disabled) and Welfar technology for public facilities and social services, issues and the latest developments in assistive technology and welfar. Students are expected to be able to implement this knowledge in developing assistive devices to improve or maintain the lives of people with permanent or temporary disabilities.*
Bahan Kajian: Materi pembelajaran ***Course Materials:***	*1.* Pengantar disabilitas dan device dalam teknologi assistif / *Introduction to disabilities and devices in assistive technology* 2. Teknologi asistif untuk disabilitas : tuna rungu, tuna wicara, tuna netra, tuna daksa dan tuna grahita / Assistive technology for disabilities: deaf, mute, blind, disabled and mentally disabled *3.* Teknologi welfar untuk fasilitas publik dan pelayanan sosial / Welfar technology for public facilities and social services
Pustaka ***References***	**Utama / *Main*:** 1. Marion Hersh, Michael A Johnson, “Assistive Technology for the Hearing-impaired, Deaf and Deafblind”, Springer-Verlag London, 2003 2. Marion Hersh, Michael A Johnson, “Assistive Technology for Visually Impaired and Blind People”, Springer-Verlag London, 2008 **Pendukung / *Supporting*:** 1. Giulio Lancioni, Nirbhay N. Singh, “Assistive Technologies for People with Diverse Abilities”, Springer-Verlag New York, 2014 2. Tohru Ifukube,“Sound-Based Assistive Technology”, Springer International Publishing, 2017

Dosen Pengampu ***Lecturers***	1. Dr. Achmad Arifin, S.T.,M.Eng. 2. Eko Agus Suprayitno, S.Si., M.T. 3. Djoko Kuswanto, S.T., M.Biotech.
Matakuliah syarat ***Prerequisite***	Biomedical Instrumentations System and Laboratory (Sudah pernah mengambil, Nilai Minimal D) Biomedical Signal Processing and Laboratory (Sudah pernah mengambil, Nilai Minimal D)

