Improving Malaysian HE Knowledge Towards a Wood and Furniture Industry 4.0



Deliverable 2.2: Joint Curriculum

Prepared	Verified	Approved
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1. INTRODUCTION

This document reports the results performed in tasks "T2.2: Design and organization of training paths: Joint Curriculum" and "T2.3: Methodological aspects" in the framework of the WP2 "Training path, learning content structure and methodological aspects".

The aim of this task, leaded by KIT, is to design and organize the training path: Joint Curriculum (subject-centered), approaching the Malaysian Qualification Framework (MQF) requirements. The results of the report D2.1 "Definition of the Learning Outcomes" were used as a basis for the development of this task.

After the analysis of the results of the WP1 "Analysis and comparison of the current HE training offer and furniture and woodworking industry", the learning outcomes were defined for each of the identified topics.

The definition of learning outcomes was made considering the Recommendations of the European Qualifications Framework - EQF, and subsequently harmonized with the Programme Learning Outcomes defined in the Malaysian Qualification Framework 2nd edition (MQF2.0) for a Master's Degree Level 7.

The identified learning outcomes have been grouped into 4 modules:

- 1. Processes and Production of Furniture.
- 2. Intelligent and Sustainable design.
- 3. Wood and New Materials.
- 4. Innovation Management.

For each module, a number of courses have been identified and defined, organised in a coherent way and considering the requirements indicated in the Education Program Standard (EPS).

As an annex to this report, is the **Deliverable 2.3 "Methodological Aspects"**, which describes the main methodological aspects of the Master Degree, adapted to those currently in use in Malaysian universities.

The Joint Curriculum was validated by experts from the furniture and wood industry, as well as by teachers and students. The result of this Validation is included in **Deliverable 2.4 ''Joint Curriculum Validation''.**



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With the completion of this work we have achieved **Milestone 2**: "Define and describe learning outcomes", and **Milestone 3**: "Determine the best training methodology and path". Moreover, this work is also linked to specific project objective **SO2**: "Create an innovative learning pathway able to provide HE students the most important competences and skills related with Industry4.0.

This new learning pathway will aim to improve the level of specific and transversal competences and skills, with particular regard to those relevant for the labour market in the furniture sector, such as management, entrepreneurship, language competences and leadership".

The results of this report are an essential point for the correct development of the WP3: "Develop of Training Materials and guides for trainers", as will set the basis for the development of the necessary training materials that will made up the Making 4.0 Master degree.

2. PROGRAMME AIMS AND OBJECTIVES.

An education programme at the master's level aims to provide graduates with advanced knowledge in specialized areas of education, with clear directions and pathways to acquire, generate, enhance, hone knowledge and skills, whilst making cross-linkages with other knowledge disciplines such as the humanities, the social sciences and the physical sciences.

The programme objective at the master's level is specifically to educate and train learners to become graduate scholar-teachers who are able to:

- make judgments of relevant theories and practices and demonstrate capability of producing new and creative knowledge in order to be effective and inspiring professionals;
- 2. critically analyse, and synthesize the understanding of their own sources of mature professional knowledge and professional practices to solve significant problems;
- 3. plan and execute innovative projects, research initiatives and write dissertations, theses and reports for the purpose of building and applying knowledge for the benefit of the profession and society as a whole;
- 4. demonstrate capabilities in generating and communicating knowledge effectively through the practice of life-long learning and life-long contribution;



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- 5. lead and participate in knowledge generation and in championing intellectual property rights and acknowledgments of original works by others, guarding against plagiarism and other academic improprieties; and
- 6. acquire general knowledge and develop specializations, individual talents and potentialities. [1]

MAKING4.0 is in line with the actions pointed in the Malaysia Education Blueprint (2015-2025) and the objectives of the Ministry of International Trade and Industry in developing the National Industry 4.0 policy framework in order to ensure adequate supply of human capital and skills. MAKING4.0 aims to develop an innovative Master Degree to modernize the current training offer in wood and furniture technology processes and design around Industry 4.0 in Malaysia.

For the selection of training contents, feedback obtained through surveys and face-to-face meetings has been considered, both from university students of various profiles and from stakeholders in the furniture and wood sector. The experience of the companies and universities that make up the MAKING 4.0 consortium has also been taken into account, as well as the contents previously described in the project proposal.

The contents have been organized in such a way that the student acquires the knowledge gradually and over two academic semesters. In the first semester they will achieve the objectives and outcomes more related to the new technologies and sustainable design and in the second those related to the new business models, production processes and new materials. In addition, they will carry out Internships to put into practice what they have learned and to feed on the experience of working in different sectors. In order to pass the Master, the student must complete the Master Thesis, to consolidate all the knowledge acquired.

2.1. Access requirements.

Access requirements for the master's degree "Master of Advanced Technologies and Innovation for Wood-based Industry".

Both national and international students must have a bachelor's degree to be eligible for the master's degree. Each university in Malaysia has a Cumulative Grade Point Average (CGPA) established for access to a Master's degree. Universities such as UiTM and UKM have established that to access a Master's degree a student must have at least 2.75 CGPA.



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CGPA stands for Cumulative Grade Point Average. A CGPA is the average of the cumulative marks for all semesters taken. The amount of pointers from the first semester will be added with the total marks of each semester right up to the final semester. Students can increase their CGPA by increasing their GPAs for each semester.

$$CGPA = \frac{Total \ Grade \ Point \ for \ all \ semesters}{Total \ Credit \ Hours \ for \ all \ course \ codes}$$

Depending on the university's regulations, CGPA calculations for each university in Malaysia may differ from one another.

GPA stands for Grade Point Average. A GPA is a student's mark and grade for each semester. It is calculated based on marks for each subject taken for a semester. Marks from each subject will be multiplied and divided with the number of credit hours taken. [2]

$$GPA = \frac{Total \ Grade \ Point \ (Gradde \ point \ x \ Credit)}{Total \ Credit \ Hours}$$

For more information it is advisable to contact the university where the application will be made.

3. TRAINING PATH. MAKING 4.0 MASTER'S STRUCTURE

The name of the Master developed under the MAKING 4.0 project has been assigned considering the opinion of experts in higher education and in coherence with the objectives of the programme.

MASTER OF ADVANCED TECHNOLOGIES AND INNOVATION FOR WOOD-BASED INDUSTRY.

The Program Educational Objectives for this master's programme aim to provide students with theoretical and applied knowledge of new technologies in industry 4.0 and the latest trends in materials and processes in the wood sector. Students will be able to apply the key enabling technologies in the wood industry while being aware of and committed to a more productive and sustainable society.



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The Program Educational Objectives (PEO) of this program are to produce graduates that:

- **PEO 1.** Knowledgeable in the field of Key Enabling Technologies (KET) of the Industry 4.0 and current trends of wood materials and processes with appropriate skills and attitude to work in wood-based industry sector.
- **PEO 2.** Capable to apply the Key Enabling Technologies (KET) and the sustainable innovation within the production processes of the wood-based industry.
- **PEO 3.** Innovative and creative, as well as aware and committed with a more sustainable and technological productive society.

The program's learning outcomes (PLO) reflect the 7 MQF domains and are consistent with and support the HEP vision and mission.

At the end of this program, students are able to:

- **PEO 1.** Demonstrate mastery of KETs knowledge in the wood and furniture industry.
- **PEO 2.** Apply practical skills about digital transformation in the wood and furniture industry.
- PEO 3. Relate ideas to societal issues in wood and furniture industry.
- **PEO 4.** Conduct research with minimal supervision and adhere to legal, ethical and professional codes of practice.
- **PEO 5.** Demonstrate leadership qualities through communicating and working effectively with peers and stakeholders.
- **PEO 6.** Generate solutions to problems in wood and furniture industry using scientific and critical thinking skills.

PEO 7. Manage information for lifelong learning.

The program is designed to prepare students for the world of work and the new changes that are taking place due to the digital transformation in the industry and especially in the wood-based industry, as well as for active citizenship. It is aligned with and supports the vision, mission and objectives of higher education providers (HEPs) through:

- Providing knowledge and practical skills based on scientific principles.
- Inculcation of attitudes, ethics, sense of professionalism and leadership skills for the advancement of society within the framework of national aspiration.



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- Building the capacity to analyse and solve problems, as well as to critically and creatively assess and make decisions based on evidence and experience.
- The development of the quest for knowledge and the capacity for lifelong learning that are essential for the continuous development of knowledge and skills that are parallel to the rapid advancement of global knowledge.
- The consideration of other imperatives that are necessary for society and those of the markets, as well as those that are relevant to the local, national and international market context. [1]

The validation of this alignment is reflected in the mapping of the above statements to the specific Programmes Learning Outcomes of this program.

	Program Educational Objective (PEO)							
	Master of Advanced Technology and Innovation for Wood-Based Industry	Knowledgeable in the field of Key Enabling Technologies (KET) of the Industry 4.0 and current trends of wood materials and processes with appropriate skills and attitude to work in wood-based industry.	Capable to apply the Key Enabling Technologies (KET) and the sustainable innovation within the production processes of the wood- based industry.	Innovative and creative, as well as aware and committed with a more sustainable and technological productive society.				
	Providing knowledge and practical skills based on scientific principles.	\checkmark	~					
cation Poviders	Inculcation of attitudes, ethics, sense of professionalism and leadership skills for the advancement of society within the framework of national aspiration.			V				
Objectives of Higher Education Poviders	Building the capacity to analyse and solve problems, as well as to critically and creatively assess and make decisions based on evidence and experience.		1	\checkmark				
Objectives	The development of the quest for knowledge and the capacity for lifelong learning that are essential for the continuous development of knowledge and skills that are parallel to the rapid advancement of global knowledge.	\checkmark	V					
	The consideration of other imperatives that are necessary for society and those of the markets, as well as those that are relevant to the local, national and international market context.	~		\checkmark				

Table 1. Mapping Objective of HEP with PEO.



making 40

Making4.0 Programme Learning Outcomes (PLOs) and Programme Educational objectives have been mapped, in order to ensure that all PEOs are addressed through the defined PLOs. See table 2.

Matrix of programs learning outcomes against the program educational objectives:

			Program Learning Outcome (PLO)						
PEOS WITH PLOS	No.	Program Educational Objective (PEO) Master of Advanced Technology and Innovation for Wood- Based Industry	demonstrate mastery of KETs knowledge in the wood and furniture industry	apply practical skills about digital transformation in the wood and furniture industry	relate ideas to societal issues in wood and furniture industry	conduct research with minimal supervision and adhere to legal, ethical and professional codes of practice	demonstrate leadership qualities through communicating and working effectively with peers and stakeholders	generate solutions to problems in wood and furniture industry using scientific and critical thinking skills	manage information for lifelong learning
MAPPING			с	Р	A	A	А	С	Α
AAPI			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
2	1.	knowledgeable in the field of Key Enabling Technologies (KET) of the Industry 4.0 and current trends of wood materials and processes with appropriate skills and attitude to work in wood- based industry.	\checkmark	\checkmark					\checkmark
	2.	capable to apply the Key Enabling Technologies (KET) and the sustainable innovation within the production processes of the wood based industry.		\checkmark				\checkmark	\checkmark
	3.	Innovative and creative, as well as aware and committed with a more sustainable and technological productive society.			\checkmark	\checkmark	\checkmark		

Table 2. Mapping PEOs with PLOs.





The following table shows the mapping between MQF domain of learning outcome, bloom taxonomy and soft skills:

BLOOM TAXONOMY	LEVEL OF BLOOM TAXONOMY DOMAIN	PROGRAM LEARNING OUTCOME (PLO)	SOFT SKILL*	MQF DOMAIN OF LEARNING OUTCOME	INTENDED PLO STATEMENT FOR MASTER PROGRAM
COGNITIVE	C1 – C6	PLO1	-	Knowledge of Discipline Area	demonstrate mastery of knowledge of KETs in the wood and furniture industry
(C)	C1 – C6	PLO6	CTPS	Problem Solving and Scientific Skills	generate solutions to problems using scientific and critical thinking skills
PSYCHOMOTOR (P)	P1 – P7	PLO2	-	Practical Skills	apply practical skills about digital transformation in the wood and furniture industry
AFFECTIVE	A1 – A5	PLO3	TS	Social Skills and Responsibilities	relate ideas to societal issues in wood production processes
(A)	A1 – A5	PLO4	EM	Values, Attitudes and Professionalism	conduct research with minimal supervision and adhere to legal, ethical and professional codes of practice
	A1 – A5	PLO5	CS, LS	Communication, Leadership and Team Skills	demonstrate leadership qualities through communicating and working effectively with peers and stakeholders
	A1 – A5	PLO7	LL	Information Management and Lifelong Learning Skills	manage information for lifelong learning

Table 3. Mapping between MQF domain of learning outcome, bloom taxonomy and soft skills.

*Soft skills abbreviation:	Level of Cognitive (C)	Level of Psychomotor (P) domain:	Level of Affective (A)
CTPS : critical thinking and problem	domain:		domain:
solving TS : social skills EM : Ethics, morale, values, and professionalism CS : communication skills LS : leadership skills	C6 – Creating C5 – Evaluating C4 – Analyzing C3 – Applying C2 – Understanding C1 – Remembering	P7 – Origination P6 – Adaptation P5 – Complex overt response P4 – Mechanism P3 – Guided response P2 – Set P1 – Perception	A5 – Internalizing Values A4 – Organization A3 – Valuing A2 – Responding A1 – Receiving





Constructive alignment between learning outcomes, teaching and learning activities, and assessment activities:

BLOOM TAXONOM Y		PROGRAM LEARNING OUTCOME (PLO)	SOFT SKILL*	MQF DOMAIN OF LEARNING OUTCOME	Teaching and Learning Activities	Assessment Activities
COGNITIV E	C1 – C6	PLO1	Ŧ	Knowledge of Discipline Area	Lecture, Tutorial, Self-directed Learning, SCL type like PBL, POBPL, etc.	Oral or written examination, viva, report, log book, project paper etc.
(C)	C1 – C6	PLO6	CTPS	Problem Solving and Scientific Skills	Lecture, practical, tutorial, self-directed learning, experiential learning, SCL type like PBL, POPBL, etc.	Exam, assignment, project report, case study, role- play, final year project, etc.
PSYCHOM OTOR (P)	P1 – P7	PLO2	-	Practical Skills	Practical work, laboratory experiment, demonstrations, etc.	Observation through practical work (rubric)
AFFECTIV E	A1 – A5	PLO3	TS	0.0000000000000000000000000000000000000	SCL activities like group discussion, role play, case study, PBL, POPBL, field work, etc	Observation rubric, peer assessment, etc.
(A)	A1 – A5	PLO4	EM		SCL activities like group discussion, role play, case study, PBL, POPBL, field work, etc	Observation rubric, supervisory report, peer assessment, etc.
	A1 – A5	PLO5	CS, LS		SCL activities like group discussion, role play, case study, PBL, POPBL, field work, etc	Observation rubric, assignment, essay, case study report, presentation, scenario-based debate, etc.
	A1 – A5	PLO7		Information Management and Lifelong Learning Skills	SCL activities like group discussion, case study, PBL, POPBL, etc	Literature review, assignment, case study report, final year project, etc.

Table 4. Constructive alignment between learning outcomes, teaching and learning activities, and assessment activities





The master's program will last one academic year, and the modules to be taught will be divided between the two semesters. After the analysis of the different topics and learning outcomes identified in the first tasks developed during the first months of the project and considering the current situation in Europe regarding Masters related to both industry 4.0 and wood technology and science, the following modules and consequent courses have been identified:

Modules

	e 1: Processes and ction of Furniture.	Module 2: Intelligent and Sustainable Design.	
	Master of Advanced Technologies and Innovation for Wood -Based Industry.		
Module	e 3: Wood and New Materials.	Module 4 Innovation Management.	

Internship and Master Thesis

Table 5: Modules Making 4.0 Master's Degree.





MODULE 1: PROCESSES AND PRODUCTION OF FURNITURE.

- Digital Transformation in the Industry 4.0
- Production processes in the furniture sector.
- Automation and mechanization. Low Cost Automation.
- Additive manufacturing
- Internet of Things (IoT) applied to wood-based industry
- Wireless technologies for logistic and manufacturing
- Network communications in the industry
- Robotics applied to the wood-based industry
- Augmented reality
- Simulation and 3D Scanning
- Cloud Computing and Big Data applied to wood-based industry

MODULE 2: INTELLIGENT AND SUSTAINABLE DESIGN.

- Eco and sustainable design.
- Product design and digitalization.
- Circular Economy in the wood and Furniture Sector.

MODULE 3: WOOD AND NEW MATERIALS.

- Wood science.
- Materials for furniture manufacturing.
- Material processing.

MODULE 4: INNOVATION MANAGEMENT.

- Innovation management systems.
- Technological surveillance and competitive intelligence.
- Management Systems. Lean Manufacturing

OTHER COMPONENTS

- Internship/Practicum
- Master Thesis

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The minimum number of ECTS credits (Credit hours) for a Master's degree in Malaysia is 40. A Malaysian credit corresponds to 1.5 credits in the European framework¹.

Based on the basic requirements for the master's degrees by coursebook defined in the Education Program Standard – EPS, the structure of the Master Making 4.0 has been defined as follows:

Modules of the Master	ECTS		
Processes and Production of Furniture.	16		
Intelligent and Sustainable design.	4		
Wood and New Materials.	6		
Innovation Management.			
Practicum / Internship	5		
Master Thesis	5		
Total Malaysian Credits	40		

Table 6: Modules of the Master and ECTS credits.

Course Clasification	Credit Value ECTS	Percentage %
Compulsory	28	70,0%
Elective (Optional Subjects)	12	30,0%
Total Credit Value	40	100,00%

Table 7. Percentage of ECTS by Master components.

As can be seen in table 7, the percentage of credits according to the different components of the Master meets the pre-established requirements of the MQF.

Of the four modules defined, two of them, those that make up the body of knowledge of the master's degree, contain the compulsory courses. In the following table, the general structure of the Master can be seen. It shows the name of the modules and their courses, the number of ECTS credits per course and the typology (C= Compulsory, E= Elective).



¹ Henceforth when it is expressed credits in this document it is referenced to Malaysian credits

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Т

	MASTER'S STRUCTU	RE		
	COURSES	ECTS	TYPE	Total ECTS
	Processes and Production of Furniture. Elective subjects. Choose two	L.		16
	Digital Transformation in the Industry 4.0	2	С	
	Production processes in the furniture sector.	2	с	
	Automation and mechanization. Low Cost Automation.	2	с	
	Additive manufacturing	2	с	
	Internet of Things (IoT) applied to wood-based industry	2	с	
MODULE 1	Wireless technologies for logistic and manufacturing	2	с	
	Network communications in the industry	2	E	
	Robotics applied to the wood-based industry	2	E	
	Augmented reality	2	E	
	Simulation and 3D Scanning	2	E	
	Cloud Computing and Big Data applied to wood-based industry	2	E	
	Intelligent and Sustainable design. Elective subjects. Choose two			4
MODULE 2	Eco and sustainable design	2	E	
MODULE 2	Product design and digitalization.	2	E	
	Circular Economy in the wood and Furniture Sector	2	E	
	Wood and New Materials. Compulsory subjects.			6
MODULE 3	Wood science	2	С	
MODULE 3	Materials for furniture manufacturing.	2	с	
	Material Processing	2	С	
	Innovation Management. Elective subjects. Choose two			4
MODULE 4	Innovation management systems	2	E	
WODULE 4	Technological surveillance and competitive intelligence.	2	E	
	Management Systems. Lean manufacturing	2	E	
	Internship			5
Internship &	Internship/Practicum	5	с	
Dissertation	Master Thesis			5
	Master Thesis	5	С	
			TOTAL ECTS:	40

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Table 8. Master's Structure. MAKING 4.0

The number of credits to be taken in each of the modules is indicated. In order to pass the Master, the student must take a total of 15 courses, 6 of which are elective. It is necessary to carry out internships with a total of 5 ECTS credits and the Master thesis to which 5 ECTS credits have been assigned.



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Distribution of work between semesters

For a homogeneous and balanced distribution of the workload between the two academic semesters, the modules and other components have been divided as follows.

MASTER OF ADVANCED TECHN	olog	IES AND	INNOVATION FOR WOOD-BASED INDUSTRY		
FIRST SEMESTER			SECOND SEMESTER		
COURSES	TYPE	ECTS	COURSES	TYPE	ECTS
Processes and Production of Furniture. Elective subjects. Choose two		16	Wood and New Materials. Compulsory subjects.		6
Digital Transformation in the Industry 4.0	С	2	Wood science	С	2
Production processes in the furniture sector.	С	2	Materials for furniture manufacturing.	С	2
Automation and mechanization. Low Cost Automation.	С	2	Material Processing	С	2
Additive manufacturing	С	2	Innovation Management. Elective subjects. Choose two		4
Internet of Things (IoT) applied to wood-based industry	С	2	Innovation management systems	E	2
Wireless technologies for logistic and manufacturing	С	2	Technological surveillance and competitive intelligence.	E	2
Network communications in the industry	E	2	Management Systems. Lean manufacturing	E	2
Robotics applied to the wood-based industry	E	2	Practicum / Internship	С	5
Augmented reality	E	2	Master Thesis	С	5
Simulation and 3D Scanning	E	2	Total ECTS 2nd semester		20
Cloud Computing and Big Data applied to wood-based industry	E	2			
Intelligent and Sustainable design. Elective subjects. Choose two		4			
Eco and sustainable design	E	2			
Product design and digitalization.	Е	2			
Circular Economy in the wood and Furniture Sector	Е	2			
Total ECTS 1st semester		20			

 Table 9. Distribution of courses between semesters.



Courses Information

		Classification (Compulsory/	Credit		grram	e Lea	rning	Outco	mes (Pre-
no.	Name and Code of the Course	Mayor/Minior	Value	P	P	P	P	P	P	P	requisite/Co-
		/Elective)	value		0	0	L		L	L	erquisite
		,,		1	2	3	4	5	6	7	
1	Digital Transformation in the Industry 4.0	Compulsory	2	٧		٧				٧	N
2	Production processes in the furniture sector.	Compulsory	2	٧	V				٧	v	N
3	Automation and mechanization. Low Cost Automation.	Compulsory	2	٧	V	٧			٧		N
4	Additive manufacturing	Compulsory	2	٧	V	٧			٧		N
5	Internet of Things (IoT) applied to wood-based industry	Compulsory	2	٧			v		٧		N
6	Wireless technologies for logistic and manufacturing	Compulsory	2	V					v	٧	N
7	Network communications in the industry	Elective	2	٧			v		v		N
8	Robotics applied to the wood-based industry	Elective	2	٧			٧			v	N
9	Augmented reality	Elective	2	٧		٧			٧		N
10	Simulation and 3D Scanning	Elective	2	٧	V	v			٧		N
11	Cloud Computing and Big Data applied to wood-based industry	Elective	2	٧			v		٧		N
12	Eco and sustainable design	Elective	2	٧		٧	v		٧		N
13	Product design and digitalization.	Elective	2	٧	V	٧					N
14	Circular Economy in the wood and Furniture Sector	Elective	2	٧		٧	v		٧		N
15	Wood science	Compulsory	2	٧	v				٧	٧	N
16	Materials for furniture manufacturing.	Compulsory	2	٧	v				٧	٧	N
17	Material Processing	Compulsory	2	V	٧	٧			v		N
18	Innovation management systems	Elective	2	V	٧			٧	٧		N
19	Technological surveillance and competitive intelligence.	Elective	2	V	٧	٧			V	V	N
20	Management Systems. Lean manufacturing	Elective	2	V	٧			V	v		N

Table 10: Brief description of courses offered in the programme and PLOs covered by each of them.

Description of the courses offered in the program.

The following pages describe the 20 courses² (Compulsories and Electives) that make up the Master Making 4.0 degree, as well as the other components of the training itinerary, the Master Thesis and the Internship.

Two tables are introduced for each of the courses. The first table defines the CLOs and their alignment with the PLOs and the Bloom Taxonomy, as well as showing the teaching and learning activities, and the activities to evaluate each of the CLOs together with the assessment weighting.

The second refers to the "Course Information" table in the "Code of Practices for Program Accreditation" document, which shows more detailed information about each course.



² Access link to the course descriptions: <u>https://drive.google.com/drive/folders/14srirzeFL2NRRM-e0-6ExpPL1T4-NAmX?usp=sharing</u>