Mg ke/ *Week*	**Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)***	**Penilaian / *Assessment***		**Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]***		**Materi Pembelajaran [Pustaka] / *Learning Material [Reference]***	**Bobot Penilaian /*Assess-ment Load* (%)**
		Indikator / *Indicator*	**Kriteria & Teknik / *Criteria & Techniques***				
(1)	**(2)**	**(3)**	**(4)**	**Tatap Muka / *In-class* (5)**	**Daring / *Online* (6)**	**(7)**	**(8)**
1	Mahasiswa memahami dan mampu menjelaskan tentang disabilitas, sejarah dan perkembangan teknologi assistif dan welfar *Students understand and are able to explain*	• Kebenaran pemahaman, jawaban dan analisa • Keberhasilan menjelaskan tugas • Ketepatan waktu pengumpulan tugas	**Non-tes :** **Tugas 1** - Tugas tertulis mengenai disabilitas, sejarah dan perkembangan teknologi assistif dan welfar.	• Kuliah dan brainstorming , tanya jawab. [TM : 3 x 50”] [BM : 3 x 50”] [PT : 3x 50”] • *Presentation and brainstorming*	• Chatting dan diskusi dalam forum platform ITS. • *Chat and discussion in ITS platform forum.*	• Kontrak kuliah: - Motivasi belajar - Rencana pembelajaran - Aturan-aturan perkuliahan - Tujuan perkuliahan - Sistem penilaian, buku	**5**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*	Tatap Muka / *In-class* (5)	Daring / *Online* (6)		
(1)	(2)	(3)	(4)			(7)	(8)
	disabilities, the history and development of assistive and welfare technologies..	• *Correct in understanding, answers and analysis* • *Able to explaini the assignments* • *On time submission of assignments.*	***Task 1*** - *Written assignments regarding disabilities, history and development of assistive and welfar*	*, ask and answer.* *[FF : 3 x 50”]* *[SA : 3 x 50”]* *[SS : 3 x 50”]*		ajar/sumber pustaka • Pengenalan pada disabilitas, jenis-jenis disabilitas, sejarah dan perkembangan teknologi assistif dan welfar **[Link materi di MyITSClassroom]** • *Course contract:* *- Motivation to learn* *- Lesson plan* *- Lecture rules* *- Course objective*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						- Assessment system, textbooks / library resources ● *Introduction to disabilities, types of disabilities, history and development of assistive and welfar*	
2-3	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna rungu *Students understand and able to explain about assistive technology for deaf disabilities*	● Kebenaran pemahaman, jawaban dan analisa ● Keberhasilan menjelaskan tugas ● Ketepatan waktu pengumpulan tugas	**Non-tes :** **Tugas 2:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna rungu ***Non-test :***	● Kuliah dan brainstorming , tanya jawab. 2x[TM: 3 x 50”] 2x[BM: 3 x 50”] 2x[PT : 3x 50”]		● Teknologi assistif untuk disabilitas tuna rungu : pengenalan sistem auditori pada manusia, akustik pendengaran, anatomi dan fisiologi sistem auditori, klasifikasi	**5**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
		• *Correct in understanding, answers and analysis* • *Able to explaini the assignments* • *On time submission of assignments.*	***Task 2:*** *Written assignment regarding assistive technology for deaf disabilities*	• *Presentation and brainstorming , ask and answer.* *2x[FF : 3 x 50”]* *2x[SA : 3 x 50”]* *2x[SS : 3 x 50”]*		hearing-loss, treatment (medis dan nonmedis), audiologi (metode pengukuran, pure-tone audiometry, immittance, Electric Response Audiometry (ERA), audiometric equipment design and calibration, artificial ears), induction-loop systems, infrared communication systems, telephone technology, alarm and alerting systems	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						• Isu dan perkembangan terkini terkait peralatan assistif untuk tuna rungu • *Assistive technology for deaf disabilities: introduction to the auditory system in humans, auditory acoustics, auditory system anatomy and physiology, hearing-loss classification, treatment (medical and non-medical), audiology*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						(measurement methods, pure-tone audiometry, immittance, Electric Response Audiometry (ERA), audiometric equipment design and calibration, artificial ears), induction-loop systems, infrared communication systems, telephone technology, alarm and alerting systems • *Recent issues and developments regarding assistive*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						equipment for the deaf	
4 - 5	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna wicara *Students understand and are able to explain about assistive technology for mute disabilities*	• Kebenaran pemahaman, jawaban dan analisa • Keberhasilan menjelaskan tugas • Ketepatan waktu pengumpulan tugas • *Correct in understanding, answers and analysis* • *Able to explaini the assignments*	**Non-tes :** **Tugas 3:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna wicara ***Non-test :*** ***Task 3:*** *Written assignment regarding assistive technology for mute disabilities*	• Kuliah dan brainstorming , tanya jawab. 2x[TM: 3 x 50”] 2x[BM: 3 x 50”] 2x[PT : 3x 50”] • *Presentation and brainstorming , ask and answer. 2x[FF : 3 x 50”]*		• Teknologi assistif untuk disabilitas tuna wicara : pengenalan mekanisme produksi sinyal suara pada manusia (struktur organ, vocal tract, speech production model), intonasi dan fluktuasi suara, pemrosesan sinyal suara, sistem pengenalan	**5**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
		• *On time submission of assignments.*		*2x[SA : 3 x 50"]* *2x[SS : 3 x 50"]*		suara, electro-larynx (konsep dasar, analisa, perancangan), artifitial larync implant, voice synthesizer, Augmentative and Alternative Communication aids (AAC), Voice Output Communication Aids (VOCA) • Isu dan perkembangan terkini terkait peralatan assistif	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						untuk tuna wicara • *Assistive technology for mute disabilities: recognition of speech signal production mechanisms in humans (organ structure, vocal tract, speech production model), voice intonation and fluctuation, speech signal processing, speech recognition systems, electro-larynx (basic*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						concepts, analysis, design) , artificial larync implant, voice synthesizer, Augmentative and Alternative Communication aids (AAC), Voice Output Communication Aids (VOCA) ● *Latest issues and developments related to assistive equipment for the mute disabilities*	
6-7	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna netra	● Kebenaran pemahaman, jawaban dan analisa ● Keberhasilan menjelaskan tugas	**Non-tes :** **Tugas 4:** Tugas tertulis mengenai teknologi assistif	● Kuliah dan brainstorming , tanya jawab. 2x[TM: 3 x 50”]		● Teknologi assistif untuk disabilitas tuna netra : pengenalan	**5**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
	Students understand and are able to explain about assistive technology for blind disabilities	• Ketepatan waktu pengumpulan tugas • *Correct in understanding, answers and analysis* • *Able to explaini the assignments* • *On time submission of assignments.*	untuk disabilitas tuna netra ***Non-test :*** ***Task 4:*** *Written assignment regarding assistive technology for blind disabilities*	2x[BM: 3 x 50”] 2x[PT : 3x 50”] • *Presentation and brainstorming , ask and answer.* *2x[FF : 3 x 50”]* *2x[SA : 3 x 50”]* *2x[SS : 3 x 50”]*		tentang persepsi, sistem visual (mata), *sight measurement, haptic perceptual system*, teknologi untuk mobilitas dan navigasi, teknologi Braille *(electronic refreshable displays, writers, and note takers)* • Isu dan perkembangan terkini terkait peralatan assistif untuk tuna netra	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						• *Assistive technology for blind disabilities: recognition of perception, visual system (eye), sight measurement, haptic perceptual system, technology for mobility and navigation, Braille technology (electronic refreshable displays, writers, and note takers)*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						• *Recent issues and developments related to assistive equipment for the blind*	
8	**EVALUASI TENGAH SEMESTER** *MID-SEMESTER EXAM*						**20**
9 - 10	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna daksa. *Students understand and are able to explain about assistive technology for the disabled.*	• Kebenaran pemahaman, jawaban dan analisa • Keberhasilan menjelaskan tugas • Ketepatan waktu pengumpulan tugas • *Correct in understanding, answers and analysis*	**Non-tes :** **Tugas 5:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna daksa ***Non-test :*** ***Task 5:*** *Written assignment*	• Kuliah dan brainstorming , tanya jawab. 2x[TM: 3 x 50”] 2x[BM: 3 x 50”] 2x[PT : 3x 50”] • *Presentation and*		• Teknologi assistif untuk disabilitas tuna daksa : sistem gerak pada manusia, gangguan gerak dan penyebabnya (neuro-muskular, struktur tulang, penyakit, kecelakaan),	**5**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
		• *Able to explaini the assignments* • *On time submission of assignments.*	*regarding assistive technology for disabled*	*brainstorming , ask and answer.* *2x[FF : 3 x 50”]* *2x[SA : 3 x 50”]* *2x[SS : 3 x 50”]*		pengenalan sistem pengukuran gerak pada manusia, kursi roda elektrik (*wheelchair and mobility aids)*, eksoskeleton, *special seating and positioning*, ortosis dan prosthesis • Isu dan perkembangan terkini terkait peralatan assistif untuk tuna daksa • *Assistive technology for*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						disabled people: motion systems in humans, movement disorders and their causes (neuro-muscular, bone structure, disease, accidents), introduction to motion measurement systems in humans, electric wheelchairs (wheelchair and mobility aids), exoskeleton,	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*	Tatap Muka / *In-class* (5)	Daring / *Online* (6)		
(1)	(2)	(3)	(4)			(7)	(8)
						special seating and positioning, orthosis and prosthesis ● *Latest issues and developments related to assistive equipment for the disabled*	
11 - 12	Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna grahita *Students understand and are able to explain about assistive technology for mentally disabled people*	● Kebenaran pemahaman, jawaban dan analisa ● Keberhasilan menjelaskan tugas ● Ketepatan waktu pengumpulan tugas	**Non-tes :** **Tugas 6:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna grahita ***Non-test :***	● Kuliah dan brainstorming , tanya jawab. 2x[TM: 3 x 50”] 2x[BM: 3 x 50”] 2x[PT : 3x 50”]		● Teknologi asistif untuk disabilitas tuna grahita : pengenalan tentang tuna grahita, klasifikasi kelainan, (cognition and learning	**5**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
		• *Correct in understanding, answers and analysis* • *Able to explaini the assignments* • *On time submission of assignments.*	***Task 6:*** *Written assignment regarding assistive technology for mentally disabled*	• *Presentation and brainstorming , ask and answer. 2x[FF : 3 x 50"] 2x[SA : 3 x 50"] 2x[SS : 3 x 50"]*		disabilities), computer software for learning and recording, telecare and home monitoring systems (SOS call alarm), electronic pre-recorded voice memory aid and timed reminder • Isu dan perkembangan terkini terkait peralatan assistif untuk tuna grahita	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
						• *Assistive technology for mentally disabled: introduction to the mentally disabled, classification of disorders, (cognition and learning disabilities), computer software for learning and recording, telecare and home monitoring*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*	Tatap Muka / *In-class* (5)	Daring / *Online* (6)		
(1)	(2)	(3)	(4)			(7)	(8)
						systems (SOS call alarm), electronic pre-recorded voice memory aid and timed reminder ● *Recent issues and developments related to assistive equipment for the mentally disabled*	
13-15	Mahasiswa memahami dan mampu menjelaskan tentang teknologi welfar untuk fasilitas publik dan pelayanan social, isu dan perkembangan terkini	● Kebenaran pemahaman, jawaban dan analisa ● Keberhasilan menjelaskan tugas	**Non-tes :** **Tugas 7:** Tugastertulis mengenai teknologi welfar untuk fasilitas	● Kuliah dan brainstorming , tanya jawab. 2x[TM: 3 x 50”]		● Teknologi welfar untuk fasilitas publik dan pelayanan social, hukum, etika, isu	**30**