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Course: Digital transformation in Industry 4.0. Compulsory.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Affective (A) PLO 3	Affective (A)				
1	Evaluate the possibilities of Industry 4.0 and digital transformation in the wood and furniture sector. (C5 = PLO1)	PLO 1 √	PL0 3	PLO 7				
2	Integrate the benefits of digital transformation in the timber industry. (A4, TS = PLO3)		V					
3	Integrate knowledge of digital transformation into personal, civic, social and employability skills.(A4= PLO4 & PLO7) (EM= PLO4) (LL= PLO7)			4				
	TOTAL (%)	60	40					
					Assessment	Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment	Observation rubric. Group discussion.	Case study report.	Final	Total (%)
1	Evaluate the possibilities of Industry 4.0 and digital transformation in the wood and furniture sector. (C5 = PLO1)	PLO1	Lecture & self-Learning (SCL): Assignment (SCL): Case Study (SCL): Problem-Based Learning (PBL).	10	10	10	30	60
2	Integrate the benefits of digital transformation in the timber industry. (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Problem-Based Learning (PBL). (SCL): Assignment.		10	5		15
3	Integrate knowledge of digital transformation into personal, civic, social and employability skills.(A4, LL= PLO7)	PLO7	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	10	10	5		25
	•		TOTAL (%)	20	30	20	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Digital Trans	formation in	Industry 4.0											
	Course Code :	0													
2.	Synopsis :						a								
				understanding understand th								ncept will t	ransform indust	rial and manufactu	ring companies.
3.	Name(s) of academic staff :										-				
4.	Semester and Year		Sem	ester		1	Year	1							
	offered :					-		_							
5.	Credit Value :	2													
6.	Prerequisite/co- requisite: (if any)	No													
7.	Course Learning Outcom	es (CLO) · At	the end of th	e course the	students will	he able to									
<i>.</i> .	CLO1			of Industry 4.0			on in the woo	d and furnitur	e sector. (C5 :	= PLO1)					
	CLO2			digital transfo											
	CLO3			igital transfor					kills.(A4, LL=	PLO7)					
8.	Mapping of the Course L														
	Please select the Learnin	g Outcome D	omain (LOD)	for each PLO	in the cells a	oove it.								-	
			1		1	Pro	gramme Learn	ing Outcomes	(PLO)		1		1		
	Course Learning	Knowledge of	Practical Skills	Social Skills and	Values, Attitudes and	Communication, Leadership and	Problem Solving	Information Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area	Practical Skills	Responsibilities	Professionalism	Team Skills	and Scientific Skills	s Lifelong Learning Skills						Teaching Method	Assessment wethou
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
														Lecture, self-	Continuous assignment.
	CLO 1	V												Learning, Student-	Final exam.
														Center Learning.	
	CLO 2			v										Lecture, self-	Continuous assignment.
				, v										Center Learning.	continuous usignment.
														Lecture, self-	
	CLO 3							V							Continuous assignment
														Center Learning.	
	Indicate the relevancy bet	ween the CLO c	and PLO by tick	ing "/" the ap	propriate relev	ant hox									
	(This description must be r						6 & 18)								
9.	Transferable Skills (if ap					, ,									
	(Skills learned in the cou	rse of study v	vhich can be i	useful and uti	lized in other	settings)	1	Be able to b	e part of a tea	am that leads	s the digital tr	ansformati	on of a company	γ.	
							2	Know how to	o identify the	new kev tech	nologies of di	gital transf	ormation.		
											nsformation for				
							3			-					
							4	Gain knowle	dge about dig	ital transform	mation.				
10.	Distribution of Student Le	arning Time (SI	LT)												
											Teaching and				
										Guided Lea	Teaching and	d Learning A			•
			Course Cor	ntent Outline				CLO*		Guided Lea	rning (F2F)		ctivities Guided Learning (NF2F)	Independent	SLT
			Course Cor	ntent Outline				CLO*	L	Guided Lea T		d Learning A	Guided	Independent Learning (NF2F)	SLT
	1 Introduction to I4.0. V	Vhat is I4.0?	Course Cor	ntent Outline					-		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F)	
			Course Cor	ntent Outline				CLO*	L 2		rning (F2F)		Guided Learning (NF2F)		SLT 6
	1 Introduction to I4.0. V 2 History of Industrry 4		Course Cor	ntent Outline				CLO1, CLO3	2		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F)	6
	2 History of Industrry 4		Course Cor	ntent Outline					-		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F)	
			Course Cor	ntent Outline				CLO1, CLO3	2		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F)	6
	2 History of Industrry 4. 3 Society 5.0.	0.						CLO1, CLO3 CLO3	2		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4	6
	2 History of Industrry 4	0.						CLO1, CLO3 CLO3	2		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4	6
	2 History of Industrry 4 3 Society 5.0. 4 Digital transformatio	0. n in the wood	l-based indus	try.	tion process			CLO1, CLO3 CLO3 CLO3	2 2 3		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6	6
	2 History of Industrry 4. 3 Society 5.0.	0. n in the wood	l-based indus	try.	tion process.			CLO1, CLO3 CLO3 CLO3	2 2 3		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6	6
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I	0. n in the wood Key Enabling 1	i-based indus Fechnologies	try.	ition process.			CLO1, CLO3 CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2	2 2 3 4		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9	6 6 9 13
	2 History of Industrry 4 3 Society 5.0. 4 Digital transformatio	0. n in the wood Key Enabling 1	i-based indus Fechnologies	try.	ition process.			CLO1, CLO3 CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2,	2 2 3 4		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9	6 6 9 13
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2,	2 2 3 4 5		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10	6 6 9 13 15 9
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	ition process.			CLO1, CLO3 CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2,	2 2 3 4 5		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10	6 6 9 13 15
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	ition process.			CL01, CL03 CL03 CL03 CL01, CL02 CL01, CL02 CL01, CL02, CL01, CL02, CL01, CL02,	2 2 3 4 5 3 4		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10 6 8	6 6 9 13 15 9 12
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indu	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2,	2 2 3 4 5 3		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10	6 6 9 13 15 9
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indu	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO2, CLO2,	2 2 3 4 5 3 4		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10 6 8	6 6 9 13 15 9 12
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indu	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	tion process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO2, CLO2, CLO3, CLO2	2 2 3 4 5 3 4		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10 6 8 6 6	6 6 9 13 15 9 12 9
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indu	0. n in the wood Key Enabling 1 Insformation	I-based indus Fechnologies within the Ind	try. in the produci	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO2, CLO2, CLO3 CLO2, CLO2, CLO3	2 2 3 4 5 3 4		rning (F2F)		Guided Learning (NF2F)	Learning (NF2F) 4 4 6 9 10 6 8 6 6	6 6 9 13 15 9 12 9
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies.	0. n in the wood Key Enabling 1 nsformation ustrry 4.0 in th	-based indus Fechnologies within the In re woood-bas Continuou	try. in the produci dustry sed industry.	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3,	2 2 3 4 5 3 4	T	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 6	6 6 9 13 15 9 12 9 79 5LT
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies. 1	0. n in the wood Key Enabling T Insformation ustrry 4.0 in th	I-based indus Fechnologies within the Ind re woood-bas Performance Continuou	try. in the produci dustry sed industry.	ition process.			CL01, CL03 CL03 CL03 CL01, CL02 CL01, CL02 CL01, CL02 CL01, CL02 CL01, CL02 CL02, CL03 CL02, CL03 CL02, CL03 CL02, CL03 CL02, CL03 CL02, CL03 CL03 CL03, CL03 CL03 CL03 CL03 CL03 CL03 CL03 CL03	2 2 3 4 5 3 4	T	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 6	6 9 13 15 9 12 9 79 Sut 0
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies.	0. n in the wood Key Enabling 1 insformation ustrry 4.0 in th Assignments	I-based indus Fechnologies within the Ind ne woood-bas Continuou 5. rubric. Group	try. in the produci dustry sed industry.	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3,	2 2 3 4 5 3 4	T	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 6	6 6 9 13 15 9 12 9 79 5LT
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	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Inde 8 Case studies. 1 2	0. n in the wood rey Enabling 1 insformation astrry 4.0 in th Assignments Observation	I-based indus Fechnologies within the Ind ne woood-bas Continuou 5. rubric. Group	try. in the produci dustry sed industry.	tion process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2 CLO2, CLO2, CLO3 CLO2, CLO2 CLO3, CLO2 CLO3, CLO2 CLO3, CLO2 CLO3, CLO2 CLO3, CLO3 CLO3, CLO3 CLO3, CLO3 CLO3, CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	2 2 3 4 5 3 4	T	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total	6 9 13 15 9 12 9 79 SLT 0 0 0
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Inde 8 Case studies. 1 2	0. n in the wood rey Enabling 1 insformation astrry 4.0 in th Assignments Observation	I-based indus Fechnologies within the Industry the woood-base rewood-base Continuou	try. in the produci dustry sed industry.	tion process.			CLO1, CLO3 CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO3, CLO3 CLO1, CLO2 CLO3, CLO3 CLO3, CLO3 CLO3, CLO2 CLO3 CLO3, CLO2 CLO3 CLO3, CLO2 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	2 2 3 4 5 3 4	T	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total	6 9 13 15 9 12 9 79 SLT 0 0 0
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies. 1 2 3	0. n in the wood Key Enabling 1 insformation ustrry 4.0 in th Assignments Observation Case study re	I-based indus Fechnologies within the Industry the woood-base rewood-base Continuou	try. in the produci dustry sed industry. s Assessment o discussion.	ition process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3, CLO3, CLO3, CLO3,	2 2 3 4 5 3 4	F2F	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total	6 6 9 13 15 9 12 9 79 SLT 0 0 0 0 0 0 SLT
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	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies. 1 2 3	0. n in the wood Key Enabling 1 insformation ustrry 4.0 in th Assignments Observation Case study re	I-based indus Fechnologies within the Industry the woood-base rewood-base Continuou	try. in the produci dustry sed industry. s Assessment o discussion.	tion process.			CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3, CLO3, CLO3, CLO3,	2 2 3 4 5 3 4	F2F	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total	6 6 9 13 15 9 12 9 79 SLT 0 0 0 0 0 0 SLT
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indu 8 Case studies. 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0. n in the wood Key Enabling T Insformation sstrry 4.0 in th Assignments Observation Case study ro Final Exam	I-based indus Fechnologies within the Ind ne woood-bas Continuou 3. Continuou 3. Tubric. Group eport. Final A :	try. in the produci dustry sed industry. s Assessment seessment		ve Learning Treas	(E.1) of 50%	CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3, CLO3, CLO3, CLO3,	2 2 3 4 5 3 4	F2F	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total	6 6 9 13 15 9 12 9 12 9 79 5 12 9 5 12 9 0 0 0 0 0 0 0 0 0 0 0 12 12 13
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11	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies. 1 1 2 3 1 ***Please tick (v) if this course 1 ***Please tick (v) if this course 1 Course of the Indi 2 Course of the Indi 2 Course of the Indi 2 Course of the Indi 1 Course of the Indi 2 Course of	0. in in the wood Key Enabling 1 insformation insformation istrry 4.0 in th Assignments Observation Case study re Final Exam is a Lathan Indust the CLO's nur the CLO's nur ent to	I-based indus Technologies within the Industry the woood-base rubric. Group eport. Final At tri/ Clinical Placen tri/ Clinical Placen tri/ Clinical Placen tri/ Clinical Placen	try. in the produci dustry ied industry. s Assessment discussion. ssessment nent/ Practicum/ rec to Face, NF2 n 8.	WBL using Effecti F=Non Face to	Face	(ELT) of 50%	CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3, CLO3, CLO3, CLO3,	2 2 3 4 5 3 4	F2F	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total Total Total	6 6 9 13 15 9 12 9 79 5LT 0 0 0 0 0 0 5LT 2 2
11 12	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies. 1 2 3 1 +*Please tick (v) if this course L = Lecture, T = Tutorial, P = Indicate the CLO based or	0. in in the wood Key Enabling 1 insformation insformation istrry 4.0 in th Assignments Observation Case study re Final Exam is a Lathan Indust the CLO's nur the CLO's nur ent to	I-based indus Technologies within the Industry the woood-base rubric. Group eport. Final At tri/ Clinical Placen tri/ Clinical Placen tri/ Clinical Placen tri/ Clinical Placen	try. in the produci dustry ied industry. s Assessment discussion. ssessment nent/ Practicum/ rec to Face, NF2 n 8.	WBL using Effecti F=Non Face to	Face	(E.T) of 50%	CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3, CLO3, CLO3, CLO3,	2 2 3 4 5 3 4	F2F	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total Total Total	6 6 9 13 15 9 12 9 79 5LT 0 0 0 0 0 0 5LT 2 2
	2 History of Industry 4 3 Society 5.0. 4 Digital transformatio 5 Application of some I 6 Benefits of Digital tra 7 Machinery of the Indi 8 Case studies. 1 1 2 3 1 ***Please tick (v) if this course 1 ***Please tick (v) if this course 1 Course of the Indi 2 Course of the Indi 2 Course of the Indi 2 Course of the Indi 1 Course of the Indi 2 Course of	0. in in the wood Key Enabling 1 insformation insformation istrry 4.0 in th Assignments Observation Case study re Final Exam is a Lathan Indust the CLO's nur the CLO's nur ent to	I-based indus Technologies within the Industry the woood-base rubric. Group eport. Final At tri/ Clinical Placen tri/ Clinical Placen tri/ Clinical Placen tri/ Clinical Placen	try. in the produci dustry ied industry. s Assessment discussion. ssessment nent/ Practicum/ rec to Face, NF2 n 8.	WBL using Effecti F=Non Face to	Face	(ELT) of 50%	CLO1, CLO3 CLO3 CLO3 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2 CLO1, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO2, CLO3, CLO3, CLO3, CLO3, CLO3,	2 2 3 4 5 3 4	F2F	rning (F2F)		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 4 6 9 10 6 8 6 7 Total Total Total	6 6 9 13 15 9 12 9 79 5LT 0 0 0 0 0 0 5LT 2 2





Course: Production processes in the furniture sector. Compulsory.

			Assessment We	ightage (%)				
No.	Course Leaning Outcome (CLO)	Cognitive (C) PLO 1	Cognitive (C) PLO 6	Psychomotor (P) PLO 2	Affective (A) PLO 7			
1	Assess the knowledge of solid and panel furniture technology C5	Å						
2	Adapts furniture production CTPS P6		V	Å				
3	Technologically integrates designed furniture and production A4 LL				7			
TOTAL (%)		15	30	50	5			
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment Activit	ties (%)		Total (%)
			Activities	Assignment	Case study	Practical	Final	
1	Assess the knowledge of solid and panel furniture technology (C5= PLO1)	PLO1	Lecture & self-Learning (SCL): Discussion (SCL): Case Study	5	5		5	15
2	Adapts furniture production (CTPS = PLO6) (P6 = PLO2)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	5	5		20	30
		PLO2	(POBL): Testing Practical. Prototype (virt) and Technical Report.	5	5	40		50
3	Technologically integrates designed furniture and production (A4, LL = PLO7)	PLO7	(SCL): Case Study Prototype (virt) and Technical Report.	5				5
TOTAL (%)				20	15	40	25	100





1.	Name of Course :	Production p	rocesses in th	ne furniture s	ector.										
	Course Code :														
2.	Synopsis :	Course focus required.	es of basic kr	nowledge of v	wood and woo	d-based furn	iture product	on, covering I	oasic producti	on technologi	es. Course se	ecures abili	ty to implement	needed technology	for the specific product
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-	-													
	requisite: (if any)	No													
7.	Course Learning Outcom	es (CLO) : At	the end of th	e course the	students will	be able to:									
	CLO1				el furniture te										
	CLO2	Adapts furnit	ture production	on CTPS P6											
	CLO3	Technologica	ally integrates	s designed fu	rniture and pr	oduction A4 L	L								
8.	Mapping of the Course L														
	Please select the Learnin	ng Outcome D	omain (LOD)	for each PLO	in the cells a					3 - Practical S	kills			-	•
				1	1			Information	(PLO)	1	1	1	T		
	Course Learning	Knowledge of	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific	Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area		Responsibilities	Professionalism	Team Skills	Skills	Lifelong Learning Skills						Teaching Method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
														Lecture, self-	Continuous assignment
	CLO 1	V												Learning, Student-	Final exam.
														Center Learning. Lecture, self-	Continuous assignment
	CLO 2		V				v								Continuous assignment Project report. Fina
			•				•							Center Learning.	exam.
														Lecture, self-	Scenario based discuss
	CLO 3							V							and case study. Project
														Center Learning.	report
	Indicate the relevancy bet	ween the CLO a	and PI O by tick	ina "/" the an	nropriate relev	ant box.									
	(This description must be r						5 & 18)								
9.	Transferable Skills (if ap	plicable)					1	Understandi	ng specifics o	f furniture pro	oduction				
	(Skills learned in the cou	rse of study v	which can be	useful and uti	lized in other	settings)	2	Knowledge o	of application	of specific ma	aterial to tas	s required			
							3	Knowledge o	of application	of specific to	ol to procedu	re required			
							4	Knowledge o	on putting spe	cific furniture	e piece to pro	duction			
10.	Distribution of Student Le	arning Time (SI	LT)												
											Teaching and	d Learning A	ctivities		
										Guided Lea			Guided		
			Course Cor	ntent Outline				CLO*			,			Independent	SLT
										-			Learning (NF2F)		
									ι	т	Р	o	Learning (NF2F) eg: e-Learning	Learning (NF2F)	
	1 - Solid wood furniture	production								т	Р	0		Learning (NF2F)	
								CLO1	L 1	т	Р	o			5
	1 - Solid wood furniture 2 - Panel furniture produ							CLO1	1	т	P	0		Learning (NF2F)	5
	2 - Panel furniture produ	ction								T	P	0		Learning (NF2F)	
		ction	lucts					CLO1 CLO1	1	T		0		Learning (NF2F) 4 4	5
	2 - Panel furniture produ 3 - Machining of wood a	ction nd panel prod						CLO1	1	т	р 8	0		Learning (NF2F)	5
	2 - Panel furniture produ	ction nd panel prod						CLO1 CLO1 CLO2, CLO3	1 1 2	T	8	0		Learning (NF2F) 4 4	5 5 13
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat	nd panel prod es in furniture	production					CLO1 CLO1	1	T		0		Learning (NF2F) 4 4 3	5
	2 - Panel furniture produ 3 - Machining of wood a	nd panel prod es in furniture	production					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3	1 1 2	T	8	0		Learning (NF2F) 4 4 3	5 5 13
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology	nd panel prod es in furniture	production					CLO1 CLO1 CLO2, CLO3	1 1 2 2	т 	8	0		Learning (NF2F) 4 4 3 3 3	5 5 13 11
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat	nd panel prod es in furniture	production					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 2	т 	8	0 		Learning (NF2F) 4 4 3 3 3	5 5 13 11
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture	nd panel prod es in furniture of furniture p	production					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3	1 1 2 2 2	T	8 6 8	0		Learning (NF2F) 4 4 3 3 3 3	5 5 13 11 13
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology	nd panel prod es in furniture of furniture p	production					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 2 2	T	8 6 8	0		Learning (NF2F) 4 4 3 3 3 3	5 5 13 11 13
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag	nd panel prod es in furniture of furniture p	e production roduction					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 2 2 2	T	8 6 8 8	0		Learning (NF2F) 4 4 3 3 3 3 2 2	5 5 13 11 13 12
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture	nd panel prod es in furniture of furniture p	e production roduction					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 2 2 2 2 2 2 2	T	8 6 8 8	0		Learning (NF2F) 4 4 3 3 3 3 2 2	5 5 13 11 13 12
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag	nd panel prod es in furniture of furniture p	e production roduction					CLO1 CLO1 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10 11
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag	nd panel prod es in furniture of furniture p	e production roduction					CL01 CL01 CL02, CL03 CL02, CL03 CL02, CL03 CL02, CL03 CL02, CL03	1 1 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag	nd panel prod es in furniture of furniture p	e production roduction	t Asspermant				CLO1 CLO1 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Total Percentage	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10 11 80
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag	ction nd panel prod es in furniture of furniture p ing te and transpo	e production roduction	s Assessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10 11 80 SLT
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1	ction nd panel prod es in furniture of furniture p ing re and transpo	e production roduction	s Assessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%) 20	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10 11 11 80 51T 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2	ction nd panel prod es in furniture of furniture p ing ie and transpo Assignment Case Study	e production roduction	s Assessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3 CLO3 CLO3, CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10 11 10 11 80 51T 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1	ction nd panel prod es in furniture of furniture p ing re and transpo	e production roduction	s Assessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%) 20	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 2 2 4 4 4 4 4 4 4 4	5 5 13 11 13 12 10 11 11 80 5kT 0 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2	ction nd panel prod es in furniture of furniture p ing ie and transpo Assignment Case Study	e production roduction	sAssessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3 CLO3 CLO3, CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2		8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3	5 5 13 11 13 12 10 11 10 11 80 51T 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2	ction nd panel prod es in furniture of furniture p ing ie and transpo Assignment Case Study	e production roduction ortation Continuou					CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3 CLO3 CLO3, CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 2 2 4 4 4 4 4 4 4 4	5 5 13 11 13 12 10 11 11 80 51T 0 0 0 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2 3	ction nd panel prod es in furniture p ing te and transpo Assignment Case Study Practical	e production roduction ortation Continuou Final At	s Assessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 2 2 4 4 4 4 4 4 4 4	5 5 13 11 13 12 10 11 11 80 5LT 0 0 0 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2 3	ction nd panel prod es in furniture of furniture p ing ie and transpo Assignment Case Study	e production roduction ortation Continuou Final At					CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 Percentage Percentage	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 11 10 11 80 51T 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2 3	ction nd panel prod es in furniture p ing te and transpo Assignment Case Study Practical	e production roduction ortation Continuou Final At					CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 2 2 4 4 4 4 4 4 4 4	5 5 13 11 13 12 10 11 11 80 5LT 0 0 0 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 2 3 1 1 1	ction nd panel prod es in furniture p ing ie and transpo Assignment Case Study Practical Written exar	e production roduction ortation Continuou Final A: mination	ssessment				CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 10 11 11 80 5kT 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 1 2 1 **Please tick (V) if this course	ction nd panel prod es in furniture of furniture p ing ing is and transpo Assignment Case Study Practical Written exar e is Lathan Indust	e production roduction ortation Continuou Final At mination r/ Clinical Placen	ssessment			(E, T) of 50%	CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 11 10 11 80 51T 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 1 2 1 **Please tick (M # this cours L = Lecture, T = Tutorial, P=	ction nd panel prod es in furniture of furniture p ing te and transpo te and transpo Assignment Case Study Practical Written exar is Latiban Indust Practical, O=4	e production roduction ortation Final At mination ri/ Clinical Placen	ssessment nent/ Practicum/ ce to Face, NFA			ELT) of 50%	CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 10 11 11 80 5kT 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2
11	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 1 2 1 **Please tick (V) if this course	ction nd panel prod es in furniture p ing ie and transpo ge and transpo Vractical Written exar e is Latihan Indust Practical, 0s=	e production roduction ortation Final At mination ri/ Clinical Placen	ssessment nent/ Practicum/ ce to Face, NFA			[E.T] of 50%	CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 10 11 11 80 5kT 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2
11 12	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 1 2 3 1 **Please tick (v) if this course L = Lecture, T = Tutorial, Pe Indicate the CLO based on	es in furniture p of furniture p ing te and transpo e and transpo Practical Written exar e is Lathan Indust Practical, <i>O=</i> = the CLO's num	e production roduction ortation Continuou Final A: mination ri/ Clinical Placen thers, F2F=F6 beering in Iter	ssessment nent/ Practicum/ ce to Face, NF: n 8.	2F=Non Face to	Face	ELT) of 50%	CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 10 11 11 80 5kT 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2
	2 - Panel furniture produ 3 - Machining of wood a 4 - Veneers and laminat 5 - Finishing technology 6 - Fittings in furniture 7 - Assembly and packag 8 - Safe-handling, storag 1 1 2 3 1 **Please tick (V) if this cours L = Lecture, T = Tutorial, P= 'indicate the CLO based on Identify special requirem	es in furniture p of furniture p ing te and transpo e and transpo Practical Written exar e is Lathan Indust Practical, <i>O=</i> = the CLO's num	e production roduction ortation Continuou Final A: mination ri/ Clinical Placen thers, F2F=F6 beering in Iter	ssessment nent/ Practicum/ ce to Face, NF: n 8.	2F=Non Face to	Face	[E.1] of 50%	CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	1 1 2 2 2 2 2 2 2 2 2 2 2	0 F2F	8 6 8 8 6 6		eg: e-Learning	Learning (NF2F) 4 4 3 3 3 3 2 2 2 3 24 Total	5 5 13 11 13 12 10 10 11 11 80 5kT 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2





Course: Automation and mechanization. Low cost automation. Compulsory.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 3			
1	Devise the production system in reference of production organization forms development (C6)	×						
2	Composing the new supporting solutions of production processes (P7, CTPS)		k	4				
3	Proposes ideas to societal issues according to applied organizational forms in production systems (A5, TS)				4			
	TOTAL (%)		50	40	10			
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment	Activities (%)		Total (%)
110.		.20	reaching a Leanning Activities	Assignment	Practical Work (Prototype)	Reports	Final	10(21(70)
1	Devise the production system in reference of production organization forms development (C6 = PLO1)	PL01	Lecture, tutorial & self-Learning (SCL): Assignment (SCL): Problem-Based Learning (PBL).	10			15	25
			. ,					
2	Composing the new supporting solutions of production processes (CTPS = PLO6) (P7 = PLO2)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Assignment (SCL): Case Study (SCL): Problem-Based Learning (PBL).			10	15	25
		PLO2	Practical. Prototype and Technical Report.		40			40
3	Proposes ideas to societal issues according to applied organizational forms in production systems (A5, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Studyg (SCL): Assignment (SCL): Problem-Based Learning (PBL).	10				10
			TOTAL (%)	20	40	10	30	100





1.	Name of Course :	Automation a	ind mechaniz	ation. Low Co	ost Automatio	on.									
-	Course Code :														
2.	Synopsis :				ion to the organisms and the organisms of the second second second second second second second second second se In the second s							n usage. Emp	hasis is place	d on the production	with an low cost
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-requisite: (if any)	No													
7.	Course Learning Outcomes (C	CLO): At the e	nd of the cou	urse the stude	ents will be al	ole to:									
	CLO1	Devise the pr	oduction syst	tem in referer	nce of product	tion organiza	tion forms de	velopment (C	(6)						
						-		teropinene (e	,						
	CLO2				ns of productio					-1					
	CLO3				ding to applie	-			stems (A5, T	5)					
8.	Mapping of the Course Learn Please select the Learning Ou								itive, PLO3 -	Practical Skill	s				
						Prog	gramme Learni	ng Outcomes (PLO)				-		
	Course Learning Outcomes	Knowledge of		Social Skills and	Values, Attitudes	Communication,	Problem Solving and	Information Management and						Learning and	
	(CLO)	Discipline Area	Practical Skills	Responsbilities	and Professionalism	Leadership and Team Skills	Scientific Skills	Lifelong Learning						Teaching Method	Assessment Method
		PLO1	PLO2	PLO3	PLO4	PLO5	DI OC	Solis PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	1	
		PLOI	PLOZ	PLUS	PLO4	PLUS	PLO6	PL07	PLOS	PLO9	PLOID	PLOII	PLOIZ	Lecture, self-	
	CLO 1	v												Lecture, self- Learning, Student-	Continuous assignment.
														Center Learning.	Final exam.
														Lecture, self-	
	CLO 2		V				√								Continuous assignment.
														Center Learning.	
														Lecture, self-	c
	CLO 3			V										Center Learning.	Continuous assignment.
														center cearing.	
	Indicate the relevancy between	the CLO and PL	O by ticking "	//" the approp	riate relevant ł	oox.									
	(This description must be read t	together with S	tandards 2.1.	2 , 2.2.1 and 2	.2.2 in Area 2	pages 16 & 1	18)								
9.	Transferable Skills (if applica	ible)					1	Understandi	ng the terms	and aspects	of automatio	on and mecha	nization, syste	em production in re	ferences of low cost
	(Skills learned in the course of	of study which	can be usefu	I and utilized	in other setti	ngs)	2						/ great it has	an impact on the fi	rst and second
							2	environment	t, and organia	zation forms	of production	system			
								Developmen	t of skills of	design and pr	rototyping th	e low cost aut	omatization p	prototypes and cont	rol systems in furniture
							3	industry							
							4	Low cost aut	tomation ma	nufacturing in	n Industry 4.0)			
10.	Distribution of Student Learnin	ng Time (SLT)					4	Low cost aut	tomation ma	nufacturing ir	n Industry 4.0)			
10.	Distribution of Student Learnin	ng Time (SLT)					4	Low cost aut	tomation ma	nufacturing ir	n Industry 4.0				-
10.	Distribution of Student Learnin						4		tomation ma		Teaching an	d Learning Acti	vities		
10.	Distribution of Student Learnin		Course Conte	nt Outline			4	Low cost aut		Guided Le	Teaching an arning (F2F)	d Learning Acti	Guidea	Independent	SLT
10.			Course Conte	nt Outline			4	CLO*	L		Teaching an arning (F2F) P		vities Guiaea Learning (NE2E)	Learning (NF2F)	
10.	1-The concept of automation and m	echanization					4	CLO*	L 1	Guided Le	Teaching an arning (F2F) P 2	d Learning Acti	Guidea	Learning (NF2F) 2	5
10.	1-The concept of automation and m 2-Characteristics of the production sy	echanization ystem environme	nt (first and seco	ond)			4	CLO* CLO1 CLO1	L 1 1	Guided Le	Teaching an arning (F2F) P 2 2	d Learning Acti	Guidea	Learning (NF2F) 2 2	5
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn	echanization ystem environme ology in the field o	nt (first and seco	ond)			4	CLO* CLO1 CLO1 CLO1	L 1 1 2	Guided Le	Teaching an arning (F2F) P 2 2 4	d Learning Acti	Guidea	Learning (NF2F) 2 2 3	5 5 9
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a	echanization ystem environme ology in the field o automation	nt (first and seco of low cost autor	ond) mation			4	CLO* CLO1 CLO1 CLO1 CLO1, CLO2	L 1 1 2 3	Guided Le	Teaching an arning (F2F) P 2 2 4 10	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5	5 5 9 18
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost 5-Application of low cost automation	echanization ystem environme ology in the field o automation	nt (first and seco of low cost autor	ond) mation			4	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3	L 1 1 2 3 3	Guided Le	Teaching an arning (F2F) P 2 2 4 10 6	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5 5 5	5 5 9 18 14
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Application of two cost automation 6-Prototypes and control systems	echanization ystem environme ology in the field o automation	nt (first and seco of low cost autor	ond) mation			4	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2	L 1 1 2 3 3 1	Guided Le	Teaching an arning (F2F) P 2 2 4 10 6 6	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 9 18 14 9
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Production in the field of low cost automation 6-Prototypes and control systems 7-Final projects.	echanization ystem environme ology in the field o automation n in the furniture s	nt (first and seco of low cost autor ector. Design an	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5 5 2 2 3 3 5 3 5 3 3 5 3 5 2 3 3 5 5 5 5	5 5 9 18 14 9 15
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Application of two cost automation 6-Prototypes and control systems	echanization ystem environme ology in the field o automation n in the furniture s	nt (first and seco of low cost autor ector. Design an	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2	L 1 1 2 3 3 1	Guided Le	Teaching an arning (F2F) P 2 2 4 10 6 6	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5 5 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 9 18 14 9 15 5
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Production in the field of low cost automation 6-Prototypes and control systems 7-Final projects.	echanization ystem environme ology in the field o automation n in the furniture s	nt (first and seco of low cost autor ector. Design an	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5 5 2 2 3 3 5 3 5 3 3 5 3 5 2 3 3 5 5 5 5	5 5 9 18 14 9 15
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Production in the field of low cost automation 6-Prototypes and control systems 7-Final projects.	echanization ystem environme ology in the field o automation n in the furniture s system and its rol	nt (first and seco of low cost autor ector. Design an e in industry 4.0	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le T	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guraea Learning (NIC2E)	Learning (NF2F) 2 2 3 5 5 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 9 18 14 9 15 5 80
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Production in the field of low cost automation 6-Prototypes and control systems 7-Final projects.	echanization ystem environme ology in the field o automation n in the furniture s system and its rol	nt (first and seco of low cost autor ector. Design an	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guidea	Learning (NF2F) 2 2 3 5 5 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 9 18 14 9 15 5
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 4-Production in the field of low cost automation 6-Prototypes and control systems 7-Final projects.	echanization ystem environme ology in the field o automation n in the furniture s system and its rol	nt (first and seco of low cost autor ector. Design an e in industry 4.0	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le T	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guraea Learning (NIC2E)	Learning (NF2F) 2 2 3 5 5 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 9 18 14 9 15 5 80
10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost a 5-Application of low cost automation 6-Prototypes and control systems 7-Final projects. 8-Commercialization aspects of the s 1 2	echanization ystem environme ology in the field automation in the furniture s system and its rok system and its rok Assignment Practical Wor	nt (first and seco f low cost auton ector. Design an e in industry 4.0 Continuous A:	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3 CLO3	L 1 1 2 3 3 1 2	Guided Le T	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guraea Learning (NIC2E)	Learning (NF2F) 2 2 3 5 5 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	5 9 18 14 9 15 5 80 SLT 0 0
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10.	1-The concept of automation and m 2-Characteristics of the production s 3-The description of available techn 4-Production in the field of low cost automation 6-Prototypes and control systems 7-Final projects. 8-Commercialization aspects of the s 1 2 3 1 1 1 2 3	echanization ystem environme ology in the field o automation in in the furniture s system and its rok system and its rok Assignment Practical Wor Reports	nt (first and seco f low cost autor ector. Design an e in industry 4.0 Continuous A: k	ond) mation nd Prototyping.			4	CLO* CLO1 CLO1 CLO1 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3 CLO4, CLO4 CLO4, CLO4 CLO4 CLO4, CLO4 CLO4 CLO4, CLO4 CLO4 CLO4 CLO4 CLO4 CLO4 CLO4 CLO4	L 1 1 2 3 3 1 2	Guided Le T F2F	Teaching an arning (F2F) 2 2 4 10 6 6 10	d Learning Acti	Guidea Learning (NE2E) NF2F	Learning (NF2F) 2 2 3 5 5 2 3 3 2 3 Total	5 5 9 18 14 9 15 5 80 SLT 0 0 0 0 SLT 2
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Course: Additive Manufacturing. Compulsory.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 3			
1	Assess the different production process in additive manufacturing (C5, CTPS)	*	2					
2	Construct a furniture design based on production processes in additive manufacturing (P5, CTPS)		2	Å				
3	Relate ideas and new designs to social issues in furniture production processes. (A4, TS)				4			
	TOTAL (%)		50	40	10			
					Assessment	Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment	Project oriented problem based learing.	Reports	Final	Total (%)
1	Assess the different production process in additive manufacturing. (C5 = PLO1) (CTPS = PLO6)	PLO1	Lecture & self-Learning (SCL): Assignment	10			15	25
			(SCL): Case Study (SCL): Problem-Based Learning (PBL).					20
2	Construct a furniture design based on production processes in additive manufacturing (CTPS = PLO6) (P5 = PLO2)	PLO6	Practical. Prototype and Technical Report.			10	15	25
		PLO2	• (SCL): Assignment • Practical. Modular Project.		40			40
3	Relate ideas and new designs to social issues in furniture production processes. (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	10				10
	·		TOTAL (%)	20	40	10	30	100