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment;* *[Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material* *[Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
	Students understand and are able to explain about Welfar technology for public facilities and social services, the latest issues and developments	• Ketepatan waktu pengumpulan tugas • *Correct in understanding, answers and analysis* • *Able to explaini the assignments* • *On time submission of assignments.*	publik dan pelayanan social, isu dan perkembangan terkini **Presentasi :** Penentuan tema presentasi diberikan pada minggu ke – 9. Proses presentasi dilakukan pada minggu ke – 14-15	2x[BM: 3 x 50”] 2x[PT : 3x 50”] • *Presentation and brainstorming , ask and answer.* *2x[FF : 3 x 50”]* *2x[SA : 3 x 50”]* *2x[SS : 3 x 50”]*		dan perkembangan terkini • *Welfar technology for public facilities and social services, law, ethics, current issues and developments*	

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
			Non-test : ***Task 7 :*** *Written assignment regarding welfare technology for public facilities and social services, current issues and developments* ***Presentation*** *The theme for the presentation was given in the 9th week. The*				

Mg ke/ *Week*	Kemampuan akhir tiap tahapan belajar (Sub-CPMK) / *Final ability of each learning stage (LLO)*	Penilaian / *Assessment*		Bantuk Pembelajaran; Metode Pembelajaran; Penugasan Mahasiswa; [Estimasi Waktu] / *Form of Learning; Learning Method; Student Assignment; [Estimated Time]*		Materi Pembelajaran [Pustaka] / *Learning Material [Reference]*	Bobot Penilaian /*Assess-ment Load* (%)
		Indikator / *Indicator*	Kriteria & Teknik / *Criteria & Techniques*				
(1)	(2)	(3)	(4)	Tatap Muka / *In-class* (5)	Daring / *Online* (6)	(7)	(8)
			presentation process was carried out in the 14-15th week				
16	EVALUASI AKHIR SEMESTER *FINAL-SEMESTER EXAM*						20

TM=Tatap Muka, **PT**=Penugasan Terstuktur, **BM**=Belajar Mandiri.
***FF** = Face to Face, **SA** = Structured Assignment, **SS** = Self Study.*