1.	Name of Course :	Additive Mar	nufacturing												
	Course Code :														
2.	Synopsis :	This course e	encompasses	the introduct	ion to additiv	e manufactur	ing and the d	fferent manu	facturing tecl	nnologies. Em	nphasis is plac	ed on the r	production proce	ess from design to t	he 3D printed part. The
													al sector and inc		
2	Norma (a) of a sector size							-			-				
3.	Name(s) of academic staff :														
4.	Semester and Year														
·*.	offered :		Sem	ester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-	-													
	requisite: (if any)	No													
7.	Course Learning Outcom	es (CLO) : At	the end of th	e course the	students will	be able to:									
	CLO1	Assess the d	ifferent prod	uction process	s in additive n	nanufacturing	; (C5, CTPS)								
	CLO2	Construct a f	urniture desi	gn based on p	production pro	cesses in add	litive manufa	cturing (P5, C	FPS)						
	CLO3	Relate ideas	and new des	igns to social	issues in furr	niture product	ion processes	. (A4, TS)							
8.	Mapping of the Course L	earning Outco	omes to the P	rogramme Le	arning Outco	mes, Teachin	g Methods ar	d Assessmen	t:						
	Please select the Learnin	ng Outcome D	omain (LOD)	for each PLO	in the cells al									-	-
					1	Pro	gramme Learn	ing Outcomes	PLO)			1	1		
	Course Learning	Knowledge of	Practical Skills	Social Skills and	Values, Attitudes	Communication, Leadership and	Problem Solving	Information Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area	Practical Skills	Responsibilities	and Professionalism	Team Skills	and Scientific Skills	Lifelong Learning Skills						Teaching Method	Assessment wethou
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
														Lecture, self-	
	CLO 1	V					V							Learning, Student-	Continuous assignment. Final exam.
														Center Learning.	
														Lecture, self-	Continuous assignment.
	CLO 2		V				V							Learning, Student- Center Learning.	Final exam.
														Lecture, self-	
	CLO 3			v											Continuous assignment.
				'										Center Learning.	and the second sec
	Indicate the relevancy bet														
	(This description must be r		vith Standard.	s 2.1.2 , 2.2.1 d	and 2.2.2 in Ar	ea 2 - pages 10	5&18)								
9.	Transferable Skills (if ap (Skills learned in the cou		which can be	usoful and uti	lized in other	cottings)	1				ss in 3D printi	ng and gair	ning knowledge	and competencies	about how to print and
	(Skins learned in the cou	rse or study v	mich can be	userur and uti	nzeu in other	secungs)			eded to print			-			
							2				rinting in the				
							3							of the printing of p	prototypes and final
							4		ive Manufact			us anu mar	ket strategies.		
10.	Distribution of Student Le	arning Time (SI	(T)				4	Non or Addit	ive ividifulace	uning in mous	ci y 4.0				
			.,												
											Teaching and	d Learning A	ctivities		
			Course Cor	ntent Outline				CLO*		Guided Lea		Learning A	Guided	Independent	SLT
			Course Cor	ntent Outline				CLO*	L	Guided Lea T		Learning A	Guided Learning (NF2F)	Independent Learning (NF2F)	SLT
	1 - Introduction to Additi	ve Manufactu		ntent Outline				CLO*	L		rning (F2F)		Guided		SLT
	1 - Introduction to Additi	ve Manufactu		ntent Outline				clo*	L 1		rning (F2F)		Guided Learning (NF2F)		slt 5
	1 - Introduction to Additi 2 - Workflow: How does		iring	ntent Outline				CLO1	1		P 2		Guided Learning (NF2F)	Learning (NF2F)	5
			iring	ntent Outline					-		rning (F2F) P		Guided Learning (NF2F)	Learning (NF2F)	
		3D printing w	iring	ntent Outline				CLO1 CLO1	1		P 2 2		Guided Learning (NF2F)	Learning (NF2F)	5
	2 - Workflow: How does	3D printing w	iring	ntent Outline				CLO1	1		P 2		Guided Learning (NF2F)	Learning (NF2F)	5
	2 - Workflow: How does	3D printing w gies	iring	ntent Outline				CLO1 CLO1 CLO1	1 1 2		rning (F2F) P 2 2 3		Guided Learning (NF2F)	Learning (NF2F)	5
	2 - Workflow: How does 3 - 3D Printing Technolog	3D printing w gies	iring	ntent Outline				CLO1 CLO1	1		P 2 2		Guided Learning (NF2F)	Learning (NF2F)	5
	2 - Workflow: How does 3 - 3D Printing Technolog	3D printing w gies 3D Printing	uring vorks?		Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2	1 1 2 3		rning (F2F) P 2 2 3 11		Guided Learning (NF2F)	Learning (NF2F) 2 2 4 6	5 5 9 20
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in	3D printing w gies 3D Printing	uring vorks?		Prototyping.			CLO1 CLO1 CLO1	1 1 2		rning (F2F) P 2 2 3		Guided Learning (NF2F)	Learning (NF2F)	5
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in	3D printing w gies 3D Printing nting in the fu	rorks?	r. Design and	Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3	1 1 2 3 3		P P 2 2 2 3 11 11 3 11 11 11 11 11 11 11 11 11 11		Guided Learning (NF2F)	Learning (NF2F) 2 2 4 6 6 6	5 5 9 20 12
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir	3D printing w gies 3D Printing nting in the fu	rorks?	r. Design and	Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2	1 1 2 3		rning (F2F) P 2 2 3 11		Guided Learning (NF2F)	Learning (NF2F) 2 2 4 6	5 5 9 20
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	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products.	3D printing w gies 3D Printing tting in the fu g and Final Pro	iring iorks? rniture sector	7. Design and Tooling.	Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3	1 1 2 3 3		P P 2 2 2 3 11 11 3 11 11 11 11 11 11 11 11 11 11		Guided Learning (NF2F)	Learning (NF2F) 2 2 4 6 6 6	5 5 9 20 12
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	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products.	3D printing w gies 3D Printing tting in the fu g and Final Pro	iring iorks? rniture sector	7. Design and Tooling.	Prototyping.			CL01 CL01 CL01, CL02 CL02, CL03 CL02, CL03	1 1 2 3 3 1		rning (F2F) P 2 2 3 11 3 4		Guided Learning (NF2F)	Learning (NF2F) 2 2 4 6 6 6 2 4 4 2 2 2 2 2 2 2 2 2 2 2	5 5 9 20 12 7 18 5
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	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products.	3D printing w gies 3D Printing tting in the fu g and Final Pro	iring iorks? rniture sector	7. Design and Tooling.	Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 3 3 1 2		rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F)	Learning (NF2F) 2 2 4 6 6 6 2 4 4 2 2 2 2 2 2 2 2 2 2 2	5 5 9 20 12 7 18 5
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	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2	3D printing w gles 3D Printing ating in the fu ; and Final Pre and roll of AM	rring rorks? miture sector oducts. Rapid 4 within Indus Continuou	r. Design and Tooling. stry 4.0	Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%) 20 40 10	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 4 6 6 2 4 2 Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3	3D printing w gles 3D Printing atting in the fu and roll of AN Assignment Practical wo Reports	rring rorks? miture sector oducts. Rapid 4 within Indus Continuou	r. Design and Tooling. stry 4.0	Prototyping.			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 2 4 6 6 6 2 4 4 2 4 2 Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prin 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3 1 1	3D printing w gies 3D Printing and Printing and Final Pre- and roll of AN Practical wo Reports Final Exam	rring rorks? rniture sector oducts. Rapid f within Indus Continuou rk Final A:	r. Design and Tooling. stry 4.0 s Assessment		y Learning Times		CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 4 6 6 2 4 2 Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3	3D printing w gles 3D Printing atting in the fu ; and Final Pro- and roll of AN Practical wo Reports Final Exam	rring rorks? rniture sector oducts. Rapid twithin Indus Continuou rk Final At Final At	r. Design and Tooling. stry 4.0 s Assessment seessment	WBL using Effects		ELT) of 50%	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 2 4 6 6 2 4 2 Total Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prin 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3 1 **Please tick (M) # this course. L = Lecture, T = Tutorial, Pe *Indicate the CLO based on	3D printing w gies 3D Printing titing in the fu and roll of AN Practical wo Reports Final Exam	rring rorks? rniture sector oducts. Rapid 4 within Indu: Continuou rk Final As Final As St/ Clinical Placen	r. Design and Tooling. stry 4.0 s Assessment seessment	WBL using Effects		ELT) of 50%	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 2 4 6 6 2 4 2 Total Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3 1 **Please tick (V) if this course L = Lecture, T = Tutorial, P= *Indicate the CLO based on Identify special requirem	3D printing w gles 3D Printing atting in the fu and roll of AN Practical wo Reports Final Exam is Lathan Indust <i>rractical, 0=</i> <i>the CLO's nur</i>	rring rorks? rniture sector oducts. Rapid N within Indu Continuou rk Final As final	r. Design and Tooling. stry 4.0 s Assessment seessment eent/ Practicum/ ce to Foce, NF2 n 8.	WBL using Effecti EF=Non Face to) Face	ELT] of 50%	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 2 4 6 6 2 4 2 Total Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11 12	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prin 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3 1 **Please tick (M) # this course. L = Lecture, T = Tutorial, Pe *Indicate the CLO based on	3D printing w gles 3D Printing atting in the fu and roll of AN Practical wo Reports Final Exam is Lathan Indust <i>rractical, 0=</i> <i>the CLO's nur</i>	rring rorks? rniture sector oducts. Rapid N within Indu Continuou rk Final As final	r. Design and Tooling. stry 4.0 s Assessment seessment eent/ Practicum/ ce to Foce, NF2 n 8.	WBL using Effecti EF=Non Face to) Face	ET) of 50%	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 2 4 6 6 2 4 2 Total Total	5 5 9 20 12 7 18 5 81 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Workflow: How does 3 - 3D Printing Technolog 4 - Production Process in 5 - Application of 3D Prir 6 - Molds for Prototyping 7 - Final Products. 8 - Commercial Aspects 1 2 3 1 **Please tick (V) if this course L = Lecture, T = Tutorial, P= *Indicate the CLO based on Identify special requirem	3D printing w gles 3D Printing atting in the fu and roll of AN Assignment Practical wo Reports Final Exam	rring rorks? rniture sector oducts. Rapid N within Indu Continuou rk Final As final	r. Design and Tooling. stry 4.0 s Assessment seessment eent/ Practicum/ ce to Foce, NF2 n 8.	WBL using Effecti EF=Non Face to) Face	ELT) of 50%	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2, CLO3 CLO2, CLO3 CLO2 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	F2F	rning (F2F) P 2 2 3 11 3 4 12		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 2 4 6 6 2 4 2 Total Total	5 5 9 20 12 7 18 5 81 5 81 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0





Course: Internet of Things (IoT) applied to wood-based industry. Compulsory.

			Assessment Weightage (%)		1			
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affective (A)				
		PLO 1	PLO 6	PLO 4				
1	Synthesize main concepts and elements in a Internet of Thing environment (C6, CTPS)	*	2					
2	Develop some different Internet of Things scenarios (C6, CTPS)	*	2					
3	Revise literature and new trends of Internet of Things in the Wood and Furniture Industry. (A5, EM)			~				
	TOTAL (%)		80					
					Assessment	t Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment (Exercises)	NF2F Practical Work (Follow IoT system deployment tutorials)	Reports (research and paper readings)	Final	Total (%)
1	Synthesize main concepts and elements in a Internet of Thing environment	PLO1	Lecture & self-Learning (SCL): Assignment	10			15	25
	(Č6 = PLO1) (CTPS = PLO6)		(SCL): Case Study (SCL): Problem-Based Learning (PBL).					
2	Develop some different Internet of Things scenarios	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL).	10	20		15	55
2	(C6 = PLO1) (CTPS = PLO6)	PLO1	(SCL): Problem-based Learning (PBL). (SCL): Assignment. Deploy a Internet of Things network prototype		10			55
3	Revise literature and new trends of Internet of Things in the Wood and Furniture Industry (A5, EM = PLO4)	PLO4	Lecture & self-Learning (SCL): Discussion (SCL): Problem-Based Learning (PBL). Research of papers about Internet of Things applied to Industry Synhetize new ideas acquired Report			20		20
			TOTAL (%)	20	30	20	30	100



Deliverable 2.2: Joint Curriculum



1.	Norma of Courses	Internet of This	ngs (loT) a	pplied to wood-	has ad industry										
1.	Name of Course :	internet of Thi	ngs (ior) a	ipplied to wood-	based moustry.										
2.	Course Code : Synopsis :														
	5 ynopsis .							of this technology in th out the deployment of a			ustry as well a	as some of	the current chal	lenges that Internet	t of Things is currently
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		S	emester		1	Year	1							
5.	Credit Value :	2													
5. 6.	Prerequisite/co-														
	requisite: (if any)	No													
7.	Course Learning Outcom	es (CLO) : At th	e end of t	he course the st	udents will be ab	le to:									
	CLO1				in a Internet of T		nt (C6, CTPS)								
	CLO2				s scenarios (C6, C										
	CLO3				net of Things in t										
8.	Mapping of the Course L						ods and Assessm	ent :							
	Please select the Learnin	ng Outcome Don	nain (LOD) for each PLO in	the cells above i		rogramme Learni	ng Outcomes (PLO)							
	Course Learning		Practical	Social Skills and	Valuer Attituder and	Communication,	Problem Solving and	Information Management and		r	I	1	1	Learning and	
	Outcomes (CLO)	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and Professionalism	Leadership and Team Skills	Problem Solving and Scientific Skills	Lifelong Learning Skills						Teaching Method	Assessment Method
	,	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
		1101	1202	1100	1201	1200	1200	1207						Lecture, self-	
	CLO 1	v					v							Learning, Student- Center Learning.	Continuous assignment. Final exam.
	CLO 2	v					v							Lecture, self- Learning, Student- Center Learning.	Continuous assignment.
	CLO 3				v									Lecture, self- Learning, Student-	Continuous assignment.
	Indicate the relevancy bet	ween the CLO and	d PLO by tic	kina "/" the appr	opriate relevant b	р <i>х</i> .				l				Center Learning.	
	(This description must be r	ead together wit													
9.	Transferable Skills (if ap						1	Competencies in the id						Industry 4.0.	
	(Skills learned in the cou	rse of study whi	ich can be	useful and utiliz	ed in other settir	ngs)	2	Development of skills			ngs in the fu	niture indu	stry.		
							3	Roll of Internet of Thir	ngs in Industr	y 4.0					
10.	Distribution of Student Le	espine Time (SI T)					4								
10.	Distribution of Student Le	arning time (SET)													
											Teaching and	Learning A	ctivities		
			Com	rse Content Outli				CLO*		Guided Lea	rning (F2F)		Guided	In drawn drawt	SLT
			Cou	rse Content Outil	ne			CLO*	L	т	Р	0	Learning (NF2F)	Independent Learning (NF2F)	SLI
											,	Ŭ	eg: e-Learning		
	1 - Introduction to Intern	et of Things and	d main cha	racteristics				CLO1	2					4	6
	2 - Internet of Things Ne	twork Architect	ure					CLO1	5					7	12
	3 - Internet of Things cor	mmuncation pro	otocols					CLO1	4					7	11
	4 - Internet of Things Cha	allenges						CLO2	3					6	9
	5 - Application of Interne	et of Things						CLO1, CLO2	5					10	15
	6 - Deployment of an Int	ernet of Things	Network					CLO2	5					10	15
	7 - Use cases of Internet	of Things in the	e Wood an	d Furniture Indu	stry			CLO1, CLO2, CLO3	2					4	6
	8 - Relevance of Internet	of Things for th	he future					CLO1, CLO3	2					4	6
														Total	80
		Assignment (F)		tinuous Assessme	nt			Percentage (%)		F2F			NF2F		SLT
	2	Assignment (C	xercises/	ystem deployme	nt tutoriale)			20 30							0
	3	Reports (resea			totonalaj			20							0
									•			•		Total	0
			F	inal Assessment				Percentage (%) 30		F2F			NF2F		SLT 2
	1	Written examin	nation							-					
	1	Written exami	nation											Total	2
	1	Written exami	nation										_	Total	2
	**Please tick (V) if this course	e is Latihan Industri/	Clinical Place				%						GRAND	Total	2 82
	**Please tick (V) if this cours L = Lecture, T = Tutorial, P= *Indicate the CLO based or	e is Latihan Industri/ Practical, O=Oti n the CLO's numb	Clinical Place hers, F2F=Fi	ace to Face, NF2F			%						GRAND		
11	**Please tick (V) if this course L = Lecture, T = Tutorial, P = *Indicate the CLO based or Identify special requirem	e is Latihan Industri/ Practical, O= Oth the CLO's numb nent to deliver	Clinical Place hers, F2F=Fi ering in Ite	ace to Face, NF2F m 8.	=Non Face to Face		%						GRAND		
11 12	**Please tick (V) if this cours L = Lecture, T = Tutorial, P= *Indicate the CLO based or	e is Latihan Industri/ Practical, O= Oth the CLO's numb nent to deliver	Clinical Place hers, F2F=Fi ering in Ite	ace to Face, NF2F m 8.	=Non Face to Face		*						GRANC		





Course: Wireless technologies for logistic and manufacturing. Compulsory.

		As	ssessment Weightage (%))			
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affective (A)			
		PLO 1	PLO 6	PLO 7			
	Discuss the concepts around wireless technologies and their context in factories and manufacturing/logistic processes (C5 = PLO1)	4					
	Discriminate among the most popular wireless technologies in factories and manufacturing/logistic processes (CTPS, C5 = PLO6)		*				
	Identify the wireless technologies solutions to current and incomming issues in the logistic and manufacturing processes in industry (A4, LL = PLO7)			4			
	TOTAL (%)		85	15			
			Teaching & Learning				
No.	Course Learning Outcome (CLO)	PLO	Activities	Assignment	Case study Report&Discussion	Final	Total (%)
	Discuss the concepts around wireless technologies and their context in factories and manufacturing/logistic processes (C5 = PLO1)	PLO1	Lecture & self-Learning (SCL): Assignment (SCL): Case Study	25		15	40
	Discriminate among the most popular wireless technologies in factories and manufacturing/logistic processes (CTPS, C5 = PLO6)	PLO6	Lecture & self-Learning (SCL): Assignment (SCL): Case Study	30		15	45
	Identify the wireless technologies solutions to current and incomming issues in the logistic and manufacturing processes in industry (A4, LL = PLO7)	PLO7	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Assignment.		15		15
			TOTAL (%)	55	15	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Wireless Tee	chnologies fo	logistic and	manufacturin	g									
	Course Code :														
2.	Synopsis :							s technologies ases and futu					oth, BLE, Wi-Fi, :	Sigfox, Lora, NB-IoT	, 4G and 5G.
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		1	Year	1							
5.	Offered : Credit Value :	2													
6.	Prerequisite/co-	No													
	requisite: (if any)														
7.	Course Learning Outcom CLO1						ext in factori	es and manufa	cturing/logic	tic processes	(C5 - PLO1)				
	CLO2							nanufacturing,							
	CLO3			-			-	n the logistic a		turing process	es in industry	/ (A4, LL = F	PLO7)		
8.	Mapping of the Course L Please select the Learning						ng Methods a	nd Assessmen	t:						
	rieuse selece che ceurin	ng outcome a	/onnann (2007)	TOT COULT LO	in the cens a		gramme Learr	ning Outcomes	PLO)						
	Course Learning	Knowledge of		Social Skills and	Values, Attitudes	Communication,	Problem Solving	Information Management and						Learning and	
	Outcomes (CLO)	Discipline Area PLO1	Practical Skills PLO2	Responsibilities PLO3	and Professionalism PLO4	Leadership and Team Skills PLOS	and Scientific Skil							Teaching Method	Assessment Method
	CLO 1	v												Lecture, self- Learning, Student- Center Learning.	Continuous assignment Final exam.
	CLO 2						v							Lecture, self- Learning, Student- Center Learning.	Continuous assignment.
	CLO 3							v						Lecture, self- Learning, Student-	Continuous assignment.
	Indicate the relevancy bet	tween the CLO o	and PLO by tick	ing "/" the ap	propriate relev	ant box.	I	1	I	<u> </u>	I	I	<u>I</u>	Center Learning.	I
9.	(This description must be Transferable Skills (if ap	read together (oplicable)	with Standard	s 2.1.2 , 2.2.1 c	and 2.2.2 in Ar	rea 2 - pages 1	6 & 18) 1	Ability to tak	e decisione a	bout the use	of wireless to	chnologia	in logistic/man	ufacturing processe	s.
	(Skills learned in the cou	urse of study v	which can be	useful and uti	lized in other	settings)						-			
							2						oyment of wirel ss technologies	ess technologies in	factories.
							3	factories/log			Improvemen	ts in wirele	ss technologies	operating in	
							4								
10.	Distribution of Student Le	earning Time (S	LT)												
								1			Teaching an	d Learning /	Activities		
			Course Cor	ntent Outline				CLO*		Guided Lea	rning (F2F)		Guided Learning (NF2F)	Independent	SLT
									L	т	Р	0	eg: e-Learning	Learning (NF2F)	
	Introduction to wireless	technologies						CLO1	1					2	3
	Radio Fequency Identific modes, standards, priva	cy, security, u	se cases and	future trends				CLO1, CLO2, CLO3	4					6	10
	Near Field Communicati security, use cases and t		oduction, ma	in characteris	itics, devices,	standards, pr	rivacy,	CLO1, CLO2, CLO3	2					3	5
	Bluetooth/Bluetooth Los security, use cases and f): introductio	n, main chara	icteristics, dev	vices, standar	rds, privacy,	CLO1, CLO2, CLO3	3					5	8
	Zigbee: introduction, ma trends	ain characteris	stics, devices,	standards, pr	rivacy, security	y, use cases a	and future	CLO1, CLO2, CLO3	3					5	8
	Wi-Fi: introduction, mai future trends	in characterist	ics, devices, o	perational m	odes, privacy,	security, use	cases and	CLO1, CLO2, CLO3	2					3	5
	Wireless technologies for							CLO1, CLO2	2					3	7
	2G/3G4G: introduction, and future trends							CLO1, CLO2, CLO3	3					4	11
	5G: introduction, main of future trends			-		security, use	cases and	CLO1, CLO2, CLO3	5					6	3
	Smart wireless devices	for logistic an	d manufactur	ing: wearable	25			CLO3	1					2	3
														Total	63
			Continue	s Assessment				Percentage		F2F			NF2F		SLT
		Cantin		- navaanent				(%)					NF2F		
	2	Continuous a Continuous a						25 30		1		<u> </u>			1
	3	Case study n	-					15					15		15
														Total	17
			Final 4	sessment				Percentage		F2F			NF2F		SLT
		Final	Final As	a and a second				(%)					NFZF		
	1	Final exam						30	1	2		1		Total	2
													-		
	**Please tick (V) if this cours L = Lecture, T = Tutorial, P						(ELT) of 50%						GRANI	TOTAL SLT	82
	L = Lecture, T = Tutorial, P *Indicate the CLO based o				∠r=won ⊦ace to	race									
11	Identify special requiren	nent to						-							
12	References (include req	uired and furt	her readings,	and should b	e the most cu	rrent)								Technology, by Ang Sailad Hussain Oa	eliki Alexiou, 2017 mmer H. Abbas. Ed.
							Willey, 202		chabler für		- and nevolu		di,		
13	Other additional information	ation :													





Course: Network communications in the industry. Elective.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affective (A)				
		PLO 1	PLO 6	PLO 4				
1	Synthesize main concepts and elements in an Industrial Communication Network (C6, CTPS)	*	V					
2	Suggest tools and improvements of Communication Networks in an Industrial environment (C6, CTPS)	×	4					
	Revise literature and new trends of Communication Networks in the Wood and Furniture Industry (A5, EM)			Å				
	TOTAL (%)		70	30				
					Assessment	Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment (Exercises)	NF2F Practical Work	Reports (research and paper readings)	Final	Total (%)
	Synthesize main concepts and elements in an Industrial Communication Network. (C6 = PLO1) (CTPS = PLO6)	PLO1	Lecture & self-Learning (SCL): Assignment (CCL): Orac Study	10	10		15	35
	(CD = PLOT) (CTPS = PLOD)		(SCL): Case Study (SCL): Problem-Based Learning (PBL).					
	Suggest tools and improvements of Communication Networks in an Industrial environment	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL).	10	10		15	35
2	(C6 = PLO1) (CTPS = PLO6)	PLO1	 (SCL): Frommased Learning (FBL). (SCL): Assignment. Practical. Analysis of an Industrial Communication Network 					30
	Revise literature and new trends of Communication Networks in the Wood and Furniture Industry. (A5, EM = PLO4)	PLO4	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment. Research of papers about Communication Networks in Industry 4.0 Synthetize and acquire knowledge Report			30		30
			TOTAL (%)	20	20	30	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Network Cor	mmunicati	ions in the indus	try										
	Course Code :														
2.	Synopsis :			neral overview o explanation of										t types of communi	cation networks in terms
3.	Name(s) of academic staff :														
4.	Semester and Year			Semester		1	Year	1							
5.	offered : Credit Value :	2													
6.	Prerequisite/co-	-													
	requisite: (if any)	No													
7.	Course Learning Outcom														
	CLO1 CLO2			epts and element rovements of Co					TPS)						
	CLO3			new trends of Co											
8.	Mapping of the Course L														
	Please select the Learnin	ng Outcome D	Domain (LC	DD) for each PLO	in the cells abo		 Knowledge, I mme Learning 			actical Skills				1	1
			I	1		Communication,	Problem Solving	Information	0,	1		1	1		
	Course Learning Outcomes (CLO)	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and Professionalism	Leadership and Team Skills	and Scientific Skills	Management and Lifelong Learning						Learning and Teaching Method	Assessment Method
		PLO1	PLO2	81.02	PLO4			Skills						-	
		PLUI	PLOZ	PLO3	PL04	PLO5	PLO6	PLO7				<u> </u>		Lecture, self-	
	CLO 1	V					v							Learning, Student-	Continuous assignment. Final exam.
												<u> </u>		Center Learning.	
	CLO 2	v					v							Lecture, self- Learning, Student-	Continuous assignment.
														Center Learning.	
	CLO 3				v									Lecture, self- Learning, Student-	
					v									Center Learning.	continuous assignment.
	1			**=b/m = # # # *b = ==											
	Indicate the relevancy bet (This description must be r						3)								
9.	Transferable Skills (if ap	plicable)					1	Competencie	as in the idea	tification and	doploymont	of Commu	nication Network		
	(Skills learned in the cou	rse of study v	which can	be useful and ut	lized in other se	ettings)	1					or commu	nication Network	5.	
							2			rial Networks					
							3	Basic knowle	eage in the w	lide techology	spectrum re	lated to Co	mmunication Ne	tworks.	
							4								
10.	Distribution of Student Le	arning Time (SI	LT)												
											Teaching an	dLearning	Activities		
			Com	rse Content Outlin				CLO*		Guided Lea	rning (F2F)		Guided	Indone de t	SLT
			cou	ise content outin	ic .			610	L	т	Р	0	Learning (NF2F) eg: e-Learning	Independent Learning (NF2F)	521
	1 - Introduction to Netw	ork Communi	cations in	the Industry									eg.e-searning		
	1 - Indibuction to Netw		cations in	the moustry				CLO1	2					4	6
	2 - Digital Communication	on Basics						CLO1	4					6	10
								CLOI	-						10
	3 - Main characteristics	of Network Co	ommunica	tions				CLO1	2					4	6
	4 - Evolution of Commun	ication Netw	orks					CLO1, CLO2,							
								CLO3	2					4	6
	5 - Industrial Communic	ation Network	ks					CLO1, CLO2,	6					12	18
	6 - Industrial Communic	ation Standar	de					CLO3							
			-					CLO1, CLO2, CLO3	6					12	18
	7 - Layered Architecture	5						CLO1, CLO2	4					6	10
	8 - The Internet							500 2, 0002	-			<u> </u>			
	o - The Internet							CLO1, CLO2	2					4	6
										1		1	1		
															0
															80
			Cont	tinuous Assessme	ot			Percentage		F2F			NF2F		SLT
	1	Acciment						(%)					14721		0
	2	Assignment NF2F work	(cxercises	1				20 20				-			0
	3		earch and	paper readings)				30							0
														Tota	0
								Percentage							
		1		inal Assessment				(%)		F2F			NF2F		SLT
	1	Written exar	mination					30		2		I		Tota	2
														rota	2
	**Please tick (V) if this cours						f 50%						GRANE	TOTAL SLT	82
	L = Lecture, T = Tutorial, P				2F=Non Face to F	ace							-		
11	*Indicate the CLO based of Identify special requirem		nbering in	item 8.											
12	References (include requirement		her readin	gs, and should b	e the most curre	ent)									
							<u> </u>								





Course: Robotics applied to the wood-based industry. Elective.

			Assessment Wei	ghtage (%)				
No.	Course Leaning Outcome (CLO)	Cogn	itive (C)	Affect	tive (A)			
		PL	.0 1	PLO 4	PLO 7			
1	Discuss the concepts of industrial robotic and their context in the wood-based industry (C5)		4					
2	Identify among types of robots and their use in different process in the wood-based industry (A4, EM)			4				
	Defend an industrial robotic solution to current and incomming issues in the logistic and manufacturing wood-based industry (A4, LL)				Å			
	TOTAL (%)		30	7	70			
			Teaching &		Assessmen	t Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Learning Activities	Assignment / F	eer assignment	Case study Report&Discussion	Final	Total (%)
1	Discuss the concepts of industrial robotic and their context in the wood-based industry (C5 = PLO1)	PLO1	Lecture & self- Learning (SCL): Assignment				30	30
	Identify among types of robots and their use in different process in the wood-based industry (A4, EM = PLO4)	PLO4	• Lecture & self- Learning • (SCL): Assignment • (SCL): Case Study	2	20			20
	Defend an industrial robotic solution to current and incomming issues in the logistic and manufacturing wood-based industry (A4, LL = PLO7)	PLO7	Lecture & self- Learning (SCL): Assignment (SCL): Case Study	2	20	30		50
			TOTAL (%)	4	40	30	30	100



Deliverable 2.2: Joint Curriculum



		· · · · ·													
1.	Name of Course :	Robotic appl	ied to the wo	od-based ind	ustry										
2	Course Code :														
2.	Synopsis :		gives the stud wood-based		rview of robo	tic, mainly fo	cused on its u	ise in the woo	od-based indu	stry. The con	tents include,	basic conc	epts of industria	l robotic, goals in th	e current industry and
3.	Name(s) of academic staff :														
4.	Semester and Year		6				N								
	offered :		Sem	ester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-	No													
_	requisite: (if any)														
7.	Course Learning Outcom														
	CLO1							industry (C5=							
	CLO2							based industry				- 01.071			
8.	CLO3 Mapping of the Course L	-						gistic and ma		/ood-based in	idustry (A4, Li	. = PLO7)			
o.	Please select the Learnin						g wethous ar	ia Assessmen	it :						
							gramme Learn	ing Outcomes	(PLO)						
	6				Values, Attitudes	Communication,		Information						1	
	Course Learning Outcomes (CLO)	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	and	Leadership and	Problem Solving and Scientific Skills	Management and Lifelong Learning						Learning and Teaching Method	Assessment Method
					Professionalism	Team Skills		Skills							
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
	CLO 1	v												Lecture, self- Learning, Student-	Continuous assignment.
		ľ												Center Learning.	Final exam.
														Lecture, self-	
	CLO 2				V									Learning, Student-	Continuous assignment.
														Center Learning.	
														Lecture, self-	Continuous assignment.
	CLO 3							v						Learning, Student- Center Learning.	Case study.
													1	conten counting.	
	Indicate the relevancy bet	ween the CLO a	and PLO by tick	ing "/" the ap	oropriate relev	ant box.									
	(This description must be r		with Standard	s 2.1.2 , 2.2.1 d	ind 2.2.2 in Ar	ea 2 - pages 16	5&18)								
9.	Transferable Skills (if ap			المعادمة المعادمة			1	Ability to tal	e decisions a	bout the use	of robots in w	ood-based	industry.		
	(Skills learned in the cou	irse of study v	vnich can be	userul and uti	lized in other	settings)							-		
							2				ts taking part				
							3	Ability to im	prove wood-b	based industr	/ through indu	istrial robo	tic and robots.		
10.	Distribution of Student Le	arning Time (SI	LT)												
									-						
										Guided Lea	Teaching and	Learning	Guided	•	
			Course Cor	ntent Outline				CLO*					Learning (NF2F)	Independent	SLT
									L	т	Р	0	eg: e-Learning	Learning (NF2F)	
	Introduction to Industria	Robotic						CLO1	2					3	5
								CLUI	2					3	,
	Main concepts of indust	rial robotic						CLO1	6					8	14
	Technical issues in robot systems	ic and robots:	sensors, act	lators, manip	ulators, gears	s and other m	iechanical	CLO1	6					8	14
	Micro, nano and mobile	robote													
	Micro, nano and mobile	TODOLS						CLO1, CLO2	2					4	6
	Robots in small and mee	tium enternris	ses.												
								CLO2, CLO3	2					4	6
	Guidelines for implement	nting robotic s	systems in sm	all and medi	um enterprise	s									
								CLO2, CLO3	4					6	6
	Use cases in the wood-b	ased industry								İ 🗌				-	
								CLO2, CLO3	4					6	10
	Future trends of robotic	in industry						CLO3	2					3	5
								2205	-						
														Total	66
								Percentage							
			Continuou	s Assessment				(%)		F2F			NF2F		SLT
	1	Continuous a	ssignment					20		1					1
	2	Continuous a						20		1					1
	3	Case study re	eport					30					12	.	12
														Total	14
								Percentage							
			Final A:	sessment				(%)		F2F			NF2F		SLT
	1	Final exam						30		2					2
														Total	2
														D TOTAL SLT	82
	**Please tick (V) if this cours L = Lecture, T = Tutorial, P=						(ELT) of 50%						GRAN	S IOTAL SLI	62
	*Indicate the CLO based of														
11	Identify special requirem	nent to													
12	References (include requ	uired and furt	her readings,	and should be	e the most cu	rrent)		s.stanford.ed							
													l robot investme botics in europe,		
							https://www	w.eu-robotics.	net/	-	-			,	
							https://goldbe	rg.berkeley.edu/	pubs/T-ASE-Clou	ud-RA-Survey-Pa	per-Final-2015.p	df			
13	Other additional information	ation :													





Course: Augmented reality. Elective.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affective (A)				
		PLO 1	PLO 6	PLO 3				
1	Evaluate the use and benefits of Augmented Reality technology. (C5)	×						
2	Design theoretical augmented reality solutions for the furniture sector. (C6, CTPS = PLO6)		×					
3	Explain the posibilities of Augmented Reality within the wood-based industry. (A4, TS)			Å				
	TOTAL (%)		70	30				
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment	Activities (%)		Total (%)
			Fouring & Louning Konvico	Assignment	Project report. Case study	Scenario-based debate	Final	. otal (70)
1	Evaluate the use and benefits of Augmented Reality technology. (C5= PLO1)	PLO1	Lecture & self-Learning (SCL): Assignment (SCL): Case Study (SCL): Problem-Based Learning (PBL).	5	10	5	15	35
2	Design theoretical augmented reality solutions for the furniture sector. (C6, CTPS = PLO6)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment. Practical. Modular Project.	5	10	5	15	35
3	Explain the posibilities of Augmented Reality within the wood-based industry. (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment. Practical. Modular Project.	10	10	10		30
	TOTAL (%)			20	30	20	30	100





1.	Name of Course :	Augmented	Reality												
	Course Code :	_													
2.	Synopsis :	This course i	ntroduces Au	gmented Rea	lity, giving an	overview of	what Augmer	nted Reality is	and how it w	vorks. It detai	Is how to use	this techno	ology in the woo	d and furniture sec	or, explaining some of
		its most rele	vant uses in f	his field. It al	so refers to t	he commercia	al benefits that	at the furnitur	e sector can	obtain thanks	to this techn	ology.			
3.	Name(s) of academic														
	staff :														
4.	Semester and Year		Sem	ester		1	Year	1							
-	offered :					_		-							
5.	Credit Value :	2													
6.	Prerequisite/co- requisite: (if any)	No													
7.	Course Learning Outcon	nes (CLO) : At	the end of th	e course the	students will	be able to:									
	CLO1			efits of Augm			C5)								
	CLO2	Design theor	etical augme	nted reality s	olutions for th	ne furniture s	ector. (C6, CT	PS = PLO6)							
	CLO3						sed industry.								
8.	Mapping of the Course														
	Please select the Learni	ing Outcome D	omain (LOD)	for each PLO	in the cells a			dge, PLO2 - Ci ing Outcomes (3 - Practical S	kills				
								Information			1				
	Course Learning Outcomes (CLO)	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific Skills	Management and Lifelong Learning						Learning and Teaching Method	Assessment Method
	outcomes (cco)				Professionalism	Team Skills		Skills						reaching method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
	CLO 1	V												Lecture, self- Learning, Student-	Continuous assignment.
		· ·												Center Learning.	Final exam.
														Lecture, self-	Continuous assignment.
	CLO 2						V							Learning, Student- Center Learning.	Final exam.
														Lecture, self-	
	CLO 3			v										Learning, Student-	Continuous assignment.
														Center Learning.	_
	Indicate the relevancy be (This description must be						5 & 18)								
9.	Transferable Skills (if a			, 2.2.1 (1	Lises of Auro	mented Reali	ty throughout	the production	on chain of	furniture from	the design to the fi	nal piece.
	(Skills learned in the co		hich can be	useful and uti	lized in other	settings)	2				ed Reality in t			the design to the h	lai piece.
							3				nted reality in				
							4	Roll of Augm	ented Reality	in Industry 4	4.0				
10.	Distribution of Student Le	earning Time (S	.T)												
											Teaching and	i Loorning A	stivities		1
										Guided Lea		r tearning A	Guided	1	
			Course Cor	tent Outline				CLO*	L	т	P	0	Learning (NF2F)	Independent Learning (NF2F)	SLT
											r	0	eg: e-Learning	ceaning (wrzr)	
	1. Introduction to Augm	ented Reality						CLO1	1		2			3	6
															-
	2. Augmented Reality v	s Virtual Reali	y					CLO1	1		1			1	3
	L														
	3. AR: How it works?							CLO1	1		2			2	5
	4. Types of Augmented	Reality						CLO1, CLO3	1		2			2	5
	5. Brief description of s	omo coftuero	used in AR					CI 01							
	5. Brief description of s	ome sontware	used in AK					CLO1	1		2			2	5
	6. Application of AR in t	the furniture se	ctor. Design	and Prototypi	ng.			CLO2, CLO3	1		6			2	9
			itter besign	ana motorypi				CLO2, CLO3	-		•			-	
	7. Application of AR in t	the furniture se	ctor. Product	ion Process.				CLO2, CLO3	1		5			2	8
								,	-		-			_	-
	8. Application of AR in t	the furniture se	ctor. Supply	chain.				CLO2, CLO3	2		4			2	8
	9. Application of AR in t	the furniture se	ector. Mainte	nance.				CLO2, CLO3	1		2			2	5
											2				
	10. Application of AR in	the furniture	ector. Traini	чБ•				CLO2, CLO3	1		2			2	5
	<u> </u>	the furniture	sector. Traini	ιg.											
	10. Application of AR in 11. Resources for AR.	the furniture	sector. Traini	њ.				CLO2, CLO3	2		11			2	15
	11. Resources for AR.			ig.				CLO2	2		11			2	15
	<u> </u>													2	15
	11. Resources for AR.			н <u>р</u> .				CLO2	2		11			2	15
	11. Resources for AR.							CLO2 CLO3	2		11			2	15
	11. Resources for AR.		cial Market.	s Assessment			_	CLO2 CLO3 Percentage	2	F2F	11		NF2F	2	15
	11. Resources for AR.		cial Market.					CLO2 CLO3	2	F2F	11		NF2F	2	15 6 80
	11. Resources for AR. 12. Augmented Reality 1 1 2	in the comme Assignment Project repo	rcial Market. Continuou t. Case study	s Assessment				CLO2 CLO3 Percentage (%) 15 40	2	F2F	11		NF2F	2	15 6 80 SLT 0 0
	11. Resources for AR. 12. Augmented Reality	in the comme	rcial Market. Continuou t. Case study	s Assessment				CLO2 CLO3 Percentage (%) 15	2	F2F	11		NF2F	2 2 Total	15 6 80 SLT 0 0 0
	11. Resources for AR. 12. Augmented Reality 1 1 2	in the comme Assignment Project repo	rcial Market. Continuou t. Case study	s Assessment				CLO2 CLO3 Percentage (%) 15 40	2	F2F	11		NF2F	2	15 6 80 SLT 0 0
	11. Resources for AR. 12. Augmented Reality 1 1 2	in the comme Assignment Project repo	cial Market. Continuou t. Case study ed debate	s Assessment				CLO2 CLO3 Percentage (%) 15 40 15	2		11			2 2 Total	15 6 80 SLT 0 0 0 0
	11. Resources for AR. 12. Augmented Reality 1 1 2	in the comme Assignment Project repo	cial Market. Continuou t. Case study ed debate	s Assessment				CLO2 CLO3 Percentage (%) 15 40	2	F2F	11		NF2F	2 2 Total	15 6 80 SLT 0 0 0
	11. Resources for AR. 12. Augmented Reality 1 1 2	in the comme Assignment Project repo	cial Market. Continuou t. Case study ed debate	s Assessment				CLO2 CLO3 Percentage (%) 15 40 15 Percentage	2		11			2 2 Total	15 6 80 SLT 0 0 0 0
	11. Resources for AR. 12. Augmented Reality 1 1 2 3 1 2	in the comme Assignment Project repo Scenario-ba	cial Market. Continuou t. Case study ed debate	s Assessment				CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11			2 2 Total	15 6 80 SLT 0 0 0 0 0 SLT
	11. Resources for AR. 12. Augmented Reality 1 1 2 3 1 1 1 1	Assignment Project repo Scenario-ba	Continuou Continuou t. Case study ed debate Final A:	s Assessment				CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11		NF2F	2 2 Total	15 6 80 5LT 0 0 0 0 0 0 5LT 2 2
	11. Resources for AR. 12. Augmented Reality 1 1 2 3 1 **Please tick (t) if this court	in the comment Assignment Project repo Scenario-bar Final Exam	rcial Market. Continuou t. Case study red debate Final A:	s Assessment			E.1) of 50%	CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11		NF2F	2 2 Total	15 6 80 5LT 0 0 0 0 5LT 2
		in the commer Assignment Project repo Scenario-baz Final Exam	cial Market. Continuou t. Case study ed debate Final As ri/ Clinical Placen others, F2F=F0	s Assessment sessment eent/Practicum/			E.1] of 50%	CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11		NF2F	2 2 Total	15 6 80 5LT 0 0 0 0 0 0 5LT 2 2
11	11. Resources for AR. 12. Augmented Reality 1 1 2 3 1 +*Please tick (t) if this court	Assignment Project repo Scenario-bar Final Exam	cial Market. Continuou t. Case study ed debate Final As ri/ Clinical Placen others, F2F=F0	s Assessment sessment eent/Practicum/			18.1) of 50%	CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11		NF2F	2 2 Total	15 6 80 5LT 0 0 0 0 0 0 5LT 2 2
		in the comment Assignment Project repo Scenario-bar Final Exam = Fractical, 0= m the CLO's num	Continuou t. Case study ed debate Final Ac r/ Clinical Placen others, F2F=F0 nbering in Iten	s Assessment sessment nent/ Practicum/ ce to Face, NF. n 8.	P=Non Face to	Face	ELT) of 50%	CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11		NF2F	2 2 Total	15 6 80 5LT 0 0 0 0 0 0 5LT 2 2
		in the comment Assignment Project repo Scenario-bar Final Exam = Fractical, 0= m the CLO's num	Continuou t. Case study ed debate Final Ac r/ Clinical Placen others, F2F=F0 nbering in Iten	s Assessment sessment nent/ Practicum/ ce to Face, NF. n 8.	P=Non Face to	Face	16.1) of 50%	CLO2 CLO3 Percentage (%) 15 40 15 Percentage (%)	2	F2F	11		NF2F	2 2 Total	15 6 80 5LT 0 0 0 0 0 0 5LT 2 2




Course: Simulation and 3D Scanning. Elective.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 3			
1	Assess the uses of 3D scanning and simulation within the wood-based ndustry. (C5= PLO1, CTPS =PLO6)	Y	Y					
2	Display an operation or product through 3D scanning and simulation technologies. (P5= PLO2)			4				
3	Identify 3D scanning and simulation solutions for current and future issues in the wood and furniture industry. (A4, TS = PLO3)				4			
	TOTAL (%)		45	40	15			
					Assessment	Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment	Project oriented problem based learing.	Reports	Final	Total (%)
1	Assess the uses of 3D scanning and simulation within the wood-based ndustry. (C5= PLO1, CTPS	PLO1	Lecture & self-Learning (SCL): Assignment	15			15	30
	=PLO6)		(SCL): Case Study (SCL): Problem-Based Learning (PBL).					50
2	Display an operation or product through 3D scanning and simulation technologies. (P5= PLO2)	PLO6	Practical. Prototype and Technical Report.				15	15
		PLO2	(SCL): Assignment Practical. Modular Project.		40			40
3	Identify 3D scanning and simulation solutions for current and future issues in the wood and furniture industry. (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.			15		15
	•		TOTAL (%)	15	40	15	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Simulation a	and 3D Scannr	nig											
	Course Code :			0											
2.	Synopsis :	This course a	aims to transi	mit knowledg	e about digita	al simulation	and its applic	ations in the f	urniture indu	stry.					
		In addition,	concepts abou	ut the 3D scar	ning process	and rapid pro	ototyping will	be discussed,	as well as ho	w it can be u	ised in the fur	niture and	wood sector.		
3.	Name(s) of academic														
4.	staff : Semester and Year							1							
٦.	offered :		Sem	lester		1	Year	1							
5. 6.	Credit Value :	2													
6.	Prerequisite/co- requisite: (if any)	No													
7.	Course Learning Outcom	nes (CLO) : At	the end of th	e course the	students will	be able to:									
	CLO1							. (C5= PLO1, (
	CLO2 CLO3							ies. (P5= PLO2 he wood and i		stry. (A4, TS :	= PLO3)				
8.	Mapping of the Course I	earning Outco	omes to the P	rogramme Le	arning Outco	mes, Teachir					,				
	Please select the Learni	ng Outcome D	Oomain (LOD)	for each PLO	in the cells al		eramme Learn	ing Outcomes	PLO)						
	Course Learning	Knowledge of		Social Skills and	Values, Attitudes	Communication,	Problem Solving	Information Management and						Learning and	
	Outcomes (CLO)	Discipline Area	Practical Skills	Responsibilities	and Professionalism	Leadership and Team Skills	and Scientific Skills	Lifelong Learning Skills						Teaching Method	Assessment Method
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
	CLO 1	v					v							Lecture, self- Learning, Student- Center Learning.	Continuous assignment. Final exam.
	CLO 2		v				v							Lecture, self- Learning, Student-	Continuous assignment. Final exam.
	CLO 3			~										Center Learning. Lecture, self- Learning, Student-	Continuous assignment.
														Center Learning.	continuous asignment.
	Indicate the relevancy bet (This description must be	6 & 18)													
9.	Transferable Skills (if ap	oplicable)					1	Know what a	imulation is	its most use	d techniques a	and coffus	70		
	(Skills learned in the cou	urse of study v	which can be i	useful and uti	lized in other	settings)					-				
							2		-	s and how it v simulation stu		ations in the	e furniture and v	wood sector.	
							3								
10.	Distribution of Student Le	arning Time (S	LT)				4								
										Guided Lea	Teaching and rning (F2F)	d Learning A	-		
			Course Cor	ntent Outline				CLO*	L	Guided Lea			Guided Learning (NF2F)	Independent Learning (NF2F)	SLT
	1 Introduction to Simu	lation and 3D		ntent Outline				CLO*		Guided Lea T	rning (F2F)	d Learning A	Guided	Independent Learning (NF2F)	SLT
	1 Introduction to Simu	lation and 3D		ntent Outline				clo*	L 2		rning (F2F)		Guided Learning (NF2F)		SLT 7
	2 Fundamental Simula	tion concepts	Scanning.	ntent Outline							rning (F2F) P		Guided Learning (NF2F)	Learning (NF2F)	
	2 Fundamental Simula 3 Application of Simula	tion concepts ation in the In	Scanning. dustry.					CLO1	2		P 3		Guided Learning (NF2F)	Learning (NF2F)	7
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Sca	tion concepts ation in the In anning within	Scanning. dustry. the wood-bas	sed Industry.				CLO1 CLO1	2		P 3 3		Guided Learning (NF2F)	Learning (NF2F) 2 3	7
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Sca 5 3D product modeling	tion concepts ation in the In anning within :: 3D Scanning	Scanning. dustry. the wood-bas	sed Industry.				CLO1 CLO1 CLO1, CLO3	2 2 2		rning (F2F) P 3 3 3 3		Guided Learning (NF2F)	Learning (NF2F)	7 8 8
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Sca	tion concepts ation in the In anning within :: 3D Scanning im.	Scanning. dustry. the wood-bas	sed Industry.				CLO1 CLO1 CLO1, CLO3 CLO1, CLO3 CLO2 CLO2	2 2 2 2 2 1		P P 3 3 3 3 3 9 9		Guided Learning (NF2F)	Learning (NF2F) 2 3 3 3 3	7 8 8 8 14 14
	2 Fundamental Simula 3 Application of Simul: 4 Application of 3D Sc. 5 3D product modeling 6 Introduction to FlexS	tion concepts ation in the In anning within :: 3D Scanning im. example.	Scanning. dustry. the wood-bas ; and Rapid Pr	sed Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO1, CLO3 CLO2 CLO2	2 2 2 2 2 2 1 1		ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F)	Learning (NF2F) 2 3 3 3 3 4 4 4	7 8 8 8 14 14 14
	2 Fundamental Simula 3 Application of Simul 4 Application of 3D Sci 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation	tion concepts ation in the In anning within :: 3D Scanning im. example.	Scanning. dustry. the wood-bas ; and Rapid Pr	sed Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO1, CLO3 CLO2 CLO2	2 2 2 2 2 1		P P 3 3 3 3 3 9 9		Guided Learning (NF2F)	Learning (NF2F) 2 3 3 3 3 4 4 4 2 2	7 8 8 8 14 14 14 7
	2 Fundamental Simula 3 Application of Simul 4 Application of 3D Sci 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation	tion concepts ation in the In anning within :: 3D Scanning im. example.	Scanning. dustry. the wood-bas ; and Rapid Pr	sed Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO1, CLO3 CLO2 CLO2	2 2 2 2 2 2 1 1		ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F)	Learning (NF2F) 2 3 3 3 3 4 4 4	7 8 8 8 14 14 14
	2 Fundamental Simula 3 Application of Simul 4 Application of 3D Sci 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation	tion concepts ation in the In anning within :: 3D Scanning im. example.	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4	sed Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO1, CLO3 CLO2 CLO2 CLO3 Percentage	2 2 2 2 2 2 1 1		ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F)	Learning (NF2F) 2 3 3 3 3 4 4 4 2 2	7 8 8 8 14 14 14 7
	2 Fundamental Simula 3 Application of Simul 4 Application of 3D Sci 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation	tion concepts ation in the In anning within : 3D Scanning im. example. a and scanning	Scanning. dustry. the wood-bas and Rapid Pr g in industry 4 Continuou	ied Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO2 CLO2 CLO2 CLO2 CLO3 Percentage (%)	2 2 2 2 2 2 1 1	T	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 3 4 4 4 2 2	7 8 8 8 14 14 14 7 80
	2 Fundamental Simula 3 Application of Simuli 4 Application of 3D Scs 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2	tion concepts ation in the In anning within : 3D Scanning im. example. and scanning Assignment Practical wo	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4 Continuou	ied Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO1, CLO3 CLO2 CLO2 CLO3 Percentage (%) 20 40	2 2 2 2 2 2 1 1	T	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 3 4 4 4 2 2	7 8 8 8 14 14 14 14 7 80 51T 0 0
	2 Fundamental Simula 3 Application of Simul. 4 Application of 3D Sci 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1	tion concepts ation in the In anning within : 3D Scanning im. example. a and scanning Assignment	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4 Continuou	ied Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO2 CLO2 CLO2 CLO2 CLO3 Percentage (%) 20	2 2 2 2 2 2 1 1	T	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 3 4 4 4 2 Total	7 8 8 8 14 14 14 7 80 80 81T 0 0 0
	2 Fundamental Simula 3 Application of Simuli 4 Application of 3D Scs 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2	tion concepts ation in the In anning within : 3D Scanning im. example. and scanning Assignment Practical wo	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4 Continuou	ied Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO3 Percentage (×0) 40 10	2 2 2 2 2 2 1 1	T	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 3 4 4 4 2 2	7 8 8 8 14 14 14 7 80 80 81T 0 0 0
	2 Fundamental Simula 3 Application of Simuli 4 Application of 3D Scs 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2	tion concepts ation in the In anning within : 3D Scanning im. example. and scanning Assignment Practical wo	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4 Continuou rk	ied Industry. ototyping.				CLO1 CLO1 CLO1, CLO3 CLO2 CLO2 CLO2 CLO3 Percentage (%) 20 40 10	2 2 2 2 2 2 1 1	T	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 3 4 4 4 2 Total	7 8 8 8 14 14 14 7 80 80 81T 0 0 0
	2 Fundamental Simula 3 Application of Simuli 4 Application of 3D Scs 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2	tion concepts ation in the In anning within : 3D Scanning im. example. and scanning Assignment Practical wo	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4 Continuou rk	sed Industry. ototyping. .0.				CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO3 Percentage (×0) 40 10	2 2 2 2 2 2 1 1	T	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 4 4 2 Total	7 8 8 8 14 14 14 14 14 7 80 SLT 0 0 0 0 SLT 2
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Sca 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2 3	tion concepts ation in the In anning within : 3D Scanning im. example. example. a and scanning Practical wo Reports	Scanning. dustry. the wood-bas ; and Rapid Pr ; in industry 4 Continuou rk	sed Industry. ototyping. .0.				CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO2 CLO3 Percentage (%) Percentage (%)	2 2 2 2 2 2 1 1	F2F	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 3 4 4 4 2 Total	7 8 8 8 14 14 14 14 14 7 80 SLT 0 0 0 0 SLT 2
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Sca 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2 3	tion concepts ation in the In inning within : 3D Scanning im. example. a and scanning Assignment Practical wo Reports Final Exam e is Latihan Indus	Scanning	sed Industry. ototyping. .0. s Assessment ssessment nent/ Practicum/			(ELT) of 50%	CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO2 CLO3 Percentage (%) Percentage (%)	2 2 2 2 2 2 1 1	F2F	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 4 4 2 Total	7 8 8 8 14 14 14 14 14 7 80 80 81T 0 0 0 0 0 81T 2
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Scc 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2 1 1 2 1 4-Please tick (M) if this cours L = Lecture, T = Tutorial, P Indicate the CLO based o	tion concepts ation in the In anning within : 3D Scanning im. example. a and scanning Assignment Practical wo Reports Final Exam e is Latihan Induse Practical, dus	Scanning	ied Industry. ototyping. .0. s Assessment ssessment nemt/ Practicum/			(ELT) of 50%	CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO2 CLO3 Percentage (%) Percentage (%)	2 2 2 2 2 2 1 1	F2F	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 4 4 4 2 Total Total	7 8 8 8 14 14 14 14 7 80 80 81 7 80 80 81 7 80 80 81 7 81 7
11	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Scs 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2 1 4 1 2 3 1 ++Please tick (v) it this cours L = Lecture, T = Tutorial, P	tion concepts ation in the In inning within : 3D Scanning im. example. a and scanning Assignment Practical wo Reports Final Exam e Is Lathan Indus n Practical, 0= n the CLO's nun	Scanning	sed Industry. ototyping. .0. s Assessment ssessment nent/ Practicum/ ree to Face, NF2	2F=Non Face to	o Face	(ELT) of 59%	CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO2 CLO3 Percentage (%) Percentage (%)	2 2 2 2 2 2 1 1	F2F	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 4 4 4 2 Total Total	7 8 8 8 14 14 14 14 7 80 80 81 7 80 80 81 7 80 80 81 7 81 7
	2 Fundamental Simula 3 Application of Simula 4 Application of 3D Sca 5 3D product modeling 6 Introduction to FlexS 7 Practical Simulation 8 Roll of 3D simulation 1 2 3 1 1	tion concepts ation in the In inning within : 3D Scanning im. example. a and scanning Assignment Practical wo Reports Final Exam e Is Lathan Indus n Practical, 0= n the CLO's nun	Scanning	sed Industry. ototyping. .0. s Assessment ssessment nent/ Practicum/ ree to Face, NF2	2F=Non Face to	o Face	(ELT) of 50%	CLO1 CLO1 CLO1, CLO3 CLO2, CLO2 CLO2 CLO2 CLO3 Percentage (%) Percentage (%)	2 2 2 2 2 2 1 1	F2F	ming (F2F) P 3 3 3 3 9 9 9 9 9		Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 2 3 3 3 4 4 4 2 Total Total	7 8 8 8 14 14 14 14 7 80 80 81 7 80 80 81 7 80 80 81 7 81 7







Course: Cloud Computing and Big Data applied to wood-based industry. Elective.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affective (A)				
		PLO 1	PLO 6	PLO 4				
1	Determining gaps or failures in a Cloud Computing and Big Data scenarios (C5, CTPS)	Å	4					
2	Providing options to build a Cloud Computing Environment and Big Data analysis ecosystems. (C6, CTPS)		×					
3	Revise literature and new trends of Cloud Computing in the Wood and Furniture Industry (A5, TS)			Å				
	TOTAL (%)		80	20				
					Assessment	Activities (%)		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment (Exercises)	NF2F Practical Work	Reports (research and paper readings)	Final	Total (%)
1	Determining gaps in Cloud Computing and Big Data scenarios (C5 = PLO1) (CTPS = PLO6)	PLO1	Lecture & self-Learning (SCL): Assignment	10	10		15	35
			(SCL): Case Study (SCL): Problem-Based Learning (PBL).					
2	Providing options to build a Cloud Computing Environment and Big Data analysis ecosystems. (C6, CTPS = PLO6)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment. Data Analysis and Hadoop exercises	10	20		15	45
3	Revise literature and new trends of Cloud Computing in the Wood and Furniture Industry (A5, EM = PLO4)	PLO4	Lecture & self-Learning (SCL): Discussion (SCL): Problem-Based Learning (PBL). Research of papers about Internet of Things applied to Industry Synhetize new ideas acquired Report			20		20
			TOTAL (%)	20	30	20	30	100