II. Rencana Asesmen & Evaluasi (RAE) / *Assessment & Evaluation Plan*

	ASSESSMENT & EVALUATION PLAN BACHELOR DEGREE PROGRAM OF BIOMEDICAL ENGINEERING - FTEIC ITS **Course : Assistive and Welfare Technologies**		**RA&E** Write Doc Code
Kode/*code*: **EB234904**	**Bobot sks/*credits* (T/P): 3/0**	**Rumpun MK: Teknik Biomedik** ***Course Cluster: Biomedical Engineering***	Peminatan *Specialization*
OTORISASI ***AUTHORIZATION***	**Penyusun RA & E** ***Compiler A&EP*** **Nada Fitrieyatul H, S.T, M.T**	**Koordinator RMK** ***Course Cluster Coordinator*** **Ir. Josaphat Pramudianto, M.Eng**	**Ka DEP** ***Head of DEP*** **Dr. Achmad Arifin, S.T., M.Eng.**

Mg ke/ *Week* (1)	**Sub CP-MK / *Lesson Learning Outcomes (LLO)* (2)**	**Bentuk Asesmen (Penilaian) *Form of Assessment* (3)**	**Bobot / *Load* (%) (4)**
1	**Sub CP-MK 1:** Mahasiswa memahami dan mampu menjelaskan tentang disabilitas, sejarah dan perkembangan teknologi assistif dan welfar ***LLO 1:*** *Students understand and are able to explain*	**Non-tes :** **Tugas 1** - Tugas tertulis mengenai disabilitas, sejarah dan perkembangan teknologi assistif dan welfar. **Tes:** Soal 1 pada ETS ***Non-tes*** ***Task 1*** *Written assignments regarding disabilities, history and development of assistive and welfar* ***Test:*** *Question 1 in Mid Exam*	5

	disabilities, the history and development of assistive and self-help technology..		
2-3	**Sub CP-MK 2:** Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna rungu ***LLO 2:*** *Students understand and able to explain about assistive technology for deaf disabilities*	**Non-tes :** **Tugas 2:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna wicara **Tes:** Soal 2 dan 3 Pada ETS ***Non-test :*** ***Task 2:*** *Written assignment regarding assistive technology for mute disabilities* ***Test:*** *Question 2 and 3 in Mid Exam*	5
4-5	**Sub CP-MK 3:** Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna wicara ***LLO 3:*** *Students understand and are able to explain about assistive technology for mute disabilities*	**Non-tes :** **Tugas 3:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna wicara **Tes:** Soal 4 pada ETS ***Non-test :*** ***Task 3:*** *Written assignment regarding assistive technology for mute disabilities* ***Test:*** *Question 4 in Mid Exam*	5
6-7	**Sub CP-MK 4:** Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk	**Non-tes :** **Tugas 4:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna netra **Tes:** Soal 5 dan 6 pada ETS Soal 1 pada EAS	5

	disabilitas tuna netra ***LLO 4:*** *Students understand and are able to explain about assistive technology for blind disabilities*	 ***Non-test :*** ***Task 4:*** *Written assignment regarding assistive technology for blind disabilities* ***Test:*** *Question 5 and 6 in Mid Exam* *Question 1 in Final Exam*	
8	**Evaluasi Tengah Semester** ***Mid Exam***	**Tes:** Ujian Tulis/Ujian Daring ***Test:*** *Writing Exams / Online Exams*	20
9-10	**Sub CP-MK 5:** Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna daksa. ***LLO 5:*** *Students understand and are able to explain about assistive technology for the disabled.*	**Non-tes :** **Tugas 5:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna daksa **Tes:** Soal 2 pada EAS ***Non-test :*** ***Task 5:*** *Written assignment regarding assistive technology for disabled* ***Test:*** *Question 2 in Final Exam*	5
12	**Sub CP-MK 6:** Mahasiswa memahami dan mampu menjelaskan tentang teknologi assistif untuk disabilitas tuna grahita ***LLO 6:*** *Students understand and*	**Non-tes :** **Tugas 6:** Tugas tertulis mengenai teknologi assistif untuk disabilitas tuna grahita **Tes:** Soal 3 dan 4 pada EAS ***Non-test :*** ***Task 6:*** *Written assignment regarding assistive technology for mentally disabled* ***Test:***	5