1.	Name of Course :	Cloud Compu	uting and E	Big Data applied	d to wood-based	l industry									
2.	Course Code :	mi				10: 0 -									
2.	Synopsis :					ng and Big Data management to		nich are the mai	n teatures of	them. In add	ition, the mo	dels and m	ethods of deploy	ment of cloud com	puting are explained, as
								ne quidelines ar	d hasic conc	ents of use an	e given toge	ther with re	eal applications i	n the Industry	
3.	Name(s) of academic	rutilennore	, it is pres	enteu what is t	ne most useu te	childingy in big	Data and sol	ne guidennes ai	iu basic conci	epts of use al	e given, toge	uler with the	ar applications i	n the moustry.	
5.	staff :														
4.	Semester and Year														
	offered :		5	Semester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-														
	requisite: (if any)	No													
7.	Course Learning Outcome	es (CLO) : At	the end of	f the course the	students will b	e able to:									
	CLO1					Big Data scena	rios. (C5, C1	PS)							
	CLO2	Providing sol	lutions in C	Cloud Computing	g Environment a	nd Big Data ana	lysis ecosys	ems. (C6, CTPS	5)						
						n the Wood and									
8.	Mapping of the Course Le						ethods and A	ssessment :							
	Please select the Learnin	g Outcome D	omain (LC	DD) for each PLC	In the cells ab			ng Outcomes (PLC	2)						
				1	1			Information	<i>.</i> ,	1	1	r –	1		
	Course Learning	Knowledge of	Practical Skills	Social Skills and	Values, Attitudes and	Communication, Leadership and Team	Problem Solving and Scientific	Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area	Skills	Responsibilities	Professionalism	Skills	Skills	Lifelong Learning Skills						Teaching Method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
														Lecture, self-	Continuous essimment
	CLO 1	V					V							Learning, Student-	Continuous assignment. Final exam.
														Center Learning.	
														Lecture, self-	Continuous assignment.
	CLO 2						V							Learning, Student- Center Learning.	Final exam.
	CLO 3				v									Lecture, self- Learning, Student-	Continuous assignment.
					l *							1		Center Learning.	continuous assignment.
	Indicate the relevancy betw	ween the CLO a	nd PLO by	ticking "/" the ap	opropriate releva	nt box.									
	(This description must be re	ead together v	vith Stando	ards 2.1.2 , 2.2.1	and 2.2.2 in Are	a 2 - pages 16 & 1	18)								
9.	Transferable Skills (if app							Decembing of	elevel becad	and Die Date	ta alta al a ai a a	in industria			
	(Skills learned in the cou	rse of study w	vhich can b	be useful and ut	tilized in other s	ettings)	1	Recognition of	cloud-based	and Big Data	technologies	in industria	il environments.		
								Ability to apply	the knowled	ge acquired ir	Cloud Comp	outing and B	ig Data in Indus	trial environments b	based on furniture and
							2	wood.							
								To know future	trends in the	Cloud Comp	uting paradig	m.			
							3								
							4								
10.	Distribution of Student Lea	arning Time (Sl	(T)												
			,												
			,												
										Cuided Lee	Teaching an	d Learning A			
				e Content Outlin	e			CLO*		Guided Lea		d Learning A	Guided	Independent	SLT
		•		e Content Outlin	e			CLO*	L	Guided Lea		d Learning A		Independent Learning (NF2F)	SLT
			Cours		e						rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F)	
	1 - Introduction to Cloud		Cours		e			CLO*	L 2		rning (F2F)	1	Guided Learning (NF2F)		SLT 6
	1 - Introduction to Cloud	Computing ar	Cours		ie			CLO1	2		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F)	6
		Computing ar	Cours		ie						rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F)	
	1 - Introduction to Cloud 2 - Models of Cloud Com	Computing ar	Cours		ie			CLO1	2		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F)	6
	1 - Introduction to Cloud	Computing ar	Cours		ie			CLO1	2		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F)	6
	1 - Introduction to Cloud 2 - Models of Cloud Com 3 - Deployment Models	Computing ar	Cours nd main ch	naracteristics				CLO1 CLO1	2		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5	6
	1 - Introduction to Cloud 2 - Models of Cloud Com	Computing ar	Cours nd main ch	naracteristics				CLO1 CLO1	2		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5	6
	1 - Introduction to Cloud 2 - Models of Cloud Com 3 - Deployment Models 4 - Introduction to Big Da	Computing ar puting ita, character	Cours nd main ch	naracteristics				CLO1 CLO1 CLO1	2 2 4		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6	6 7 10
	1 - Introduction to Cloud 2 - Models of Cloud Com 3 - Deployment Models	Computing ar puting ita, character	Cours nd main ch	naracteristics				CLO1 CLO1 CLO1	2 2 4		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6	6 7 10
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A 	Computing an puting ita, character inalysis	Cours nd main ch	naracteristics				CLO1 CLO1 CLO1 CLO1, CLO2	2 2 4 4		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 5	6 7 10 9
	1 - Introduction to Cloud 2 - Models of Cloud Com 3 - Deployment Models 4 - Introduction to Big Da	Computing an puting ita, character inalysis	Cours nd main ch	naracteristics				CLO1 CLO1 CLO1 CLO1, CLO2	2 2 4 4		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 5	6 7 10 9
	I - Introduction to Cloud Andels of Cloud Com, J - Deployment Models - Introduction to Big Da - The process of Data A 6 - Getting started with I	Computing ar puting ita, character inalysis Hadoop	Cours nd main ch istics and	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2	2 2 4 4 6		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12	6 7 10 9 18
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A 	Computing ar puting ita, character inalysis Hadoop	Cours nd main ch istics and	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2	2 2 4 4 6		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12	6 7 10 9 18
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A G - Getting started with I Introduction to Big Da 	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana,	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2	2 2 4 4 6 4		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12 8	6 7 10 9 18 12
	I - Introduction to Cloud Andels of Cloud Com, J - Deployment Models - Introduction to Big Da - The process of Data A 6 - Getting started with I	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana,	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2	2 2 4 4 6 4		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12 8	6 7 10 9 18 12
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A G - Getting started with I Introduction to Big Da 	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana,	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	2 2 4 4 6 4 3		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6	6 7 10 9 18 12 9 9
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A G - Getting started with I Introduction to Big Da 	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana,	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	2 2 4 4 6 4 3		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6 7 10 9 18 12 9
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A G - Getting started with I Introduction to Big Da 	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana,	dimensions of s				CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	2 2 4 4 6 4 3		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6	6 7 10 9 18 12 9 9
	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A G - Getting started with I Introduction to Big Da 	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana, ations	dimensions of s	scalability			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	2 2 4 4 6 4 3		rning (F2F)	1	Guided Learning (NF2F)	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6	6 7 10 9 18 12 9 9
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	 Introduction to Cloud Models of Cloud Com Deployment Models Introduction to Big Da The process of Data A G - Getting started with I Introduction to Big Da 	Computing an puting ita, character inalysis Hadoop ita Modeling	Cours nd main ch istics and and Mana, ations Contin	dimensions of s gement	scalability			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3	2 2 4 4 6 4 3	T	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6	6 7 10 9 18 12 9 9 9 9 80
	I - Introduction to Cloud A - Introduction to Big Da Deployment Models - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1	Computing an puting ita, character inalysis Hadoop ita Modeling ement Applic	Cours Individual Cours Individual Courses Individua	dimensions of s gement	nt			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	2 2 4 4 6 4 3	T	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6	6 7 10 9 18 12 9 9 9 9 80 80 80 5LT 0
	I - Introduction to Cloud A - Models of Cloud Com J - Deployment Models A - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 2	Computing an puting ita, character inalysis Hadoop ita Modeling ement Applic	Cours Individual Cours Individual Courses Individua	dimensions of s gement nuous Assessmen	nt			CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	2 2 4 4 6 4 3	T	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 6	6 7 10 9 18 12 9 9 9 9 9 80 80 80 80 80
	I - Introduction to Cloud A - Models of Cloud Com J - Deployment Models A - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 2	Computing an puting ita, character inalysis Hadoop ita Modeling ement Applic	Cours Individual Cours Individual Courses Individua	dimensions of s gement nuous Assessmen	nt			CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	2 2 4 4 6 4 3	T	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 5 12 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 7 10 9 18 12 9 9 9 80 5LT 0 0 0
	I - Introduction to Cloud A - Models of Cloud Com J - Deployment Models A - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 2	Computing an puting ita, character inalysis Hadoop ita Modeling ement Applic	Cours ond main ch istics and and Mana, ations Contin (Exercises earch and	dimensions of s gement nuous Assessmer) paper readings	nt			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%) 20 30 20	2 2 4 4 6 4 3	T	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 5 12 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
	I - Introduction to Cloud A - Introduction to Big Da Deployment Models - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 2 3 3	Computing ar puting ita, character inalysis Hadoop ita Modeling ement Applic Assignment NF2F work Reports (rese	Cours nd main ch istics and and Mana, ations Contin (Exercises earch and Fim	dimensions of s gement nuous Assessmen	nt			CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 5 12 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
	I - Introduction to Cloud A - Introduction to Big Da Deployment Models - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 2 3 3	Computing an puting ita, character inalysis Hadoop ita Modeling ement Applic	Cours nd main ch istics and and Mana, ations Contin (Exercises earch and Fim	dimensions of s gement nuous Assessmer) paper readings	nt			CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%) 20 30 20	2 2 4 4 6 4 3	T	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
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	I - Introduction to Cloud A - Introduction to Cloud Com, J - Deployment Models - Introduction to Big Da - The process of Data A - Getting started with I - Introduction to Big Data Real Big Data Manage 1 1 2 3 1 1	Computing an puting ita, character inalysis Hadoop ata Modeling ement Applic ement Applic Assignment NF2F work Reports (reso	Cours d main ch istics and and Mana, ations Contin (Exercises earch and Fin mination	dimensions of s gement nuous Assessment) paper readings;	nt			CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
	I - Introduction to Cloud A - Introduction to Cloud Com, J - Deployment Models A - Introduction to Big Da S - The process of Data A G - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 2 3 1 1 1 1	Computing ar puting ita, character inalysis Hadoop ita Modeling ement Applic ement Applic Assignment NF2F work Reports (rese Written exar	Cours and main ch istics and i and Mana, and Mana, ations Contei (Exercises earch and Finn mination	dimensions of s dimensions of s gement paper readings hal Assessment axement/ Practicumy	nt / WBL using Effective		ef 50%	CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
	I - Introduction to Cloud - Models of Cloud Com - Deployment Models - Introduction to Big Da - The process of Data A - Getting started with I - Introduction to Big Da 8 - Real Big Data Manage 1 2 3 1 +*Please tick (v) if this course L = Lecture, T = Tutoriol, P=	Computing an puting ita, character inalysis Hadoop ita Modeling ement Applic ement Applic ement Applic Mitten exar Vitten exar Procticol, 0=4	Cours Cours d main ch istics and and Mana ations Contin (Exercises earch and Fin mination st/ Clonkal Pla	dimensions of s dimensions of s gement) paper readings hal Assessment acement/ Practicum,	nt / WBL using Effective		of 50%	CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
	I - Introduction to Cloud - Introduction to Cloud Com, 3 - Deployment Models 4 - Introduction to Big Da 5 - The process of Data A 6 - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 1 2 3 1	Computing an puting ita, character inalysis Hadoop ata Modeling ement Applic ement Applic ement Applic Mritten exar Written exar s is Lathan Indust Practical, 0= the CLO's nun	Cours Cours d main ch istics and and Mana ations Contin (Exercises earch and Fin mination st/ Clonkal Pla	dimensions of s dimensions of s gement) paper readings hal Assessment acement/ Practicum,	nt / WBL using Effective		of 50%	CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
11		Computing ar puting ita, character inalysis Hadoop ita Modeling ement Applic ement Applic ement Applic stathan indust Written exar : is Lathan indust Practical, 0= t the CLO's nun	Cours Cours and main ch istics and i and Mana, ations Contin (Exercises earch and Finn inination ivi (Cinical Piu thering in i	dimensions of s dimensions of s gement paper readings hal Assessment acement/ Practicum, =Face to Face, Ni ttem 8.	nt / WBL using Effective 22F=Non Face to I	Face	of 50%	CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
	I - Introduction to Cloud - Introduction to Cloud Com, 3 - Deployment Models 4 - Introduction to Big Da 5 - The process of Data A 6 - Getting started with I 7 - Introduction to Big Da 8 - Real Big Data Manage 1 1 2 3 1	Computing ar puting ita, character inalysis Hadoop ita Modeling ement Applic ement Applic ement Applic stathan indust Written exar : is Lathan indust Practical, 0= t the CLO's nun	Cours Cours and main ch istics and i and Mana, ations Contin (Exercises earch and Finn inination ivi (Cinical Piu thering in i	dimensions of s dimensions of s gement paper readings hal Assessment acement/ Practicum, =Face to Face, Ni ttem 8.	nt / WBL using Effective 22F=Non Face to I	Face	of 50%	CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80
11		Computing ar puting ita, character inalysis Hadoop ita Modeling ement Applic ement Applic ement Applic stathan indust Written exar : is Lathan indust Practical, 0= t the CLO's nun	Cours Cours and main ch istics and i and Mana, ations Contin (Exercises earch and Finn inination ivi (Cinical Piu thering in i	dimensions of s dimensions of s gement paper readings hal Assessment acement/ Practicum, =Face to Face, Ni ttem 8.	nt / WBL using Effective 22F=Non Face to I	Face	of 50%	CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 Percentage (%)	2 2 4 4 6 4 3	F2F	rning (F2F)	1	Guided Learning (NF2F) eg: e-Learning NF2F	Learning (NF2F) 4 5 6 5 12 8 6 6 6 7 Total	6 7 10 9 18 12 9 9 9 9 9 80 80 80 80 80 80 80 80 80 80 80 80 80





Course: Eco and sustainable design. Elective.

No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affect	ive (A)	
		PLO 1	PLO 6	PLO 4	PLO 3	
1	Assess environmental aspects of ecological and sustainable design in the industry (C5, CTPS)	4	Å			
2	Identify action plans to mitigate the environmental impact on the industry (A4, EM)			~		
3	Relate ideas and new designs to social issues in furniture production processes. (A4, TS)				4	
	TOTAL (%)		53	21	26	
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assessment	Activities (%)	Total (%)
				Assignment	Final	
1	Assess the different production process in additive manufacturing. (C5 = PLO1) (CTPS = PLO6)	PLO1	Lecture & self-Learning (SCL): Assignment	11	15	53
	Assess the different production process in additive manufacturing. (C5 = PLO1) (C1P5 = PLO6)	PLO6	(SCL): Case Study (SCL): Problem-Based Learning (PBL).	12	15	53
2	Identify action plans to mitigate the environmental impact on the industry (A4, EM = PLO4)	PLO4	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	21		21
3	Relate ideas and new designs to social issues in furniture production processes. (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	26		26
			TOTAL (%)	70	30	100





1.	Name of Course :	Eco and sus	tainable desig	gn											
2.	Course Code : Synopsis :	traditional d		ll as the legal											t brings with respect to ental aspects to be
3.	Name(s) of academic staff :	Laken into a	ccount are m	troubceu.											
4.	Semester and Year offered :		Sem	ester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co- requisite: (if any)	No													
7.	Course Learning Outcon														
	CLO1				-			ustry (C5, CTP	S)						
	CLO2		on plans to m	-											
	CLO3							sses (A4, TS)							
8.	Mapping of the Course Please select the Learni					above it.									-
					1	Pro	gramme Learr	ning Outcomes	(PLO)		1	1	1		
	Course Learning	Knowledge of	Practical Skills	Social Skills and	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific	Information Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area	Practical Skills	Responsibilities	Professionalism	Team Skills	Skills	Lifelong Learning Skills						Teaching Method	Assessment wethou
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7						1	
	cl01	V					V							Lecture, self- Learning, Student- Center Learning.	Continuous assignment. Final exam.
	CLO 2				V									Lecture, self- Learning, Student- Center Learning.	Continuous assignment.
	CLO 3			V										Lecture, self- Learning, Student- Center Learning.	Continuous assignment.
	Indicate the relevancy be (This description must be						16 & 18)								•
9.	Transferable Skills (if a	oplicable)					1	Recognize e	nvironmental	aspects and	methodologi	es for evalu	ating environme	ental impact.	
	(Skills learned in the co	urse of study v	which can be	useful and ut	ilized in othe	r settings)	2				production ar				
							3				mmunication nts and mitiga		nent registration	processes	
10.	Distribution of Student Le	earning Time (S	iLT)					Ivialiageniei	it of environm	rentar merder		action plans			
								r –			Teaching an	d Learning A	Activities		
			Course Cor	tent Outline				CLO*		Guided Lea			Guided	Independent	SLT
	1 - Introduction to eco a	nd sustainabl							L	т	Р	o	Learning (NF2F) eg: e-Learning	Learning (NF2F)	
	2 - Traditional design ve			esign				CLO1	3					5	8
	3 - EU Legal and enviror							CLO1	3					5	8
	4 - Cost and life cycle ar	nalysis						CLO1, CLO2	4					8	12
	5 - Principles and strate	gies						CLO1, CLO2	3					6	9
	6 - Applying eco and sus	tainable desi	gn					CLO2 CLO2,CLO3	3					6	9
	7 - Environmental aspec	ts of the com	pany					CLO2,CLO3	6					10	16
	8 - Environmental produ	ict declaration	ı					CLO3	3					6	9
								I	I	1	I	I	I	Total	
				Percentage (%)		F2F			NF2F		SLT				
	2	Assignment						70							0
	3							1				1			0
								•	•			•		Total	
								Percentage							
	1	Written exa		ssessment				(%) 30		F2F			NF2F		SLT 2
	1	Written exa	mination					30		2				Total	
	**Please tick (V) if this cours						e(ELT) of 50%						GRAN	D TOTAL SLT	82
	L = Lecture, T = Tutorial, P *Indicate the CLO based o	n the CLO's nu			2F=Non Face	to Face									
11 12	Identify special requirer References (include req		her readings,	and should b	e the most c	urrent)									
	Other additional inform														





Course: Product design and digitalization. Elective.

			Assessment Weightage (%)				
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 2	PLO 3			
1	Test different advanced digital tools applicable to furniture design (C5)	Å					
2	Build solutions to new products design through advanced digital design tools (P5)		4				
3	Identify social needs through design methods and processes (A4, TS)			4			
	TOTAL (%)	35	55	10			
				As	sessment Activiti	es (%)	
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment	Practical Work (Digital Prototype and Progressive exercises)	Final	Total (%)
1	Test different advanced digital tools applicable to furniture design (C5 = PLO1)	PLO1	Lecture & self-Learning (SCL): Assignment (SCL): Case Study (SCL): Problem-Based Learning (PBL).	5		30	35
2	Build solutions to new products design through advanced digital design tools (P5 = PLO2)	PLO2	(SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment. Practical. Progressive exercises and Digital Prototype	10	45		55
3	Identify social needs through design methods and processes. (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	10			10
			TOTAL (%)	25	45	30	100



Deliverable 2.2: Joint Curriculum



1.															
	Name of Course :	Product Desi	gn and Digita	lization											
	Course Code :														
2.	Synopsis :				ation to final ducts in the d							ound the ir	mportance of wo	orking within a desig	gn method to obtain a
3.	Name(s) of academic staff :														
4.	Semester and Year		Sam	lester		1	Year	1							
	offered :		Sem	ester		1	rear	1							
5.	Credit Value :	2													
6.	Prerequisite/co-	No													
	requisite: (if any)														
7.	Course Learning Outcom														
	CLO1			-	plicable to fu										
	CLO2				n through adva			(P5)							
-	CLO3				ethods and pr										
8.	Mapping of the Course L Please select the Learning									Depetion	lille.				
	Flease select the ceanin	ig Outcome D	omani (LOD)	TOT EACIT FLO	In the cens at		gramme Learni			5 - Flactical 5	MIIS				
						1	grannie cearn	Information	1201		1	1	1	1	
	Course Learning	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific Skills	Management and						Learning and	Assessment Method
	Outcomes (CLO)	Disopline Area		Nesponsibilities	Professionalism	Team Skills	and scientific skills	Lifelong Learning Skills						Teaching Method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
														Lecture, self-	Continuous assignment.
	CLO 1	V		1										Learning, Student-	Final exam.
				ļ'		<u> </u>							l	Center Learning.	
	CLO 2			1										Lecture, self-	Continuous ossionment
	CL02		v	1										Center Learning.	Continuous assignment.
														Lecture, self-	
	CLO 3			V											Continuous assignment.
				1 ' '										Center Learning.	
	Indicate the relevancy bet														
	(This description must be r		vith Standard	s 2.1.2 , 2.2.1 o	and 2.2.2 in Ar	ea 2 - pages 16	5&18)								
9.	Transferable Skills (if ap						1	Design proce	ess and the iss	ues that aris	e in the progr	ession fron	n conceptual to	detailed design.	
	(Skills learned in the cou	irse of study v	which can be	useful and util	lized in other	settings)	2	Develop skil	s in use of ad	vanced digita	I design tools				
											-				
							3				playing in the n a company f			il manufacturing an	d design and implement
							4		gner within th			ormuustry	4.0		
10.	Distribution of Student Le	arning Time (SI	LT)				4	Note of desig	gner within th	e furniture in	idustry 4.0.				
			.,												
											Teaching and	d Learning A	ctivities		
			Course Cou	ntent Outline				CLO*		Guided Lea	rning (F2F)		Guided	Independent	SLT
			course con	itent outline					L	т	Р	0	Learning (NF2F)	Learning (NF2F)	361
									-			-	eg: e-Learning		
	1 - Introduction to the to		า					CLO3	2		0			2	4
	1 - Introduction to the fu	irniture desigr									_			_	
									2						
	2 - Design within a meth							CLO3	1		0			1	2
	2 - Design within a meth	nod						CLO3			0			1	2
		nod							1						
	2 - Design within a meth 3 - Creativity and concep	nod it.						CLO3 CLO3			0			1	2
	2 - Design within a meth	nod it.		Ndustry 4.0.				CLO3	1		1			2	4
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi	nod it. ign tools for ti	he furniture in	ndustry 4.0.					1						
	2 - Design within a meth 3 - Creativity and concep	nod it. ign tools for ti	he furniture in	ndustry 4.0.				CLO3 CLO1	1 1 1		1			2	4
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi	nod it. ign tools for ti	he furniture in	ndustry 4.0.				CLO3	1		1			2	4
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi	nod it. ign tools for tl gn for furnitur	he furniture in	ndustry 4.0.				CLO3 CLO1 CLO1, CLO2	1 1 1 4		1 0 20			2 1 10	4 2 34
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi	nod it. ign tools for tl gn for furnitur	he furniture in	ndustry 4.0.				CLO3 CLO1	1 1 1		1			2	4
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi	nod it. ign tools for tl gn for furnitu otipe.	he furniture in re products.	ndustry 4.0.				CLO3 CLO1 CLO1, CLO2 CLO2	1 1 4 2		1 0 20 9			2 1 10 5	4 2 34 16
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote	nod it. ign tools for tl gn for furnitu otipe.	he furniture in re products.	ndustry 4.0.				CLO3 CLO1 CLO1, CLO2	1 1 1 4		1 0 20			2 1 10	4 2 34
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote	nod it. ign tools for ti gn for furnitui otipe. in the furnitui	he furniture in re products. re industry.		try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO1, CLO2	1 1 4 2 2		1 0 20 9 8			2 1 10 5 5	4 2 34 16 15
	 2 - Design within a meth 3 - Creativity and conception 4 - Advanced digital desits 5 - Computer Aided Desits 6 - Making a digital protection 7 - Reverse engeniering 	nod it. ign tools for ti gn for furnitui otipe. in the furnitui	he furniture in re products. re industry.		try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2	1 1 4 2		1 0 20 9			2 1 10 5	4 2 34 16
	 2 - Design within a meth 3 - Creativity and conception 4 - Advanced digital desits 5 - Computer Aided Desits 6 - Making a digital protection 7 - Reverse engeniering 	nod it. ign tools for ti gn for furnitui otipe. in the furnitui	he furniture in re products. re industry.		try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO1, CLO2	1 1 4 2 2		1 0 20 9 8			2 1 10 5 5	4 2 34 16 15
	2 - Design within a meth - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prot 7 - Reverse engeniering	nod it. ign tools for ti gn for furnitui otipe. in the furnitui	he furniture in re products. re industry.		try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO1, CLO2	1 1 4 2 2		1 0 20 9 8			2 1 10 5 5 1	4 2 34 16 15 3
	2 - Design within a meth - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prot 7 - Reverse engeniering	nod it. ign tools for ti gn for furnitui otipe. in the furnitui	he furniture in re products. re industry. able to the fu		try 4.0.		_	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1	4 2 34 16 15 3 80
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prot 7 - Reverse engeniering 8 - Digital design docum	nod it. gn tools for the gn for furnitur otipe. in the furnitur etation applic	he furniture in re products. re industry. able to the fu	urniture indust	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1	4 2 34 16 15 3 80 SLT
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1	nod it. gn tools for tu gn for furnitu otipe. in the furnitu etation applic	he furniture in re products. re industry. rable to the fu	urniture indust	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%) 30	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1	4 2 34 16 15 3 80 SLT 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prot 7 - Reverse engeniering 8 - Digital design docum	nod it. gn tools for the gn for furnitur otipe. in the furnitur etation applic	he furniture in re products. re industry. rable to the fu	urniture indust	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1	4 2 34 16 15 3 80 SLT 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1	nod it. gn tools for tu gn for furnitu otipe. in the furnitu etation applic	he furniture in re products. re industry. rable to the fu	urniture indust	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%) 30	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1	4 2 34 16 15 3 80 SLT 0 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1	nod it. gn tools for tu gn for furnitu otipe. in the furnitu etation applic	he furniture in re products. re industry. rable to the fu	urniture indust	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%) 30	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1	nod it. gn tools for tu gn for furnitu otipe. in the furnitu etation applic	he furniture in re products. re industry. table to the fu Continuou rk	urniture indusi s Assessment	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%) 30	1 1 4 2 2		1 0 20 9 8			2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1	nod it. gn tools for tu gn for furnitu otipe. in the furnitur etation applic Assignment Practical Wo	he furniture in re products. re industry. able to the fu Continuou rrk Final A t	urniture indust	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%) 30 40	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1	nod it. gn tools for tu gn for furnitu otipe. in the furnitu etation applic	he furniture in re products. re industry. able to the fu Continuou rrk Final A t	urniture indusi s Assessment	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage	1 1 4 2 2		1 0 20 9 8			2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SUT 0 0 0 0 0 0 5 SUT 2
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 2	nod it. gn tools for tu gn for furnitu otipe. in the furnitur etation applic Assignment Practical Wo	he furniture in re products. re industry. able to the fu Continuou rrk Final A t	urniture indusi s Assessment	try 4.0.			CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8			2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 5LT
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 2 1 1 1 1	end it. In the second	he furniture in re products. re industry. table to the fu Continuou rk Final A: mination	urniture indusi s Assessment ssessment				CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 1 2 1 **Please tick (V) # this course	ind it. gn tools for the gn for furnitur otipe. in the furnitur etation applic etation applic Practical Wo Written exar	he furniture in re products. re industry. able to the fu continuou rk Final At mination	urniture indusi s Assessment ssessment nent/ Practicum/	WBL using Effects		[ELT] of 50%	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 \$UT 0 0 0 0 0 0 0 5UT 2
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital proti 7 - Reverse engeniering 8 - Digital design docum 1 2 1 **Please tick (V) if this course L = Lecture, T = Tutorial, P =	In the second se	he furniture in re products. re industry. able to the fu Continuou rk Final A: mination	urniture indusi s Assessment ssessment nent/Practicum/1	WBL using Effects		[E.T] of 50%	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 1 2 1 +*Please tick (v) # this course L = Lecture, T = Tutorial, P= Indicate the CLO based or	e is Latihan Indust	he furniture in re products. re industry. able to the fu Continuou rk Final A: mination	urniture indusi s Assessment ssessment nent/Practicum/1	WBL using Effects		[E,1] of 50%	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 0 0 0 0 0 0 0 0 0
11	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 1 2 1 ***Please tick (v) # this course L = Lecture, T = Tutorial, P= 'Indicate the CLO based on identify special requirem	e is Latihan Indust	he furniture in re products. re industry. able to the fu Continuou rk Final A mination	urniture indusi s Assessment ssessment nent/ Practicum/ v rice to Foce, NF2 n 8.	WBL using Effecti ZF=Non Face to	o Face	[E,1] of 50%	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 0 0 0 0 0 0 0 0 0
11 12	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 1 2 1 +*Please tick (v) # this course L = Lecture, T = Tutorial, P= Indicate the CLO based or	e is Latihan Indust	he furniture in re products. re industry. able to the fu Continuou rk Final A mination	urniture indusi s Assessment ssessment nent/ Practicum/ v rice to Foce, NF2 n 8.	WBL using Effecti ZF=Non Face to	o Face	[E,1] of 50%	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 0 0 0 0 0 0 0 0 0
	2 - Design within a meth 3 - Creativity and concep 4 - Advanced digital desi 5 - Computer Aided Desi 6 - Making a digital prote 7 - Reverse engeniering 8 - Digital design docum 1 1 2 1 ***Please tick (v) # this course L = Lecture, T = Tutorial, P= 'Indicate the CLO based on identify special requirem	e is Latihan Indust	he furniture in re products. re industry. able to the fu Continuou rk Final A mination	urniture indusi s Assessment ssessment nent/ Practicum/ v rice to Foce, NF2 n 8.	WBL using Effecti ZF=Non Face to	o Face	[0.1] of 50%	CLO3 CLO1 CLO1, CLO2 CLO2 CLO2 Percentage (%) 30 40 Percentage (%)	1 1 4 2 2	F2F	1 0 20 9 8		NF2F	2 1 10 5 5 1 Total	4 2 34 16 15 3 80 SLT 0 0 0 0 0 0 0 0 2 2





Course: Circular Economy in the wood and Furniture Sector. Elective.

			Assessment Weightage (%)				
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Affect	tive (A)		
		PLO 1	PLO 6	PLO 4	PLO 3		
1	Assess environmental aspects of Circular Economy in industry (C5, CTPS)	V	V				
2	Integrate the circular economy as a key aspect in the business model of the sector (A4, EM)			7			
3	Relate the various dimensions of customer value creation in a circular economy environment (A4, TS)				Å		
	TOTAL (%)		48	20	32		
				Asses	ssment Activities	(%)	
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assignment	Project oriented problem based learing.	Final	Total (%)
1	Assess environmental aspects of Circular Economy in industry (C5 = PLO1) (CTPS = PLO6)	PLO1	Lecture & self-Learning (SCL): Assignment	9		15	48
		PLO6	(SCL): Case Study (SCL): Problem-Based Learning (PBL).	9		15	40
2	Integrate the circular economy as a key aspect in the business model of the sector (A4, EM = PLO4)	PLO4	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	20			20
3	Relate the various dimensions of customer value creation in a circular economy environment (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Croblem-Based Learning (PBL). (SCL): Assignment.	32			32
			TOTAL (%)	70	0	30	100





4		0: 1 F		1 15											
1.	Name of Course :	Circular Ecor	nomy in the v	vood and Furr	niture Sector										
	Course Code :														
2.	Synopsis :														
	- /	This course of	covers the int	roduction to 1	he circular e	conomy in th	e wood and f	urniture secto	r. The relatio	nship betwee	en the circular	economy a	and sustainabilit	ty is analyzed, deep	ening the keys to this
		new concept	t, its current s	status in the s	ector, as wel	l as the lega	l and regulate	ory frameworl	that regulat	es it. It also d	deepens the ir	nclusion of	the new strateg	y within the busine	ss model of the
								view of the po						,	
		company, ac	in an en gresse		inci ci di inco di o	, both non	the point of t	inen or the po	central marrie	te to the rear	funde endens p	nonaca to	che eneme		
3.	Name(s) of academic														
5.	staff :														
4.	Semester and Year		Som	ester		1	Year	1							
	offered :		Jem	ester		1	real	1 ¹							
5.	Credit Value :	2													
6.		-													
о.	Prerequisite/co-	No													
	requisite: (if any)														
7.	Course Learning Outcom	es (CLO) : At	the end of th	ne course the	students will	be able to:									
	CLO1	Assess envir	onmental as	pects of Circu	ar Economy i	n industry (C	5, CTPS)								
	CLO2							ector (A4, EM	١						
		-		-											
	CLO3							ny environme							
8.	Mapping of the Course L	earning Outco	omes to the F	Programme L	earning Outco	omes, Teachi	ng Methods a	and Assessme	nt :						
	Please select the Learning	ng Outcome D	omain (LOD)	for each PLO	in the cells a	bove it.									
						Pro	gramme Learn	ning Outcomes	(PLO)						
								Information						1	
	Course Learning	Knowledge of	Practical Skills	Social Skills and	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific	Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area	Practical Skills	Responsibilities	Professionalism	Team Skills	Skills	Lifelong Learning						Teaching Method	Assessment wiethou
								Skills						-	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
														Lecture, self-	Continuous and ment
	CLO 1	√					\checkmark							Learning, Student-	Continuous assignment.
														Center Learning.	Final exam.
														Lecture, self-	
	CLO 2				√		1				1				Continuous assignment.
					Y								I		continuous assignment.
										I			l	Center Learning.	
													I	Lecture, self-	
	CLO 3			\checkmark											Continuous assignment.
														Center Learning.	
		-													
	Indicate the relevancy bet	ween the CLO o	and PLO by tic	kina "/" the an	propriate rele	vant box.									
	(This description must be i						16 8 18)								
			with Standard	32.1.2,2.2.1	1110 2.2.2 III A	reu z - puges i									
9.	Transferable Skills (if ap						1				suitable ecolo	ogical suppl	iers for the subs	stitution of materia	IS.
	(Skills learned in the cou	irse of study v	vhich can be	useful and ut	lized in othe	r settings)	2		with custome						
							3	Knowledge a	about reasons	and behavio	rs of organic	consumptio	m		
							4	Innovation in	n the use of u	ntapped mat	erials				
10.	Distribution of Student Le	arning Time (SI	LT)												
											Teaching and	Learning	ctivities		
										Culdedlee		a counting /			
			Course Con	tent Outline				CLO*		Guided Lea	rning (FZF)		Guided	Independent	SLT
									L	т	Р	o	Learning (NF2F)	Learning (NF2F)	
									-			-	eg: e-Learning		
	1 - Introduction to the ci	rcular econom	ıy												
								CLO1	2					3	5
	2 - Keys of the Circular E	conomy						CLO1	3					5	8
								0.01	5						Ŭ
	3 - The sector and its sta	ate with respe	ct to the circ	ular economy											
								CLO1, CLO2	3					5	8
	4 - Regulations and legis	slation						0.01.0.00						-	
								CLO1, CLO2	3					5	8
	5 - Inclusion of the circu	lar oconomy i	n the husines	c model of th	o costo										
	5 - Inclusion of the circu	ar economy n	in the busines	s moder of u	e secto			CLO2	4					6	10
	6 - Marketing of product	s in the circul	ar economy												
								CLO2, CLO3	3					6	9
		1.0								I		 	I		
	7 - Value creation throug	gn the circular	economy					CLO3	5				I	10	15
								0.05	5		1			10	15
	8 - Supporting by Key En	abling Techno	logies										1		
	- Sabberruig by wey fill							CLO3	5		1			12	17
										L	L	L			
										I –			I –	I – – – – – – – – – – – – – – – – – – –	
	1												I	1	0
										·				Total	00
														iotal	80
			Continuous	s Assessment				Percentage		F2F			NF2F		SLT
								(%)					11121		
	1	Assignment						70							0
	2														0
	3							-				t			0
														10	
														Total	0
			Final Ac	sessment				Percentage		F2F			NF2F		SLT
								(%)					10121		
	1	Written exar	mination					30		2					2
														Total	
													1		
	**Please tick (V) if this cours						e(ELT) of 50%						GRAN	D TOTAL SLT	82
	L = Lecture, T = Tutorial, P	Practical, O=	Others, F2F=Fc	ice to Face, NF	2F=Non Face t	o Face									
	*Indicate the CLO based o	n the CLO's nur	nbering in Iter	n 8.											
11	Identify special requiren														-
12	References (include requ		her readings	and should b	e the most o	urrent)									
	include leg														
	Other additional informa		_			_									
13															





Course: Wood science. Compulsory.

No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 7			
1	Assess the knowledge of plant growth and wood morphology (C5)	*						
2	Determine of wood species and adapt testing procedures (CTPS, P6)		*	Å				
3	Synthesizes knowledge of properties of wood, qualifies applicability in the industry (A4, LL)				4			
	TOTAL (%)	35	25	30	10			
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment A	ctivities (%)		Total (%)
				Assignment	Case study	Practical	Final	
1	Assess the knowledge of plant growth and wood morphology (C5= PLO1)	PLO1	Lecture & self-Learning (SCL): Discussion (SCL): Case Study	10	10		15	35
		PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.		10		15	25
2	Adapt testing procedures of recognized wood species (CTPS= PLO6, P6=PLO2)	PLO2	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). Practical. Samples recognition, Equipment training, testing.		10	20		30
3	Synthesizes knowledge of properties of wood, qualifies applicability in the industry (A4, LL=PLO7)	PL07	• (SCL): Case Study • Applicability Report.	5	5			10
Total %				15	35	20	30	100





1.	Name of Course :	Wood Science	Wood Science												
	Course Code :														
2.	Synopsis :										eginning from structural ma		wth, wood morp	bhology, thru recogr	ition of wood species
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		1	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-	No													
7.	requisite: (if any) Course Learning Outcom		the end of th	o course the	studopte will I	ha abla tau									
7.	CLO1				and wood mo										
	CLO2	Adapt testin	g procedures	of recognized	l wood specie	s (CTPS, P6)									
8.	CLO3 Mapping of the Course I								••						
0.										8 - Practical S	kills				
			1	1		Pro	gramme Learn	ing Outcomes	(PLO)	1	1	1	T		
	Course Learning	Knowledge of	Practical Skills	Social Skills and	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific	Information Management and						Learning and	Assessment Method
	Outcomes (CLO)	Discipline Area		Responsibilities	Professionalism	Team Skills	Skills	Lifelong Learning Skills						Teaching Method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
	CLO 1	v												Lecture, self- Learning, Student- Center Learning.	Continuous assignment. Final exam.
	CLO 2	3 Synthesizes knowledge of properties of wood, qualifies appl pping of the Course Learning Outcomes to the Programme Learning Outcomes, Te ses select the Learning Outcome Domain (LOD) for each PLO in the cells above it. Course Learning Outcomes (CLO) Wowledge of Diciplie Area PLO1 PLO2 PLO1 PLO2 PLO3 PLO4 PLO1 PLO2 2 V add add 3 u add u add u add u add u y u add u u v u u y u add u add u add u add u add u add u y u add u add u add u add u add u												Lecture, practical, tutorial, self- directed learning.	Continuous assignment. Final exam.
														Practical work and demonstrations. (SCL): Case Study	
	CLO3							v						Practical. Applicability Report.	Scenario based discuss and case study. Report
							5 & 18)								
9.							1	Understandi	ng of the plan	t growth and	wood motphe	ology			
	(Skills learned in the cou	rse of study v	which can be i	useful and uti	lized in other	settings)	2		t of skills for v		recognition wood testing				
							4				aterial to task	s required			
10.	Distribution of Student Le	arning Time (SI	LT)												
											Teaching and	LearningA	ctivities		
			6 6					CLO*		Guided Lea		Leaning A	Guided		SLT
			course cor	itent Outline				cio	L	т	Р	0	Learning (NF2F) eg: e-Learning	Independent Learning (NF2F)	311
	1 - Wood as a plant and	tree growth						CLO1	1				-0	2	3
	2 - Structure of hardwoo	ds and softwo	oods					CLO1, CLO2	1		8			4	13
	3 - Natural and machinir	ng wood defe	cts,					CLO1, CLO2	2		4			2	8
	4 - Wood deterioration 5 - Physical properties of	wood						CLO1, CLO2	2		4			2	8
	 6 - Mechanical properties of 							CLO2, CLO3	2		5			5	12
	7 - Testing and evaluation		properties of	wood				CLO2, CLO3	2		5			3	10
	8 - Testing and evaluation							CLO2, CLO3	2		8			3	13
								CLO2, CLO3	2		8			3	13
								Total	14	0	42	0	0	24	80
			Continuou	s Assessment				Percentage		F2F			NF2F		SLT
	1	Assignment						(%) 15							0
	2	Case Study					35							0	
	3	Practical						20						Tetel	0
													Total	0	
			Final As				Percentage (%)		F2F			NF2F		SLT	
	1 Written examination							30		2				Total	2
									_	.018					
	**Please tick (V) if this cours L = Lecture, T = Tutorial, P=						ELT) of 50%						GRAN	D TOTAL SLT	82
11	*Indicate the CLO based of	n the CLO's nur													
	Identify special requirem	ient to													
12	Identify special requirem References (include requ		her readings,	and should be	e the most cu	rrent)									





Course: Materials for furniture manufacturing. Compulsory.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 7			
1	Assess (rating and valuation) typology of wood-based materials (C5 = PLO1)	*						
2	Changes technologies in the field of using wood-based materials in new construction solutions (P6=PLO2) (CTPS=PLO6)		X	Å				
3	Synthesizes acquired knowledge for further self-education (A4, LL = PLO7)				4			
	TOTAL (%)		50	40	10			
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment	Activities (%)		Total (%)
	()			Assignment	Practical Work (Prototype)	Reports	Final	
1	Assess (rating and valuation) typology of wood-based materials (C5 = PLO1)	PL01	Lecture & self-Learning (SCL): Assignment (SCL): Problem-Based Learning (PBL).	10			. 10	20
2	Changes technologies in the field of using wood-based materials in new construction solutions (P6=PLO2) (CTPS=PLO6)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.			10	20	30
		PLO2	Practical work, laboratory experiment, demonstrations.		40			40
3	Synthesizes acquired knowledge for further self-education (A4, LL = PLO7)	PL07	SCL activities like group discussion, role play, case study, PBL, POPBL, field work	10				10
		•	TOTAL (%	20	40	10	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Materials for	furniture ma	inufacturing											
	Course Code :			5											
2.	Synopsis :	The subject co allowing to th											ucing basic gr	roups of wood-base	d materials, what
3.	Name(s) of academic staff :							-							
4.	Semester and Year offered :		Sem	ester			Year								
5.	Credit Value :	2													
6.	Prerequisite/co-requisite: (if any)	No													
7.	Course Learning Outcomes (C						(ar)								
	CLO1 CLO2	Assess (rating Changes tech						ruction solution	one (P6_CTPS	1					
	CLO3	Synthesizes a	-		-			action solution	515 (10, 0115	1					
8.	Mapping of the Course Learn		-					ssessment :							
	Please select the Learning O	utcome Domai	n (LOD) for e	ach PLO in th	e cells above					Practical Skill	s				
				1			ramme Learni	ng Outcomes (PLO)			1		1	
	Course Learning Outcomes	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and Professionalism	Communication, Leadership and	Problem Solving and Scientific Skills	Management and Lifelong Learning						Learning and	Assessment Method
	(CLO)					Team Skills		Skills						Teaching Method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	1	
	CLO 1	v												Lecture, self- Learning, Student- Center Learning.	Oral or written examination
														Lecture, practical,	
														tutorial, self-	Project report and
	CLO 2		v				V							directed learning. Practical work and	observation through practical work (rubric)
														demonstrations.	,,
														SCL activities like	Scenario based discuss and
	CLO 3							V						group discussion and case study	case study
														and case study	
	Indicate the relevancy between (This description must be read t						(8)								
9.	Transferable Skills (if applica						1								
	(Skills learned in the course of	of study which	can be usefu	il and utilized	in other sett	ings)	2								
							4								
							4								
10.	Distribution of Student Learnin	ng Time (SLT)													
10.	Distribution of Student Learnin	ng Time (SLT)									Teaching and	Learning Acti	vities		
10.	Distribution of Student Learnin		Course Conte	nt Outline				CLO*		Guided Le	Teaching and arning (F2F)	Learning Acti	Guidea	Independent	SLT
10.		(CLO*	L	Guided Lea		Learning Acti		Independent Learning (NF2F)	SLT
10.	1-Perspectives and development dii	rections of wood-b	ased materials	industry.			5	CLO*	L 1		arning (F2F)		Learning		SLT 5
10.		rections of wood-b	ased materials	industry.	.). Wood-based	I materials from	5				arning (F2F) P		Learning	Learning (NF2F)	
10.	1-Perspectives and development dii 2- Wood-based materials from fiber	rections of wood-b s (LDF, ULDF, fiber	ased materials r insulation boar	industry. ds, fiber mats etc		i materials from	5	CLO1	1		P 2		Learning	Learning (NF2F) 2	5
10.	1-Perspectives and development dia 2- Wood-based materials from fiber chipboard, extruded boards, etc.).	rections of wood-b s (LDF, ULDF, fiber (typical plywood, i	ased materials r insulation boar bent plywood, c	industry. ds, fiber mats etc omposite multila	yer materials).		5 chips (light	CLO1 CLO1	1		P 2 2		Learning	Learning (NF2F) 2 2	5
10.	1-Perspectives and development dil 2-Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Multilayer wood-based materials 4-Modification of parameters of tec 5-Testing the strength properties of	(rections of wood-b s (LDF, ULDF, fiber (typical plywood, i chnological process wood-based mate	ased materials r insulation boar bent plywood, c ses and its influ	industry. ds, fiber mats etc omposite multila ence on the para	yer materials). meters of produ	ced wood-based	5 chips (light i materials.	CLO1 CLO1 CLO1 CLO1, CLO2	1 1 2 3		arning (F2F) P 2 2 5 5 5		Learning	Learning (NF2F) 2 2 3 4	5 5 10 12
10.	1-Perspectives and development di 2- Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at abail removal of screw	(rections of wood-b s (LDF, ULDF, fiber (typical plywood, I thnological process wood-based mate s).	ased materials r insulation boar bent plywood, c ses and its influ erials (modulus o	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2	1 1 2 3 3		arning (F2F) P 2 2 5 5 10		Learning	Learning (NF2F) 2 2 3 4 6	5 5 10 12 19
10.	1-Perspectives and development di 2- Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Multilayer wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6- Testing the physical properties of negry, density and density profile).	(rections of wood-b s (LDF, ULDF, fiber (typical plywood, i chnological process wood-based mate s).	ased materials r insulation boar bent plywood, c ses and its influ erials (modulus o	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2	1 1 2 3		arning (F2F) P 2 2 5 5 5		Learning	Learning (NF2F) 2 2 3 4	5 5 10 12
10.	1-Perspectives and development di 2- Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6-Testing the physical properties of negry, density and density profile, 7-Alternative wood-based materials	(typical plywood, i s (LDF, ULDF, fiber (typical plywood, i chnological process wood-based mate s). wood-based mate in constructions.	ased materials rinsulation boar bent plywood, co ses and its influe erials (modulus o erials (swelling, r	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	1 1 2 3 3 1 2		arning (F2F) P 2 2 5 5 10 10 6		Learning	Learning (NF2F) 2 2 3 4 6 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 10 12 19 15 10
10.	1-Perspectives and development di 2- Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Multilayer wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6- Testing the physical properties of negry, density and density profile).	(typical plywood, i s (LDF, ULDF, fiber (typical plywood, i chnological process wood-based mate s). wood-based mate in constructions.	ased materials rinsulation boar bent plywood, co ses and its influe erials (modulus o erials (swelling, r	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2	1 1 2 3 3 1		arning (F2F) P 2 2 5 5 10 10		Learning	Learning (NF2F) 2 2 3 4 6 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 12 19 15 10 4
10.	1-Perspectives and development di 2- Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6-Testing the physical properties of negry, density and density profile, 7-Alternative wood-based materials	(typical plywood, i s (LDF, ULDF, fiber (typical plywood, i chnological process wood-based mate s). wood-based mate in constructions.	ased materials rinsulation boar bent plywood, co ses and its influe erials (modulus o erials (swelling, r	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	1 1 2 3 3 1 2		arning (F2F) P 2 2 5 5 10 10 6		Learning	Learning (NF2F) 2 2 3 4 6 4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 10 12 19 15 10
10.	1-Perspectives and development di 2- Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6-Testing the physical properties of negry, density and density profile, 7-Alternative wood-based materials	(rections of wood-based s (LDF, ULDF, fiber (typical plywood, i thrological process wood-based mate in constructions. wood-based mate	ased materials rinsulation boar bent plywood, co ses and its influe erials (modulus o erials (swelling, r	industry. ds, fiber mats etc omposite multila ence on the parai of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 Percentage	1 1 2 3 3 1 2		arning (F2F) P 2 2 5 5 10 10 6		Learning	Learning (NF2F) 2 2 3 4 6 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 12 19 15 10 4
10.	I-Perspectives and development di Wood-based materials from fiber dipbaard, extuded boards, etc.). 3-Multilayer wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of scores 6- Testing the physical properties of energy, density and density profile). 7-Alternative wood-based materials 8-New technologies in the design of	(rections of wood-b- s (LDF, ULDF, fiber (typical plywood, i thrological process), wood-based mate in constructions, wood-based mate	ased materials insulation boar bent plywood, ct sees and its influc erials (modulus o erials (swelling, erials.	industry. ds, fiber mats etc omposite multila ence on the parai of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NIC2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 12 19 15 10 4 80
10.	I-Perspectives and development di Wood-based materials from fiber dipbaard, extuded boards, etc.). 3-Multilayer wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of scores 6- Testing the physical properties of energy, density and density profile). 7-Alternative wood-based materials 8-New technologies in the design of	(rections of wood-based s (LDF, ULDF, fiber (typical plywood, i thrological process wood-based mate in constructions. wood-based mate	ased materials insulation boar bent plywood, ct ses and its influt erials (modulus o erials (swelling, erials.	industry. ds, fiber mats etc omposite multila ence on the parai of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 Percentage	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NIC2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 12 19 15 10 4 80
10.	I-Perspectives and development dil Wood-based materials from field wood-based materials wood-based materials 4- Modification of parameters of tec S-Testing the strength properties of resistance at axial removal of screw 6-Testing the physical properties of rengty, density and density profile 7.Alternative wood-based materials 8-New technologies in the design of 1	(rections of wood-b s (LDF, ULDF, Fiber (typical phywood, i honological process wood-based mate s). wood-based mate s). wood-based mate (Assignment	ased materials insulation boar bent plywood, ct ses and its influt erials (modulus o erials (swelling, erials.	industry. ds, fiber mats etc omposite multila ence on the parai of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 Percentage (%) 20	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NIC2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 12 19 15 10 4 80 5LT 0
10.	I-Perspectives and development di Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6-Testing the physical properties of negray, density and density porfile 7-Alternative wood-based materials 8-New technologies in the design of 1 2	(typical physics) (typical phy	ased materials insulation boar bent plywood, ct ses and its influt erials (modulus o erials (swelling, erials. Continuous A:	industry. ds, fiber mats etc omposite multila ence on the parai of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NIC2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 12 19 15 10 4 80 5 17 0 0
10.	I-Perspectives and development di Wood-based materials from fiber chipboard, extruded boards, etc.) 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6-Testing the physical properties of negray, density and density porfile 7-Alternative wood-based materials 8-New technologies in the design of 1 2	(typical physics) (typical phy	ased materials insulation boar bent plywood, ct ses and its influt erials (modulus o erials (swelling, erials. Continuous A:	industry. ds, fiber mats ets omposite multila omposite multila ence on the para of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NIC2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 5LT 0 0 0
10.	1-Perspectives and development dil 2- Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Multilayer wood-based materials 4- Modification of parameters of tec 5- Testing the physical properties of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of density profile 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3	(typical physics) (typical phy	iased materials insulation boar bent plywood, ct ses and its influce erials (modulus o erials (swelling, erials.	industry. ds, fiber mats ets omposite multila omposite multila ence on the para of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2 CLO2	1 1 2 3 3 1 2	τ 	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NE2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 SLT 0 0 0 0
10.	1-Perspectives and development dil 2- Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Multilayer wood-based materials 4- Modification of parameters of tec 5- Testing the physical properties of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of density profile 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3	(typical phywood, i s (LDF, ULDF, fiber (typical phywood, i honological process wood-based mate s). wood-based mate s). wood-b	iased materials insulation boar bent plywood, ct ses and its influce erials (modulus o erials (swelling, erials.	industry. ds, fiber mats ets omposite multila omposite multila ence on the para of rupture, modul water absorption	yer materials). meters of produ lus of elasticity, i	ced wood-based internal bond, de	5 chips (light i materials. ctermination of	CL01 CL01 CL01, CL02 CL02 CL02, CL03 CL02, CL03 CL03, CL03, CL03 CL03, CL03,	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning (NE2E)	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 5LT 0 0 0 0 5LT
10.	1-Perspectives and development di 2- Wood-based materials from file 2- Wood-based materials 4- Modification of parameters of tec 3- Multilayer wood-based materials 4- Modification of parameters of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of screw 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3 1	(typical plywood, b s (LDF, ULDF, fiber (typical plywood, i honolgical process wood-based mate s), wood-based mate s), wood-ba	iased materials irinsulation boar bent plywood, ci ses and its influr erials (modulus o erials (swelling, erials. Continuous A: k Final Asse	industry. ds, fiber mats ets omposite multila ence on the para of rupture, modul water absorption ssessment ssment	yer materials). meters of produ lus of elasticity, i , surface absorp	ced wood-based internal bond, de tion, wettability,	5 chips (light Imaterials. termination of free surface	CL01 CL01 CL01, CL02 CL02 CL02, CL03 CL02, CL03 CL03, CL03, CL03 CL03, CL03,	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning ANE2EL NF2F	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 5LT 0 0 0 0 0 0 5LT 3 3
10.	I-Perspectives and development di Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Mutilityser wood-based materials 4- Modification of parameters of tec 5-Testing the strength properties of resting the physical properties of energy, density and density profile. 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3 1 1 2 3	(rections of wood-b s (LDF, ULDF, Fiber (typical phywood, i, inconstructions, wood-based mate), wood-based mate), in constructions, wood-based mate (Assignment Practical Wor Reports Final Exam than Industri/ (Clin	iased materials insulation boar bent plywood, ct, ses and its influe erials (modulus o erials (modulus o erials (swelling, erials. Continuous A k Final Asse: ical Placement/	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul water absorption sseessment ssment	yer materials). meters of produ lus of elasticity, i , surface absorp	ced wood-based internal bond, de tion, wettability,	5 chips (light Imaterials. termination of free surface	CL01 CL01 CL01, CL02 CL02 CL02, CL03 CL02, CL03 CL03, CL03, CL03 CL03, CL03,	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning ANE2EL NF2F	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 5 17 0 0 0 0 0 0 0 5 17 3
10.	1-Perspectives and development di 2- Wood-based materials from file 2- Wood-based materials 4- Modification of parameters of tec 3- Multilayer wood-based materials 4- Modification of parameters of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of screw 6- Testing the physical properties of resistance at axial removal of screw 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3 1	(typical physical, in constructions of wood-based mate s), wood-based mater s), w	ased materials insulation boar bent plywood, ct ses and its influe erials (modulus of erials (swelling, erials. Continuous A: k Final Asse: ical Placement/ i , F2F=Face to	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul water absorption sseessment ssment	yer materials). meters of produ lus of elasticity, i , surface absorp	ced wood-based internal bond, de tion, wettability,	5 chips (light Imaterials. termination of free surface	CL01 CL01 CL01, CL02 CL02 CL02, CL03 CL02, CL03 CL03, CL03, CL03 CL03, CL03,	1 1 2 3 3 1 2	T	arning (F2F) P 2 2 5 5 10 10 6		Guidea Learning ANE2EL NF2F	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 5LT 0 0 0 0 0 0 5LT 3 3
11	I-Perspectives and development di Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Multilayer wood-based materials 4-Modification of parameters of tec 5-Testing the strength properties of energy, density and density profile. 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3 1 1 1 2 1 1 1 2 3 1	(rections of wood-b s (LDF, ULDF, fiber (typical plywood, i, inconstructions, wood-based mate s), wood-based mate s), wood-based mate s), final Stamment Frinal Exam Final Exam Final Exam Final Industri/ Clin ticlo(), 0= Others CLO's numberior	iased materials insulation boar bent plywood, ct, ses and its influx erials (modulus o erials (swelling, erials. Continuous A k Final Asse: iscal Placement/ i s, F2F=Face to sg in item 8.	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul water absorption ssessment ssment Practicum/ WBL u Face, NF2F=Ne	yer materials). meters of produ- lus of elasticity, i, surface absorp	ced wood-based internal bond, de tion, wettability, aning Time(ELT) (ELT) (c	5 chips (light Imaterials. termination of free surface	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3, CLO3, CLO3 CLO3, CLO3,	1 2 3 1 2 1 2 1 	F2F	arning (F2F) P 2 5 5 10 10 6 2	0	Guidea Learning (NE2E) NF2F NF2F GRAM	Learning (NF2F) 2 2 3 4 6 4 2 1 Total Total ND TOTAL SLT	5 5 10 12 19 15 10 4 80 5LT 0 0 0 0 0 0 0 0 0 5LT 3 3 83
11	1-Perspectives and development die 2- Wood-based materials from file 2- Wood-based materials from file 3-Multilayer wood-based materials 4-Modification of parameters of tec 5-Testing the strength properties of resistance at axial removal of screw 6- Testing the physical properties of restrict and density profile 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3 1 1 4 4	(rections of wood-b s (LDF, ULDF, fiber (typical plywood, i, inconstructions, wood-based mate s), wood-based mate s), wood-based mate s), final Stamment Frinal Exam Final Exam Final Exam Final Industri/ Clin Clo's numberior Clo's numberior Clo's numberior	iased materials insulation boar bent plywood, ct, ses and its influx erials (modulus o erials (swelling, erials. Continuous A k Final Asse: iscal Placement/ i s, F2F=Face to sg in item 8.	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul water absorption ssessment ssment Practicum/ WBL u Face, NF2F=Ne	yer materials). meters of produ- lus of elasticity, i, surface absorp	ced wood-based internal bond, de tion, wettability, aning Time(ELT) (ELT) (c	5 chips (light Imaterials. termination of free surface	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3, CLO3, CLO3 CLO3, CLO3,	1 2 3 1 2 1 2 1 	F2F	arning (F2F) P 2 5 5 10 10 6 2		Guidea Learning (NE2E) NF2F NF2F GRAM	Learning (NF2F) 2 2 3 4 6 4 2 1 Total	5 5 10 12 19 15 10 4 80 5LT 0 0 0 0 0 0 0 0 0 5LT 3 3 83
11	I-Perspectives and development di Wood-based materials from fiber chipboard, extruded boards, etc.). 3-Multilayer wood-based materials 4-Modification of parameters of tec 5-Testing the strength properties of energy, density and density profile. 7-Alternative wood-based materials 8-New technologies in the design of 1 2 3 1 1 1 2 1 1 1 2 3 1	(rections of wood-b s (LDF, ULDF, fiber (typical plywood, i, inconstructions, wood-based mate s), wood-based mate s), wood-based mate s), final Stamment Frinal Exam Final Exam Final Exam Final Industri/ Clin Clo's numberior Clo's numberior Clo's numberior	iased materials insulation boar bent plywood, ct, ses and its influx erials (modulus o erials (swelling, erials. Continuous A k Final Asse: iscal Placement/ i s, F2F=Face to sg in item 8.	industry. ds, fiber mats etc omposite multila ence on the para of rupture, modul water absorption ssessment ssment Practicum/ WBL u Face, NF2F=Ne	yer materials). meters of produ- lus of elasticity, i, surface absorp	ced wood-based internal bond, de tion, wettability, aning Time(ELT) (ELT) (c	5 chips (light Imaterials. termination of free surface	CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO3, CLO3, CLO3, CLO3 CLO3, CLO3,	1 2 3 1 2 1 2 1 	F2F	arning (F2F) P 2 5 5 10 10 6 2		Guidea Learning (NE2E) NF2F NF2F GRAM	Learning (NF2F) 2 2 3 4 6 4 2 1 Total Total ND TOTAL SLT	5 5 10 12 19 15 10 4 80 5LT 0 0 0 0 0 0 0 0 0 5LT 3 3 83





Course: Material Processing. Compulsory.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 3			
1	Determine cutting properties of materials (C5, CTPS)	~	Y					
2	Demostrates the machine preparation for processing (P5, CTPS)		V	Ż				
3	Combines the machine and tool for processing (A4, TS)				4			
	TOTAL (%)		55	30	15			
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment	Activities (%)		Total (%)
				Assignment	Case study	Practical	Final	
1	Determine cutting properties of materials (C5 = PLO1, CTPS = PLO6)	PLO1	Lecture & self-Learning (SCL): Assignment	5			15	35
			(SCL): Problem-Based Learning (PBL).		10		5	
	Demostrates the machine preparation for processing (P5 = PLO2, CTPS =	PLO6	Lecture & self-Learning (SCL): Modularr project.			10	10	20
	PLO6)	PLO2	• (SCL): Assignment • Practical. Modular Project.			30		30
3	Combines the machine and tool for processing (A4, TS = PLO3)	PLO3	Lecture & self-Learning (SCL): Case Study	5	10			15
			TOTAL (%)	10	20	40	30	100





1.	Name of Course i	purse : Materials Processing													
1.	Name of Course :	Waterials Processing													
2.	Course Code : Synopsis :														
	-,														Is and methods of their
		processing.	here are thre	e sets to be	distinguish an	d dependence	e between th	em: material	with its prope	rties, machin	e with tool, m	ethod of p	rocessing with p	arameters.	
3.	Name(s) of academic														
	staff :														
4.	Semester and Year offered :		Sem	ester		2	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-	-													
	requisite: (if any)	No													
7.	Course Learning Outcom	es (CLO) : At	the end of th	e course the	students will	be able to:									
	CL01				als (C5, CTPS)										
	CLO2				for processing										
0	CLO3				cessing (A4, 1										
8.	Mapping of the Course L Please select the Learning						g Methods ar	id Assessmen	t :						
							gramme Learn	ing Outcomes	(PLO)						
	Course Learning			Social Skills and	Values, Attitudes	Communication,	Problem Solving	Information Management and						Learning and	
	Outcomes (CLO)	Knowledge of Discipline Area	Practical Skills	Responsibilities	and Professionalism	Leadership and Team Skills	and Scientific Skills	Lifelong Learning						Teaching Method	Assessment Method
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	Skills PLO7							
		FLOI	FLOZ	FLOS	FLOW	1105	100	100						Lecture, self-	
	CLO 1	V					V							Learning, Student-	Continuous assignment. Final exam.
														Center Learning.	
	CLO 2		v				v							Lecture, self- Learning, Student-	Continuous assignment.
	(10)		v				ľ							Center Learning.	Final exam.
														Lecture, self-	
	CLO 3			V											Continuous assignment.
							I							Center Learning.	
	Indicate the relevancy bet	ween the CLO o	nd PLO by tick	ina "/" the ap	propriate relev	ant box.									
	(This description must be r						5 & 18)								
9.	Transferable Skills (if ap						1			ased of mate		s			
	(Skills learned in the cou	rse of study v	which can be i	useful and uti	lized in other	settings)	2			paration for p processing tas					
							4	Developmen	t of tools for	processing tas	sks				
10.	Distribution of Student Le	arning Time (Sl	LT)					•							
										Guided Lear	Teaching and	Learning A	Guided		
			Course Cor	ntent Outline				CLO*					Learning (NF2F)	Independent	SLT
									L	т	Р	0	eg: e-Learning	Learning (NF2F)	
	 Cutting properties of s 	olid wood						CLO1	2		5			4	11
	2. Cutting properties of v	wood-based n	aterials					CLO1	2		5			4	11
	3. Static geometric accu	racy of machi	ne												
		,						CLO2, CLO3	2		16			2	20
	4. Tools for solid wood p	rocessing							_		_				_
								CLO1, CLO3	2		3			2	7
	5. Tools for wood-based	materials pro	cessing					CLO1, CLO3	2		3			2	7
								CLU1, CLU3	2		3			2	/
	6. Selection of machines	and tools for	the workpied	e				CLO1, CLO2,	2		4			4	10
	7 Manda and 1 d							CLO3							
	7. Worpiece setting in the	e machines						CLO1, CLO3	1		3			2	6
	8. Final product of the pr	oress													
								CLO1, CLO3	1		3			4	8
														Total	80
			Continuou	s Assessment				Percentage		F2F			NF2F		SLT
	1	Assignment						(%) 10							0
	2	Practical						40							0
	3	Case Study						20							0
														Total	0
								Percentage							
			Final As	sessment				(%)		F2F			NF2F		SLT
	1	Final Exam						30		2					2
														Total	2
													1		
	**Please tick (V) if this course						(ELT) of 50%						GRAN	TOTAL SLT	82
	L = Lecture, T = Tutorial, P= *Indicate the CLO based of				∠r=Non Face to	race									
11	Identify special requirem		and a second second												
12	References (include requ		ner readings,	and should b	e the most cu	rrent)									
	Other additional informa	tion :													
13															





Course: Innovation management systems. Elective.