	are able to explain about assistive technology for mentally disabled people	*Question 3 and 4 in Final Exam*	
14	**Sub CP-MK 7:** Mahasiswa memahami dan mampu menjelaskan tentang teknologi welfar untuk fasilitas publik dan pelayanan social, isu dan perkembangan terkini ***LLO 7:*** *Students understand and are able to explain about Welfar technology for public facilities and social services, the latest issues and developments*	**Non-tes :** **Tugas 7 :** Tugas tertulis mengenai teknologi welfar untuk fasilitas publik dan pelayanan social, isu dan perkembangan terkini **Presentasi :** Penentuan tema presentasi diberikan pada minggu ke – 9. Proses presentasi dilakukan pada minggu ke – 14-15 **Tes:** Soal 5 dan 6 pada EAS ***Non-test :*** ***Task 7 :*** *Written assignment regarding welfare technology for public facilities and social services, current issues and developments* ***Presentation*** *The theme for the presentation was given in the 9th week. The presentation process was carried out in the 14-15th week* ***Test:*** *Question 5 and 6 in Final Exam*	30
16	**Evaluasi Akhir** ***Final Exam***	**Tes:** Ujian Tulis/Ujian Daring ***Test:*** *Writing Exams / Online Exams*	20
		Total bobot penilaian ***Total assessment load***	**100%**

- **Indikator Pencapaian CPL Pada MK** / ***Indicator of PLO achievement charged to the course***

CPL yang dibebankan pada MK / ***PLO charged to the course***	**CPMK** / ***Course Learning Outcome (CLO)***	**Minggu ke** / ***Week***	**Bentuk Asesmen** / ***Form of Assessment***	**Bobot** / ***Load* (%)**
CPL-02 / *PLO-02*	CPMK 1 / *CLO 1*	*Week- 1*	*Task 1*	5
		Week- 8	*Mid Exam Question 1*	4
CPL-03 / *PLO-03*	CPMK 4 / *CLO 4*	*Week- 6-7*	*Task 4*	5
		Week 8	*Mid Exam Question 5 and 6*	6
		Week- 16	*Final Exam Question 1*	4
	CPMK 5 / *CLO 5*	*Week- 9-10*	*Task 5*	5
		Week 16	*Final Exam Question 2*	4
CPL-05 / *PLO-05*	CPMK 2 / *CLO 2*	*Week- 2-3*	*Task 2*	5
		Week- 8	*Mid Exam Question 2 and 3*	6
	CPMK 3 / *CLO 3*	*Week- 4-5*	*Task 3*	5
		Week- 8	*Mid Exam Question 4*	4
	CPMK 6 / *CLO 6*	*Week- 11-12*	*Task 6*	5
		Week 16	*Final Exam Question 3 and 4*	6

CPL-06 / *PLO-06*	CPMK 7 / *CLO 7*	*Week 14-15*	*Task 7*	5
		Week 14-15	*Presentation*	25
		Week 16	*Final Exam Question 5 and 6*	6
				∑ = 100%

No	*Form of Assessment*	*PLO-01*	*PLO-02*	*PLO-03*	*PLO-04*	*PLO-05*	*PLO-06*	*PLO-07*	*PLO-08*	*PLO-09*	*PLO-10*	*PLO-11*	*PLO-12*	*Total*
1	*Task 1*		0.05											**0.05**
2	*Task 2*					0.05								**0.05**
3	*Task 3*					0.05								**0.05**
4	*Task 4*			0.05										**0.05**
5	*Task 5*			0.05										**0.05**
6	*Task 6*					0.05								**0.05**
7	*Task 7*						0.05							**0.05**
8	*Presentation*						0.25							**0.25**
9	*Mid Exam*		0.04	0.06		0.10								**0.20**
10	*Final Exam*			0.08		0.06	0.06							**0.20**
	Total		0.09	0.24		0.31	0.36							**1**