			Assessment Weightage (%)				
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)		
		PLO 1	PLO 6	PLO 2	PLO 5		
1	Evaluate the operation of an Innovation Management System in an organization (C5)	A					
2	Integrate in a furniture company innovative ideas to achieve the success of its products (P6, CTPS)		×	4			
3	Arrange motivation the staff of the organization to generate creativity and innovation (A4, CS, LS)			*	~		
	TOTAL (%)		45	40	15		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Asse	essment Activitie	s (%)	Total (%)
				Assignment	Practical Work (Prototype)	Final	
1	Evaluate the operation of an Innovation Management System in an organization (C5= PLO1)	PLO1	Lecture & self-Learning Tutorial (SCL): Problem Oriented Project Based Learning (POPBL) (SCL): Problem-Based Learning (PBL).	15		15	30
	Integrate in a furniture company innovative ideas to achieve the success of its products (P6= PLO2) (CTPS=PLO6)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.			15	15
		PLO2	Practical. Modular Project Practical work Case Study Demonstrations		40		40
	Arrange motivation the staff of the organization to generate creativity and innovation (A4, CS, LS= PL05)	PLO5	Lecture & self-Learning (SCL): Group discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	15			15
			TOTAL (%)	30	40	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Innovation management systems This course encompasses the introduction to Innovation Management Systems (IMS) emphasizing aspects such as the context of the organization, the roles and responsabilities in													
2.	Course Code : Synopsis :													d responsabilities in management syste	
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		2	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-requisite: (if any)	No													
7.	Course Learning Outcomes (C	CLO): At the e	nd of the cou	urse the stude	nts will be ab	le to:									
	CLO1	Evaluate the	operation of	an Innovation	Managemen	t System in a	n organizatio	n (C5)							
	CLO2	Integrate in a													
8.	CLO3	Arrange moti							i, LS)						
8.	Mapping of the Course Learn Please select the Learning Ou								ve PLO3 - Pr	actical Skills					
	rieuse select the ceaning of		11 (200) 101 0		e cens above			ng Outcomes (actical Skills					
					Values, Attitudes	Communication,		Information							
	Course Learning Outcomes (CLO)	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	and Professionalism	Leadership and Team Skills	Problem Solving and Scientific Skills	Management and Lifelong Learning						Learning and Teaching Method	Assessment Method
	(000)							Skills						i cucining incentou	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7							
	CLO 1	v												Lecture, self- Learning, Student- Center Learning.	Continuous assignment. Final exam.
	CLO 2		٧				v							Lecture, self- Learning, Student- Center Learning.	Continuous assignment. Final exam.
	CLO 3		٧			٧								Lecture, self- Learning, Student- Center Learning.	Continuous assignment.
	Indicate the relevancy between (This description must be read t						21			•					
9.	Transferable Skills (if applica	-	10//00/032.1.	2,2.2.1 0/10 2.	2.2 /// /0002 -	puges 10 & 10	1	Know the op	eration of an	innovation m	anagement s	vstem			
	(Skills learned in the course of		can be usefu	l and utilized	in other setti	ngs)	2			rocess in an o	-				
							3			ual property a	-	of innovation	in an organiz	ation	
							4								
							5								
10.	Distribution of Student Learnin	ng Time (SLT)													
												Learning Acti	vities Guidea		
			Course Conte	nt Outline				CLO*	L	Guided Le	arning (F2F)	0	Learning	Independent Learning (NF2F)	SLT
	1. Introduction to Innovation Manag	ement Systems						CLO1	2		Р 3	0	(NE2E)	4	9
	2. Roles in the Innovation Managem							CLO1-CLO2	1		3			3	7
	3. Design Thinking							CL01-CL02	3		14			3	20
	4. Intellectual property management	nt in an organizatio	n					CLO1-CLO2	3		10			6	19
	5. Collaboration management							CLO3	4		6			5	15
	6. Creativity management							0.00.0100							
								CLO2-CLO3	1		6			3	10
								CLO2-CLO3	1		6			3	
								(102-(103	1		6				10 0 0
								CLO2-CLO3	1		6			3 Total	10 0
			Continuous A	ssessment				Percentage	1	F2F	6		NF2F		10 0 0
	1	Assignment	Continuous A	ssessment					1	F2F	6		NF2F		10 0 0 80
	 	-		ssessment				Percentage (%)	1	F2F	6		NF2F		10 0 80 SLT
		Assignment		ssessment				Percentage (%) 30	1	F2F	6		NF2F		10 0 80 SLT 0
		Assignment		ssessment				Percentage (%) 30		F2F	6		NF2F	Total	10 0 80 SLT 0 0
	2	Assignment Practical Wor						Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 SLT
		Assignment	k					Percentage (%) 30 40 Percentage		_	6		_	Total	10 0 80 SLT 0 0 0 SLT 2
	2	Assignment Practical Wor	k					Percentage (%) 30 40 Percentage (%)		F2F	6		_	Total	10 0 80 SLT 0 0 SLT
	2	Assignment Practical Wor Final exam	k Final Asse	ssment				Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 0 0 SLT 2 2
	2 1 **Please tick (V) ≓ this course is La	Assignment Practical Wor Final exam	k Final Asse ical Placement/ I	ssment Practicum/ WBL u:			150%	Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 0 SLT 2
	2	Assignment Practical Wor Final exam tihan Industri/ Clini ttical, 0= Others	k Final Asse ical Placement/ I s, F2F=Face to	ssment Practicum/ WBL u:			150%	Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 0 0 SLT 2 2
11	2 1 **Please tick (M) if this course is La L = Lecture, T = Tutorial, P= Prac	Assignment Practical Wor Final exam tihan Industri/ Clini ctical, O=Others CLO's numberin	k Final Asse ical Placement/ I s, F2F=Face to	ssment Practicum/ WBL u:			150%	Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 0 0 SLT 2 2
11	2 1 **Please tick (V) if this course is La L = Lecture, T = Tutorial, P= Pra *Indicate the CLO based on the	Assignment Practical Wor Final exam tihan Industri/ Clin trical, 0= 0thers CLO's number to deliver the	k Final Asse ical Placement/ I 5, F2F=Face to 19 in Item 8.	rssment Practicum/ WBL u: Face, NF2F=Nc	on Face to Face		150%	Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 0 0 SLT 2 2
	2 **Please tick (V) if this course is Lie L = Lecture, T = Tutorial, P = Prac 'Indicate the CLO based on the Identify special requirement	Assignment Practical Wor Final exam tihan Industri/ Clin trical, 0= 0thers CLO's number to deliver the	k Final Asse ical Placement/ I 5, F2F=Face to 19 in Item 8.	rssment Practicum/ WBL u: Face, NF2F=Nc	on Face to Face		150%	Percentage (%) 30 40 Percentage (%)		F2F	6		NF2F	Total	10 0 80 SLT 0 0 0 0 SLT 2 2





Course: Technological surveillance and competitive intelligence. Elective.

			Assessment Weightage	(%)				
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affec	ctive (A)		
		PLO 1	PLO 6	PLO 2	PLO 3	PLO 7		
1	Testing a Technology Surveillance and Competitive Intelligence system in an organization (C5, LL)	4				\checkmark		
2	Build a Technology Surveillance and Competitive Intelligence system for an organization of the furniture sector (P5, CTPS)		2	Å				
3	Identify the information needs of an organization (A4, TS, CTPS)		2		V			
	TOTAL (%)		45	40		15		
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment	Activities (%)		Total (%)
				Assignment	Practical Work (Prototype)	Reports	Final	
	Testing a Technology Surveillance and Competitive Intelligence system in an organization (C5= PLO1,	PLO1	Lecture & self-Learning (SCL): Assignment (SCL): Case Study (SCL): Problem-Based Learning (PBL).	10			15	
1	LL= PC07)	PLO 7	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Croblem-Based Learning (PBL). (SCL): Assignment.	5				30
	Build a Technology Surveillance and Competitive Intelligence system for an organization of the furniture sector (P5= PLO2, CTPS= PLO6)	PLO2	Practical. Modular Report.		30	10		40
		PLO 6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL).		5		15	20
			(SCL): Assignment. Practical. Prototype and Technical Report.					
3	Identify the information needs of an organization (A4, TS= PLO3, CTPS= PLO6)	PLO3	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.	10				10
			TOTAL (%)	25	35	10	30	100



Deliverable 2.2: Joint Curriculum



1.	Name of Course :	Technological surveillance and competitive intelligence. This course encompasses the introduction to Technological surveillance and competitive intelligence, emphasizing aspects such as the Technological surveillance process, the roles and r													
	Course Code :														
2.	Synopsis :			the introduction and use of inf					lligence, emp	ohasizing aspe	ects such as ti	ne Technologi	cal surveillan	ce process, the role	s and responsabilities in
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		2	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-requisite: (if any)														
7.	Course Learning Outcomes (CLO): At the e	end of the cou	urse the stude	nts will be ab	ole to:									
	CLO1	Testing a Teo	hnology Surv	eillance and C	ompetitive Ir	telligence sy	stem in an org	anization (C5	i, LL)						
	CLO2	Build a Techr	nology Surveil	lance and Cor	npetitive Inte	lligence syste	em for an orga	nization of th	ne furniture s	ector (P5, CTF	PS)				
	CLO3	Identify the i	nformation n	eeds of an org	anization (A4	4, TS, CTPS)									
8.	Mapping of the Course Learn Please select the Learning O								ivo PLO3 - Pr	actical Skills					
	Flease select the Learning O	Lecome Domai			e cens above		ramme Learni			actical Skills					
								Information						1	
	Course Learning Outcomes	Knowledge of	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and	Communication, Leadership and	Problem Solving and Scientific Skills	Management and						Learning and	Assessment Method
	(CLO)	Discipline Area		Responsibilities	Professionalism	Team Skills	and scientific skills	Lifelong Learning Skills						Teaching Method	
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7						1	
	CLO 1	v						v						Lecture, self- Learning, Student-	Continuous assignment.
		, v						•						Center Learning.	Final exam.
	CLO 2		v				v							Lecture, self- Learning, Student-	Continuous assignment.
			-											Center Learning.	Final exam.
	CLO 3			v			v								Continuous assignment.
														Center Learning.	
	Indicate the relevancy between														
	(This description must be read to	together with S	tandards 2.1.	2 , 2.2.1 and 2.	2.2 in Area 2 -	pages 16 & 18	3)								
9.	Transferable Skills (if applica						1			Surveillance in	n an organiza	tion			
	(Skills learned in the course of	of study which	can be usefu	l and utilized	in other setti	ngs)	2		zed search to						
							3	Identification	n and use of s	specialized in	formation sou	urces			
							4								
10.	Distribution of Student Learnin	ng Time (SI T)					5								
												d Learning Acti			
			Course Conte	nt Outline				CLO*		Guided Le	arning (F2F)		Guided	Independent	SLT
									L	т	Р	o	Learning (NF2F)	Learning (NF2F)	
	1. Introduction to Technological Sur	veillance and Com	petitive Intellige	ence				CLO1-CLO3	2		3		(1121)	4	9
	2. Roles and responsibilities in a Tec				e System			CLO1	1						
	3. Technological Surveillance and Co	ompetitive Intellig												2	6
	4. Design of a Technological Surveil		ence Tools					CLO2-CLO3			3 14			2	6
				system				CLO2-CLO3 CLO2	3		14			5	22
		lance and Compet	itive Intelligence					CLO2	3 4		14 16			5	22 28
	5. Final product in a Technological S	lance and Compet	itive Intelligence						3		14			5	22
		lance and Compet	itive Intelligence					CLO2	3 4		14 16			5	22 28 15
		lance and Compet	itive Intelligence					CLO2	3 4		14 16			5	22 28 15 0
		lance and Compet	itive Intelligence					CLO2	3 4		14 16			5	22 28 15 0 0
		lance and Compet	itive Intelligence					CLO2	3 4		14 16			5 8 5	22 28 15 0 0 0
		lance and Compet	itive Intelligence	gence System				CLO2 CLO2 Percentage	3 4	F2F	14 16		NE2F	5 8 5	22 28 15 0 0 0 80
	5. Final product in a Technological S	lance and Compet urveillance and Co	itive Intelligence	gence System				CLO2 CLO2 Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5	22 28 15 0 0 0 80 SLT
	5. Final product in a Technological S	lance and Compet urveillance and Co Assignment	itive Intelligence mpetitive Intell Continuous A	gence System				CLO2 CLO2 Percentage (%) 25	3 4	F2F	14 16		NF2F	5 8 5	22 28 15 0 0 80 80 SLT 0
	5. Final product in a Technological S	lance and Compet urveillance and Co Assignment Practical Wor	itive Intelligence mpetitive Intell Continuous A	gence System				CLO2 CLO2 Percentage (%) 25 35	3 4	F2F	14 16		NF2F	5 8 5	22 28 15 0 0 80 80 SLT 0 0
	5. Final product in a Technological S	lance and Compet urveillance and Co Assignment	itive Intelligence mpetitive Intell Continuous A	gence System				CLO2 CLO2 Percentage (%) 25	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 0 80 SLT 0 0 0
	5. Final product in a Technological S	lance and Compet urveillance and Co Assignment Practical Wor	itive Intelligence mpetitive Intell Continuous A	gence System				CLO2 CLO2 Percentage (%) 25 35	3 4	F2F	14 16		NF2F	5 8 5	22 28 15 0 0 80 80 SLT 0 0
	5. Final product in a Technological S	lance and Compet urveillance and Co Assignment Practical Wor	itive Intelligence mpetitive Intell Continuous A	ssessment				CLO2 CLO2 Percentage (%) 25 35 10 Percentage	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 0 80 SLT 0 0 0
	5. Final product in a Technological S	Assignment Practical Work	itive Intelligence ompetitive Intell Continuous A	ssessment				CLO2 CLO2 Percentage (%) Percentage (%)	3 4	F2F	14 16			5 8 5 Total	22 28 15 0 0 0 80 80 80 80 80 80 80 80 80 80 80
	5. Final product in a Technological S	lance and Compet urveillance and Co Assignment Practical Wor	itive Intelligence ompetitive Intell Continuous A	ssessment				CLO2 CLO2 Percentage (%) 25 35 10 Percentage	3 4		14 16			5 8 5 Total	22 28 15 0 0 0 80 SLT 0 0 0 0 0 0 5LT 2
	5. Final product in a Technological S	Assignment Practical Work	itive Intelligence ompetitive Intell Continuous A	ssessment				CLO2 CLO2 Percentage (%) 25 35 35 10 Percentage (%)	3 4	F2F	14 16			5 8 5 Total	22 28 15 0 0 0 80 80 80 80 80 80 80 80 80 80 80
	5. Final product in a Technological S	Assignment Practical Work Final Exam	itive Intelligences mpetitive Intelli Continuous A rk Final Asse	gence System sseessment ssment				CLO2 CLO2 Percentage (%) 25 35 35 10 Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 80 80 SLT 2 2
	5. Final product in a Technological 5 1 1 2 3 **Please tick (V) if this course is La	Iance and Competent urveillance and Co Assignment Practical Woi Reports Final Exam	itive Intelligence ompetitive Intelli Continuous A rk Final Asse sical Placement/ I	gence System sseessment ssment Practicum/ WBL us			150%	CLO2 CLO2 Percentage (%) 25 35 35 10 Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 0 80 SLT 0 0 0 0 0 0 5LT 2
	5. Final product in a Technological S	Iance and Competent urveillance and Co Assignment Practical Woi Reports Final Exam than Industri/ Clin	itive Intelligence mpetitive Intelli Continuous A rk Final Asse	gence System sseessment ssment Practicum/ WBL us			50%	CLO2 CLO2 Percentage (%) 25 35 35 10 Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 80 80 SLT 2 2
11	5. Final product in a Technological 5 1 1 2 3 **Please tick (V) # this course is La L = Lecture, T = Tutorial, P = Prot	Assignment Assignment Practical Woi Reports Final Exam tihan Industri/Clin ct.ical, 0= Other cLO's numberii	itive Intelligence mpetitive Intelli Continuous A rk Final Asse	gence System sseessment ssment Practicum/ WBL us			150%	CLO2 CLO2 Percentage (%) 25 35 35 10 Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 80 80 SLT 2 2
11 12	5. Final product in a Technological S 1 1 2 3 **Please tick (V) if this course is La L = Lecture, T = Tutorial, P = Prat *indicate the CLO based on the	Assignment Assignment Practical Wor Reports Final Exam than Industr/ (Clif) sumbering to deliver the	itive Intelligences mpetitive Intelli Continuous A rk Final Asse ikal Placement/ I s, F2F=Face to g in Item 8.	gence System sseessment ssment Practicum/ WBL us	n Face to Face		150%	CLO2 CLO2 Percentage (%) Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 80 80 SLT 2 2
	5. Final product in a Technological S 1 1 2 3 **Please tick (9) # this course in L L = Lecture, T = Tutorial, P = Prat #indicate the CLO based on the Identify special requirement	Assignment Assignment Practical Wor Reports Final Exam than Industr/ (Clif) sumbering to deliver the	itive Intelligences mpetitive Intelli Continuous A rk Final Asse ikal Placement/ I s, F2F=Face to g in Item 8.	gence System sseessment ssment Practicum/ WBL us	n Face to Face		150%	CLO2 CLO2 Percentage (%) Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 80 80 SLT 2 2
12	5. Final product in a Technological S 1 1 2 3 **Please tick (9) # this course in L L = Lecture, T = Tutorial, P = Prat #indicate the CLO based on the Identify special requirement	Assignment Assignment Practical Woi Reports Final Exam than Industri/Clin tctical, 0= Other CLO's numberi to deliver the and further re	itive Intelligences mpetitive Intelli Continuous A rk Final Asse ikal Placement/ I s, F2F=Face to g in Item 8.	gence System sseessment ssment Practicum/ WBL us	n Face to Face		150%	CLO2 CLO2 Percentage (%) Percentage (%)	3 4	F2F	14 16		NF2F	5 8 5 Total	22 28 15 0 0 80 80 SLT 2 2





Course: Management Systems. Lean manufacturing. Elective.

			Assessment Weightage (%)					
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)			
		PLO 1	PLO 6	PLO 2	PLO 5			
1	Assesses ways of characterizing modern enterprise management systems in the furniture industry (C5)	*						
2	Constructs solutions, processes and tools of management systems in accordance with the lean philosophy (P5, CTPS)		V	4				
3	Formulates socially responsible management systems in the spirit of lean philosophy (A4, CS, LS)				4			
	TOTAL (%)		50	40	10			
No.	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities		Assessment	Activities (%)		Total (%)
	<u></u> ,			Assignment	Practical Work (Prototype)	Reports	Final	
1	Assesses ways of characterizing modern enterprise management systems in the furniture industry (C5 = PLO1)	PLO1	Lecture & self-Learning (SCL): Assignment (SCL): Problem-Based Learning (PBL).	10			15	25
	Constructs solutions, processes and tools of management systems in accordance with the lean philosophy (CTPS = PLO6) (P5 = PLO2)	PLO6	Lecture & self-Learning (SCL): Discussion (SCL): Case Study (SCL): Problem-Based Learning (PBL). (SCL): Assignment.			10	15	25
		PLO2	Practical work, laboratory experiment, demonstrations.		40			40
3	Formulates socially responsible management systems in the spirit of lean philosophy (A4,CS,LS = PLO5)	PLO5	SCL activities like group discussion, role play, case study, PBL, POPBL, field work	10				10
			TOTAL (%)	20	40	10	30	100





4			and the second second second												
1.	Name of Course :	Management	systems. Le	an manufacti	uring.										
-	Course Code :														
2.	Synopsis :	The course ai through sepa						ractices of ar	n organizatio	n to impleme	nt its policies	s that may be	more effecti	ve in achieving poli	cy goals than an approach
3.	Name(s) of academic staff :														
4.	Semester and Year offered :		Sem	ester		2	Year	1							
5.	Credit Value :	2													
6.	Prerequisite/co-requisite:	No													
	(if any)														
7.	Course Learning Outcomes (O	CLO): At the e	end of the cou	urse the stude	ents will be a	ble to:									
	CLO1	Assesses way	s of characte	rizing moder	n enterprise	management	t systems in t	ne furniture i	ndustry (C5)						
	CLO2	Constructs so	lutions, proce	esses and too	ls of manage	ment system	is in accordan	ce with the le	an philosoph	ny (P5, CTPS)					
	CLO3	Formulates s	ocially respor	nsible manag	ement syster	ns in the spir	it of lean phil	osophy (A4, C	'S, LS)						
8.	Mapping of the Course Learn	ing Outcomes	to the Progra	mme Learni	ng Outcomes	, Teaching M	ethods and A	sessment :							
	Please select the Learning Ou	utcome Domai	in (LOD) for e	ach PLO in th	ne cells above					Practical Skill	s				-
						Prog	ramme Learni		PLO)		1	1			
	Course Learning Outcomes	Knowledge of		Social Skills and	Values, Attitudes	Communication,	Problem Solving and	Information Management and						Learning and	
	(CLO)	Discipline Area	Practical Skills	Responsibilities	and Professionalism	Leadership and Team Skills	Scientific Skills	Lifelong Learning						Teaching Method	Assessment Method
		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	Skils PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	1	
		1.01	TEOL	1205	1204	1205	1200	1207	1200	1205	12010		TEOIL	Lecture, self-	
	CLO 1	v												Learning, Student- Center Learning.	Oral or written examination
														Lecture, practical,	
														tutorial, self-	Project report and
	CLO 2		V				V							directed learning.	
														Practical work and demonstrations.	practical work (rubric)
	CLO 3					v								SCL activities like group discussion	Scenario based discuss and
						ľ								and case study	case study
	Indicate the relevancy between														
	(This description must be read t		tandards 2.1.	2 , 2.2.1 and 2	.2.2 in Area 2	- pages 16 & 1									
9.	Transferable Skills (if applica					·	1			onships betw					
	(Skills learned in the course of	or study which	can be usefu	i and utilized	i in other sett	ings)	2			tools to creat	e innovative s	solutions in m	anagements	systems	
							3		ve cross prot	on lean and e	so principles				
							5	ereating son	ations based	onneannana e					
10.	Distribution of Student Learnin	ng Time (SLT)					5	er en	ations based	orrican and e					
10.	Distribution of Student Learnin	ng Time (SLT)					5	erea ang son		onicanana e					
10.	Distribution of Student Learnin	ng Time (SLT)					5			orricantina e		d Learning Act			
10.	Distribution of Student Learnin		Course Conte	nt Outline			5	CLO*					Guidea	Independent	SLT
10.				nt Outline			5		L		Teaching and			Independent Learning (NF2F)	SLT
10.	1-Concepts and basics of manageme	ent in manufactur		nt Outline			5			Guided Le	Teaching and arning (F2F)	d Learning Act	Learning		SLT 5
10.	1-Concepts and basics of management 2-Environmental Management Syst	ent in manufactur tem		nt Outline			5	CLO* CLO1 CLO1	L 1 1	Guided Le	Teaching and arning (F2F) P 2 2	d Learning Act	Learning	Learning (NF2F) 2 2	5
10.	1-Concepts and basics of managem 2-Environmental Management Syst 3-Business models of modern organ	ent in manufactur tem izations	ing enterprises	nt Outline			5	CLO* CLO1 CLO1 CLO1	L 1 1 2	Guided Le	Teaching and arning (F2F) P 2 2 5	d Learning Act	Learning	Learning (NF2F) 2 2 3	5 5 10
10.	1-Concepts and basics of managem 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: org	ent in manufactur tem jzations janization context	ing enterprises and leadership				5	CLO1 CLO1 CLO1 CLO1 CLO1, CLO2	L 1 1 2 3	Guided Le	Teaching and arning (F2F) P 2 2 5 10	d Learning Act	Learning	Learning (NF2F) 2 2 3 6	5 5 10 19
10.	1-Concepts and basics of management 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: org 5-Measurement and modeling in m.	ent in manufactur tem izations ;anization context anagement and le	ing enterprises and leadership				5	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2	L 1 1 2 3 3	Guided Le	Teaching and arning (F2F) P 2 2 5 10 5	d Learning Act	Learning	Learning (NF2F) 2 2 3 6 4	5 5 10 19 12
10.	1-Concepts and basics of managem 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: org 5-Measurement and modeling in m. 6-Information and IT system in lean	ent in manufactur tem anizations anization context anagement and le manufacturing	ing enterprises and leadership ean manufacturi				5	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2	L 1 1 2 3 3 1	Guided Le	Teaching and arning (F2F) P 2 2 5 10 5 6	d Learning Act	Learning	Learning (NF2F) 2 2 3 6 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 10 19 12 9
10.	1-Concepts and basics of management 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: organ 5-Measurement and modeling in m. 6-Information and IT system in lean 7-Leadership, planning and effective	ent in manufactur tem anizations anization context anagement and le manufacturing e process manage	ing enterprises and leadership ean manufacturi ment	ng			5	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) P 2 2 5 10 5 6 10	d Learning Act	Learning	Learning (NF2F) 2 2 3 6 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	5 5 10 19 12 9 16
10.	1-Concepts and basics of managem 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: org 5-Measurement and modeling in m. 6-Information and IT system in lean	ent in manufactur tem anizations anization context anagement and le manufacturing e process manage	ing enterprises and leadership ean manufacturi ment	ng	ndustry 4.0		5	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2	L 1 1 2 3 3 1	Guided Le	Teaching and arning (F2F) P 2 2 5 10 5 6	d Learning Act	Learning	Learning (NF2F) 2 2 3 6 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 5 10 19 12 9 16 4
10.	1-Concepts and basics of management 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: organ 5-Measurement and modeling in m. 6-Information and IT system in lean 7-Leadership, planning and effective	ent in manufactur tem anizations anization context anagement and le manufacturing e process manage	ing enterprises and leadership ean manufacturi ment	ng	ndustry 4.0		5	CLO* CLO1 CLO1 CLO1 CLO1, CLO2 CLO2 CLO2 CLO2, CLO3	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) P 2 2 5 10 5 6 10	d Learning Act	Learning	Learning (NF2F) 2 2 3 6 4 2 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 10 19 12 9 16 4 0
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10.	1-Concepts and basics of management 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: org 5-Measurement and modeling in m. 6-Information and IT system in lean 7-Leadership, planning and effective 8-Man and organization - humaniza	ent in manufactur rem izations anajexient context anagement and le process manage process manage tion of the work p	ing enterprises and leadership aan manufacturi ment rocess. A learnin Continuous A:	ng ng enterprise in i	ndustry 4.0		5	CLO* CLO1 CLO1 CLO1, CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 Percentage (%)	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) P 2 2 5 10 5 6 10	d Learning Act		Learning (NF2F) 2 2 3 6 4 4 2 4 1 1 Total	5 5 10 19 12 9 16 4 0 80 80
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10.	1-Concepts and basics of management 2-Environmental Management Syst 3-Business models of modern organ 4-Quality management system: org 5-Measurement and modeling in m. 6-Information and IT system in lean 7-Leadership, planning and effective 8-Man and organization - humaniza 1 2	ent in manufactur tem izations anagement and le manufacturing process manage tion of the work p Assignment Practical Wor	ing enterprises and leadership aan manufacturi ment rocess. A learnin Continuous A:	ng ng enterprise in i usessment	ndustry 4.0		5	CLO* CLO1 CLO1 CLO1 CLO2 CLO2 CLO2 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO2, CLO3 CLO4 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1 CLO1	L 1 1 2 3 3 1 2	Guided Le	Teaching an arning (F2F) P 2 2 5 10 5 6 10	d Learning Act		Learning (NF2F) 2 2 3 6 4 2 4 1 Total	5 5 10 19 12 9 16 4 0 80 80 5LT 0 0 0
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Other Components

\Rightarrow Master Thesis

The evaluation of the Master Thesis will take place when the student has passed all the compulsory courses and those electives courses selected by the student, within the periods authorized for this purpose in the academic calendar in force for these studies and according to the rules established by the University.

Description of Contents: Program

The End of Master work is organized around the treatment of a practical case of implementation of Industry 4.0.

Students are presented with possible areas in which to carry out this work, and guidance and monitoring is provided.

Among the tasks that it includes are contemplated:

- Presentation of work topics
- Compilation and analysis of information related to the Master's work
- Development of the Final Master's Work
- Elaboration of the final report and Master Thesis Defence

The Master Thesis will be evaluated by a specific committee in accordance with the procedures and requirements established by the University, in the periods fixed annually in the academic calendar.

Course Learning Outcomes (CLO) : At the end of the course the students will be able to: CLO1 Assess the techniques presented in the different subjects of the Master related to Industry 4.0 in the wood and furniture sector to a specific problem. (C5, CTPS)													
CLO1	Assess the techniques	presented in the differe	nt subjects of the Mast	er related to Industry 4.	0 in the wood and furni	ture sector to a specific	problem. (C5, CTPS)						
CLO2	Demonstrate from resu	ilts, improvements in th	e activity of a process o	of the wood industry by	applying the concepts s	een in the Master. (P5,	CTPS)						
CLO3	CLO3 Explain its results and conclusions in a clear and effective way. (A4, CS, LS)												
CLO4 Defend the knowledge and competences acquired throughout the Master. (A4, LL)													
	the Course Learning Out			0	Assessment :								
	t the Learning Outcome	Domain (LOD) for each											
Course			Progra	amme Learning Outcome	s (PLO)								
Learning Outcomes	Knowledge of Discipline Area	Practical Skills	Social Skills and Responsibilities	Values, Attitudes and Professionalism	Communication, Leadership and Team Skills	Problem Solving and Scientific Skills	Information Management and Lifelong Learning Skills						
(CLO)	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7						
CLO 1	v					√							
CLO 2		V				v							
CLO 3					V								
CLO 4							V						





			Ass	essment Weightage	e (%)	
No.	Course Leaning Outcome (CLO)	Cognitive (C)	Cognitive (C)	Psychomotor (P)	Affective (A)	Affective (A)
		PLO 1	PLO 6	PLO 2	PLO 5	PLO 7
1	Assess the techniques presented in the different subjects of the Master related to Industry 4.0 in the wood and furniture sector to a specific problem. (C5, CTPS)	×	V			
2	Demonstrate from results, improvements in the activity of a process of the wood industry by applying the concepts seen in the Master. (P5, CTPS)		V	Å		
3	Explain its results and conclusions in a clear and effective way. (A4, CS, LS)				~	
4	Defend the knowledge and competences acquired throughout the Master. (A4, LL)					4
	TOTAL (%)	3	0	40	15	15

	Course Learning Outcome (CLO)	PLO	Teaching & Learning Activities	Assessment Activities (%)			
No.				Project oriented problem based learing.	Reports	Final	Total (%)
		PLO1				10	
1	Assess the techniques presented in the different subjects of the Master related to Industry 4.0 in the wood and furniture sector to a specific problem. (C5 = PLO1) (CTPS = PLO6)	PLO6	self-Learning (SCL): Assignment (SCL): Problem- Based Learning (PBL).			10	20
	Demonstrate from results, improvements in the activity of a process of the wood industry by applying the concepts seen in the Master. (CTPS = PLO6) (P5 = PLO2)		 Practical. Prototype and Technical Report. 			10	10
2		PLO2	• (SCL): Assignment • Practical. Modular Project.	40			40
3	Explain its results and conclusions in a clear and effective way. (A4, CS, LS = PLO5)	PLO3	Discussion Case Study		15		15
3	Defend the knowledge and competences acquired throughout the Master. (A4, LL = PLO7)	PLO7	Discussion Case Study		15		15
			TOTAL (%)	40	30	30	100

⇒ Internship/Practicum

Curricular internships offer students the opportunity to immerse themselves in the professional world and, at the same time, to apply and consolidate in an integrated manner the set of skills and knowledge that they have worked on throughout the educational itinerary of this master's degree.

4. FINAL ASSESSMENT METHODOLOGY

In order to define the evaluation methodology, the following documents have been analyzed:

- \Rightarrow Code of practices for programme accreditation (2014). COPPA second edition.
- \Rightarrow Guidelines to good practices: assessment of students (2014). Malaysian Qualifications Agency 2014
- \Rightarrow D2.3.: Methodological aspects.





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Assessment definition

A systematic and cyclical way to improve quality of students' performance and development by continuously collecting, analyzing and discussing direct and indirect data and evidences of students learning from multiple and diverse sources. Its purpose is to have deep understanding of what the students really know and can do, provide feedback to improve students learning, teachers teaching (feed forward), curriculum planning and overall programme's effectiveness. The data collected in assessment is used by students, teachers, curriculum planners, and administrators to promote students learning and is not meant to make judgment. [3]

Relationship between Assessment and Learning Outcomes.

- \Rightarrow Assessment principles, methods and practices must be aligned to the learning outcomes of the programme, consistent with the level 7 defined in the MQF.
- \Rightarrow The alignment between assessment and the learning outcomes in the programme must be systematically and regularly reviewed to ensure its effectiveness.

Assessment Methods

- \Rightarrow There must be a variety of methods and tools that are appropriate for the assessment of learning outcomes and competencies.
- \Rightarrow There must be mechanisms to ensure, and to periodically review, the validity, reliability, integrity, currency and fairness of the assessment methods.
- ⇒ The frequency, methods, and criteria of student assessment including the grading system and appeal policies - must be documented and communicated to students on the commencement of the programme.
- ⇒ Changes to student assessment methods must follow established procedures and regulations, and be communicated to students prior to their implementation. [4]

It is of utmost importance that assessment methods are aligned to both Learning outcomes and the instructional delivery. [5]



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Figure 1: Aligning learning outcomes, learning and teaching activities and assessment. Adapted from Biggs (1999) p.27

Bearing all the above in mind, we conclude that the evaluation methodology must be well structured and varied in order to be able to evaluate all the course learning outcomes defined in the different courses of the Master Degree.



Figure 2: Assessment Methodology

From the results obtained through the Malaysian universities, we come to the conclusion that the evaluation methodology most commonly used in lectures is that of "continuous evaluation". In addition, other types of assessment are used such as exams, tutorials, quizzes and assignment.

For the Master Making 4.0 - *Master of Advanced Technologies and Innovation for Wood-Based Industry* - we intend to use all the mentioned evaluation methods. Having only one method to provide information about the program would only reflect a part of the students' achievements. In addition, the CLO can be difficult to evaluate using only one method.

In most of the Master's courses, continuous assessment has a weight of 70% as opposed to the final which has 30% and is aimed at evaluating cognitive domain by conducting a final exam.



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BLOOM TAXONOMY	LEVEL OF BLOOM TAXONOMY DOMAIN	PROGRAM LEARNING OUTCOME (PLO)	SOFT SKILL*	Continuous Assessment Activities	Final Assessment
COGNITIVE	C4 – C6	PLO1	-	Report, log book, project paper etc.	Oral or written examination
(C)	C4 – C6	PLO6	CTPS	Assignment, project report, case study, role-play, final year project, etc.	Exam
PSYCHOMOTOR (P)	P4 – P7	PLO2	-	Observation through practical work (rubric)	
AFFECTIVE	A3 – A5	PLO3	TS	Observation rubric, peer assessment, etc.	
(A)	A3 – A5	PLO4	EM	Observation rubric, supervisory report, peer assessment, etc.	
	A3 – A5	PLO5	CS, LS Observation rubric, assignment, essay, case study report, presentation, scenario-based debate, etc.		
	A3 – A5	PLO7	Lterature review, assignment, case study report, final year project, etc.		





5. ANNEX 1: D2.3.: METHODOLOGICAL ASPECTS.

Improving Malaysian HE Knowledge Towards a Wood and Furniture Industry 4.0



Deliverable 2.3: Methodological aspects

Prepared	Verified	Approved
KIT	All consortium	

Dissemination level: National, International

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P2	Warsaw University of Life Sciences	WULS	PL
P3	Karlsruhe Institute of Technology	KIT	GE
P4	Centro Tecnológico del Mueble y la Madera	CETEM	SP
P5	Universiti Putra Malaysia	UPM	MY
P6	Universiti Teknologi MARA	UiTM	MY
P7	Universiti Kebangsaan Malaysia	UKM	MY
P8	Universiti Sains Malaysia	USM	MY
Р9	Malaysian Timber Industry Board	MTIB	MY





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1. Introduction

This document reports the results performed in task "T2.3: Methodological aspects" in the framework of the WP2 "Training path, learning content structure and methodological aspects".

The aim of this task, leaded by KIT, is to define the best training methodology for Making 4.0 Master, approaching the current teaching methodology in Malaysia. To carry out this task, the European partners prepared a survey to collect the necessary information. The survey was conducted on 4/7/2019 during the 2nd meeting at WULS. The four participating universities were USM, UKM, UiTM and UPM. USM was responsible for carrying out the analysis of the results, which are compiled in the report "Survey about the Malaysian Teaching Methodology" (Annex 1).

In addition to the above-mentioned survey, some documents from the Malaysian Qualifications Agency, specified in the references, have also been taken into account in the development of this document. This ensures that the methodology to be used is in line with the Malaysian education system.

With the completion of this work together with the **D2.2** "Joint Curriculum", we have achieved **Milestone 3**: "Determine the best training methodology and path". Moreover, this work is also linked to specific project objective **SO2**: "Create an innovative learning pathway able to provide HE students the most important competences and skills related with Industry 4.0.

The results of this report act as a support point for the correct development of the WP3: "Develop of Training Materials and guides for trainers", as will set the basis for the development of the necessary training materials that will made up the Making 4.0 Master Degree.



2. Learning Path and Training Methodology.

The learning path of the Master Degree is designed so that the students obtain the necessary knowledge in a progressive way, starting with courses on the technologies of the industry 4.0, deepening later with those more specific to the wood industry. The objective is to give the students the necessary tools to apply the benefits of the industry 4.0 in each of the processes of wood transformation until the final product is reached.

The Master Degree is structured to last one academic year (two semesters), and consists of four modules composed of 9 compulsory courses and 11 elective courses, 6 of the electives must be taken.

In addition, an internship and a master's thesis are required to complete the training program.



Figure 3. Structure of the Master MAKING 4.0 simplified.

For the assignment of Student Learning Time (SLT) in each of the courses, both the answers of the survey made to the Malaysian universities and the references of the Malaysian credit system have been considered. All courses are two Malaysian credits (3 European credits), and the entire master's degree has an allocation of 40 Malaysian credits (60 European credits)³.

In summary, the allocation of hours for all the courses of the Master's degree follow the table below.

Credit	Nature of the course	Total F2F hours (14 weeks)		*Total NF2F hours	Total
		Lecture	Practical	(14 weeks)	SLT
2	Without Practical	28	0	52	80
2	With 3 hours Practical per week	14	42	24	80

 Table 11: Student Learning Time by nature of the course. [6]

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³ Henceforth when it is expressed credits in this document it is referenced to Malaysian credits

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Total SLT is counted based on the assumption of learning hours by topic in a course, which includes the guided learning activities both face-to-face (F2F) and non-face-to-face (NF2F), independent learning, as well as assessment hours.

The following table shows some of the guidelines that have been considered for the assumption on the allocation of student learning times (SLT) in each of the courses:

Learning Activities	F2F Learning Hours	NF2F Learning Hours
Lecture	1 hour per topic (total lecture hours per topic is depending on the depth of topics, and based on credit values)	1~2 hour
Tutorial	1 hour	1 hour
Practical	3 hours per week	3 hours per week
Studio	2 hours per week	2 hours per week
SCL: Problem-Based Learning	2 hours per activity	4 hours per activity
Group Discussion	1~2 hours per activity	1 hour per activity
Presentation	1 hour per activity	3~4 hours per activity
Formal Continuous Assessment	2 hours per assessment (depend on the level of difficulties)	2 hours for preparation
Formal Final Assessment	2 hours per assessment	3 hours for preparation
Assignment	1 hour per task (for one type of assessment)	2 hours per task
Preparation for Formal Assessments		(2 hours x total continuous assessment) + (3 hours for preparation of final assessment)
Revision		1 hour x total lecture hours

 Table 12: Guideline for the assumption on allocation of student learning times (SLT). [3]

Table below show the examples for each type of student learning (F2F – NF2F):

Types of learning	Examples
Guided Learning: Face-to-face (F2F)	Lecture, tutorial, practical, studio work, Student-Centered Learning (SCL) activities such as case study, problem-based learning, project oriented based learning, presentation, group discussion, etc.
Guided Learning: Non-face-to-face (NF2F)	E-learning, Completion of any given tasks, modular learning, etc.
Independent Learning (NF2F)	Revision, preparation for assessments

Table 13: Examples of teaching methods by type of learning. [3]

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Based on the total hours of Guided F2F, Guided NF2F and Independent learning, below shows how credit is determined:

Total Student Learning Time (SLT) per Semester (Total SLT for 14 weeks of learning)	Credit
40~43 hours	1
80~83 hours	2

Table 14: Total Student Learning Time (SLT) per credit. [6]

In order to define the best methodological aspects for the MAKING 4.0 Master Degree, we have had as reference the answers of the survey made to the four Malaysian universities. Specifically, the answers to the questions: What type of methodology are you using in your Lectures (F2F)? What type of resources are you using in your lectures (F2F)? and What type of assessment methodology are you using in your lectures?





Figure 2 shows Types of methodology using in lectures. Based on Figure 2, all institutions (100%) use traditional lecture, project-based learning and thinking based learning in their teaching methodologies. However, only 25% of them involved with flipped classroom, collaborative learning and gamification. At a moment, not all institutions have capabilities to facilitate and engage with new teaching methodologies. 75% of the institutions used design thinking method in teaching.

All the institutions also adapted others type of methodologies listed in Figure 3 such as case study, factory visits, online based learning, problems-based learning, skill-based learning and ICT.



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If the answer above was "Others", please specify 4 responses	
Case study, factory visits	
Online based learning	
Problem base learning, skill base learning, case study	
ICT	

Figure 5: Other types of methodology in lectures.

Figure 4 indicated types of assessment methodology using in lectures. The 75% of the Malaysian universities use continuous assessment and 25% (one response) choose others. By referring figure 5, some the lists of response for others can be included as continuous assessment as well. [7]



Figure 6: Types of assessment methodology.









In order to comply with the methodology currently in use in the respondent universities and considering the resources of each university, the consortium has defined the following methodology:



\Rightarrow Trainers guides.

Under WP3 **Task 3.3 "Development of trainers guides"**, a guide will be developed for each of the courses. These will be designed for instructors so that teachers in Malaysia will have a support tool to learn the basic concepts of each course and the best methodological aspects to apply in class. The guides will include some exercises and examples that can be used by the teacher.

The training contents to be developed in the **task 3.1 "training content development"** of the WP3, are divided into two formats:

\Rightarrow Training materials for Lectures.

Generally, and according to the results of the survey carried out, at Malaysian universities a semester is divided into 14 weeks. All the courses to be developed for the master's degree have a duration of two Malaysian credits (between 80 and 83 SLT each course).

As we have seen in table 1, the theoretical-practical courses are composed of 14 hours of lectures (one hour per week), and the theoretical courses of 28 hours of lectures (2 hours

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per week). With these data, the consortium will develop in Power Point format the didactic contents that the teacher will use for each one of the hours of Lecture in the different courses.

\Rightarrow Training materials for independent learning.

For the independent learning of the student, a "Course Book" will be developed for each of the courses in pdf format. As we have seen in table 1, for our master, the SLT dedicated to NF2F vary between 24 and 52 according to the type of course (theoretical or theoretical-practical).

In addition to this course book, we will develop the necessary contents to carry out the practical parts such as group discussions, case studies, modular projects...

\Rightarrow Assessment activities.

From the results obtained through the Malaysian universities, we concluded that the evaluation methodology most commonly used in lectures is that of "continuous assessment". In addition, other types of assessment are used such as exams, tutorials, quizzes and assignment.

In most of the courses of the Master that we are developing, continuous assessment has a weight of 70% as opposed to the final which has 30%, and is aimed at evaluating cognitive domain by conducting a final exam. Those evaluation activities that best suit the definition of each course will be developed.

In addition to the above, to pass the master's degree the student will have to do an internship and a Master Thesis.

The Master Thesis will be defined in the Joint Curriculum and will be developed in depth in **T3.2 ''Development of the final assessment activity''** of WP3.

All training materials will be developed to achieve the course learning outcomes defined in each of the courses, and both the PLOs assigned to each CLO and the soft skills will be evaluated to ensure that the student acquires all predefined knowledge and competencies. Providing this alignment will encourage students to adopt learning approaches that will result in the achievement of the CLOs and therefore help in the achievement of the PLOs. [3] Show figure 7.



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Figure 9: Relationship between assessment and learning and teaching activities in the achievement of results for the Making 4.0 master's degree. [3]





To reinforce the information in figure 7, the mapping of the PEOs with the PLOs is shown below (Table 5), in addition to its relationship with the bloom taxonomy and soft skills (Table 6), teaching and learning activities and evaluation activities (Table 7).

					Program L	earning Out	come (PLO)		
PEOs WITH PLOs	No.	Program Educational Objective (PEO) Master of Advanced Technology and Innovation for Wood- Based Industry	demonstrate mastery of KETs knowledge in the wood and furniture industry	apply practical skills about digital transformation in the wood and furniture industry	relate ideas to societal issues in wood and furniture industry	conduct research with minimal supervision and adhere to legal, ethical and professional codes of practice	demonstrate leadership qualities through communicating and working effectively with peers and stakeholders	generate solutions to problems in wood and furniture industry using scientific and critical thinking skills	manage information for lifelong learning
MAPPING			с	Р	Α	Α	А	С	A
AAP			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
2	1.	knowledgeable in the field of Key Enabling Technologies (KET) of the Industry 4.0 and current trends of wood materials and processes with appropriate skills and attitude to work in wood- based industry.	\checkmark	\checkmark					\checkmark
	2.	capable to apply the Key Enabling Technologies (KET) and the sustainable innovation within the production processes of the wood based industry.		\checkmark				\checkmark	\checkmark
	3.	Innovative and creative, as well as aware and committed with a more sustainable and technological productive society.			\checkmark	\checkmark	\checkmark		

Table 15: Mapping PEOs with PLOs.





BLOOM TAXONOMY	LEVEL OF BLOOM TAXONOMY DOMAIN	PROGRAM LEARNING OUTCOME (PLO)	SOFT	MQF DOMAIN OF LEARNING OUTCOME		INTE	TENDED PLO STATEMENT FOR MASTER PROGRAM					
COGNITIVE	C1 – C6	PLO1	-	Knowledge of Discipline Area			onstrate mastery of knowledge of KETs in the wood and ture industry					
(C)	C1 – C6	PLO6	CTPS	Problem Solving and Scientific Skills		ng and Scientific Skills	generate skills	erate solutions to problems using scientific and critical thinking 's				
PSYCHOMOTOR (P) P1 – P7		PLO2	-	Practical Skills			apply practical skills about digital transformation in the wood and furniture industry			in the wood and		
AFFECTIVE	A1 – A5	A1 – A5 PLO3 TS Social Skills and Responsibilities		nd Responsibilities	relate id	late ideas to societal issues in wood production processes						
(A)	A1 – A5	PLO4	EM	EM Values, Attitudes and Professionalism		les and Professionalism			rch with minimal supervision and adhere to legal, ofessional codes of practice			
	A1 – A5	PLO5	CS, LS	Communication Skills		n, Leadership and Team	demonstrate leadership qualities through communicating and working effectively with peers and stakeholders			nicating and		
	A1 – A5	PLO7	LL		Information Management and Lifelong Learning Skills		manage information for lifelong learning					
*Soft skills abbreviati	ion:		evel of Cogniti	ive (C)		Level of Psychomotor (P) do	omain:		Level of Affective (A)			
CTPS : critical thinkin	ng and problem	de	omain:			P7 – Origination			domain:			
solving		0	6 – Creating			P6 – Adaptation			A5 – Internalizing			
TS : social skills			C5 – Evaluating		P5 - Complex overt respon		B		Values A4 – Organization			
EM : Ethics, morale, values, and			C4 – Analyzing C3 – Applying		P4 – Mechanism P3 – Guided response				A4 – Organization A3 – Valuing			
professionalism	professionalism		C2 – Understanding		P2-Set				A2 – Responding			
CS : communication skills		C	C1 – Remembering			P1 – Perception			A1 – Receiving			
LS : leadership skills												

Table 16: Mapping between MQF domain of learning outcome, bloom taxonomy and soft skills.





BLOOM TAXONOM Y	LEVEL OF BLOOM TAXONOM Y DOMAIN	PROGRAM LEARNING OUTCOME (PLO)	SOFT SKILL*	MQF DOMAIN OF LEARNING OUTCOME	Teaching and Learning Activities	Assessment Activities		
COGNITIV E	C1 – C6	PLO1	-	- Knowledge of Discipline Area		Oral or written examination, viva, report, log book, project paper etc.		
(C)	C1 – C6	PLO6 Problem Solving and Scientific Lecture, practical, tutorial, self-directed learning, experiential learning, SCL type like PBL, POPBL, etc.		Exam, assignment, project report, case study, role-play. final year project, etc.				
PSYCHOM OTOR (P)	P1 – P7	PLO2	-	Practical Skills	Practical work, laboratory experiment, demonstrations, etc.	Observation through practical work (rubric)		
AFFECTIV E	A1 – A5	A1 – A5 PLO3 TS Social Skills and Responsibilities SCL activities like group discussion, role play, case study, PBL, POPBL, field work, etc Observation rubric, peer assessment, etc		Observation rubric, peer assessment, etc.				
(A)	AI – AS PLO4 EM		Observation rubric, supervisory report, peer assessment, etc.					
	A1 – A5	PLO5	CS, LS	Communication, Leadership and Team Skills		Observation rubric, assignment, essay, case study report, presentation, scenario-based debate, etc.		
	A1 – A5	PLO7	LL	Information Management and Lifelong Learning Skills				

Table 17: Constructive alignment between learning outcomes, teaching and learning activities, and assessment activities.





Annex 2: T2.3 results of the survey about the malaysian teaching methodology.

Result.

Figure 1 shows hours of theory lessons (face to face lecture) comprised in one credit at each institution. Based on Figure 1, two institutions out of four institutions having similar 14 hours of theory lesson (face to face) which were comprised in one credit. One institution has 12 hours (face to face) for one credit. Another response showed 1 hour for 1 credit unit, perhaps it was referring as one-hour face to face lecture per week. Generally, Malaysian public university has 14 weeks of study in 1 semester [6].

	v many hours of theory lessons (face to face lecture) are comprised in credit in your institution?
4 resp	bonses
14	
1 h	iour for 1 credit unit
10	hours face to face

Figure 1. Hours of theory lessons (face to face) in one credit.

In the case of 14 weeks of study in 1 semester. By considering 1 hour per week for 1 credit, all four institutions are having almost same hours of theory lessons (face to face) for one credit within the range of 12 to 14 hours.

Figure 2 illustrates hours of practice lesson (laboratory) in one credit. There is no clear trend that could be seen from this figure. The result for this questionnaire was a mix.

in your institution	rs of practice lessons (laboratory) are comprised in one cred on?	
4 responses		
42		
13		
2 hours		
21 hours		

Figure 2. Hours of practice lesson (laboratory) in one credit. By looking deep into each response, the result can be analysed case by case as follows:

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Case 1: 42

Assume that the practice lesson is 3 hours per week for 14 weeks (2 credits). 3 hours x 14 weeks = 42 hours. If 42 hours for 2 credits, therefore 21 hours for 1 credit.

Case 2: 13

Assume that the practice lesson is 2 hours per week for 13 weeks (2 credits). 2 hours x 13 weeks = 26 hours. If 26 hours for 2 credits, therefore 13 hours for 1 credit.

Case 3: 2 hours

Assume that 2 hours means the practice lesson is 2 hours per week for 14 weeks (2 credits).

2 hours x 14 weeks = 28 hours.

If 28 hours for 2 credits, only14 hours for 1 credit.

Case 4: 21 hours

This could be similar as Case 1.

Overall, the hours of practice lesson (laboratory) for all partners' institutions can be said within 13 to 21 hours for 1 credit. Depending on the universities, the hours offered for laboratory, are either 2 or 3 hours per week.

Figure 3 illustrates hours of student home work in one credit. There is no clear trend at all among all partners institutions result for this questionnaire.



Figure 3. Hours of student home work in one credit.

Same as previous situation, this result can be analysed case by case with some general assumptions:

- 1. Student home work is equal to independent learning time (non face to face) which is one of the Student Learning Time (SLT) components.
- 2. Ratio face to face lecture to independent learning time is 1:1-2 [1]

Case 5: 64

Assume that the face to face lecture is 4 hours per week for 14 weeks (4 credits).

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4 hours x 14 weeks = 56 hours. *The differences value between response (64) and calculated (56) is 8 hours. Perhaps 8 hours is considered as another component of SLT such as preparation time for assignment*.

With ratio 1:2, the independent learning time = 2×56 hours = 112 hours.

Thus, independent learning time for one credit = 112/4 = 28 hours

Therefore, hours of student home work in one credit is 28 hours.

Case 6: 13

Assume that the face to face lecture is 4 hours per week for 13 weeks (4 credits). 4 hours x 13 weeks = 52 hours. With ratio 1:1, the independent learning time = 1 x 52 hours = 52 hours. Thus, independent learning time for one credit = 52/4 = 13 hours Therefore, hours of student home work in one credit is 13 hours.

Case 7: 2

Perhaps number 2 is representing the ratio of face to face lecture to independent learning time is 1 to 2.

Assume that the face to face lecture is 4 hours per week for 14 weeks (4 credits). 4 hours x 14 weeks = 56 hours.

With ratio 1:2, the independent learning time = 2×56 hours = 112 hours.

Thus, independent learning time for one credit = 112/4 = 28 hours

Therefore, hours of student home work in one credit is 28 hours.

Case 8: 20

Assume that the face to face lecture is 4 hours per week for 13 weeks (4 credits). 4 hours x 13 weeks = 52 hours.

With ratio 1:1.5, the independent learning time = 1.5×56 hours = 78 hours.

Thus, independent learning time for one credit = 78/4 = 19.5 hours

Therefore, hours of student home work in one credit is close to 20 hours.

Overall, the hours of student home work in one credit for all partners' institutions can be said within the range of 13 to 28. Depending on the universities, the ratio of face to face lecture to independent learning time is 1:1-2]. [6]

Figure 4 shows Types of methodology using in lectures. Based on Figure 4, all institutions (100%) use traditional lecture, project-based learning and thinking based learning in their teaching methodologies. However, only 25% of them involved with flipped classroom, collaborative learning and gamification. At a moment, not all institutions have capabilities to facilitate and engage with new teaching methodologies. 75% of the institutions used design thinking method in teaching.



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Figure 4. Types of methodology using in lectures.

All the institutions also adapted others type of methodologies listed in Figure 5 such as case study, factory visits, online based learning, problems-based learning, skill based learning and ICT.

If the a 4 response	answer above was "Others", please specify	
Case st	udy, factory visits	
Online b	based learning	
Problem	n base learning, skill base learning, case study	
ICT		

Figure 5. Other types of methodology in lectures

Figure 6 shows Types of resource using in lectures. All institutions (100%) used same resources in lectures such as slides, textbook, lectures using blackboard, case studies, and practice lessons in laboratories. Except 1 out of 4 (25%) institution do not use exercise using blackboard. In addition, all institutions also used others resources as listed in Figure 7.









If	If the answer above was "Others", please specify					
	4 responses					
	Class discussion					
	Virtual reality Excursion at industry, online methods,					
	Videos					

Figure 7. Other types of resource using in lectures

Figure 8 indicated types of assessment methodology using in lectures. Based on Figure 8, 75% of the Malaysian universities use continuous assessment and 25% (one response) choose others. By referring Figure 9, some the lists of response for others can be included as continuous assessment as well. [7]







Figure 8. Types of assessment methodology in lectures



Figure 9. Others types of assessment methodology in lectures





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