

## FACULTY OF OCEAN ENGINEERING TECHNOLOGY AND INFORMATICS

Course Information

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COPY SHEET	UPDATE INDEX	CLEAR FORM

1	Course Name:	Comp	outer Aided G	ieome	tric Design / I	Rekab	entuk Geometri Berbantu Komputer	
	Course Code:	MKG4	4113					
	Course Classification:	Electi	ve (core)				Remarks:	
2	Synopsis:	math		ırve ar			vertic modeling focusing on Bezier and B-Splines curves and surfaces. Clear comprehension of the underlying ay prepare the students to explore various applications such scientific visualization, manufacturing design and	
		1	Associate Pr	of. Dr	. Gobithaasar	n Rudr	usamy	
		2						
3	Name(s) of Academic Staff:	3						
		4						
		5						
4	Semester and Year offered:	Yea	ar Offered	3	Semester	1	Remarks:	
5	Credit Value:		3	2+1				
		None						
6	Pre-requisite/co- requisite (if any):							
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7	At the end of the course, st	tudent	should be al	ble to:				
		CL	O1 Ident	ify the	methods of	mode	ling curves and surfaces in the field of computer-aided geometric design. [PLO3-C4]	
		CL	O2 Build	curve	s and surfaces	susing	standard Bezier and B-spline functions using scientific programming language. [PLO2-P3]	
		CL	O3 Expla	in abo	ut ethics and	profe	sionalism in the field of curve and surface modelling. [PLO6-A4]	
	Course Learning							
	Outcomes (CLO)							
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							Lea	rning	and Te	aching	g Activi	ties**		
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	1	Chapter 1: Introduction  History of CAD software  Point and line representation  Types of affine transformation  Triangulation	CLO1, CLO2	1	1	2						5		
	2	Chapter 2: Curve Representation  • Types of curves  • Tangent, normal dan offset  • Curvature computation  • Various types of curve interpolation	CLO1, CLO2	3	1	2						10		
	3	Chapter 3: Bezier Curves  Introduction to Bezier curves  Properties of Bezier curves  Rational Bezier curves  Representation of cone sections  de Casteljau Algorithm  Derivatives of Bezier curves  Bezier Splines with parametric & geometric continuity	CLO1, CLO2, CLO3	6	2	3						20		
	4	Chapter 4: B-Spline curves  Introduction to B-Splines  Properties of B-Splines  Types of B-Splines  de Boor Algorithm  Introduction to NURBS  Properties of NURBS	CLO1, CLO2	4	2	3						15		
	5	Chapter 5: Representation of Surfaces  Introduction to surfaces  Various types of surfaces  Bezier surfaces  Surface normal computation	CLO1, CLO2, CLO3	3	1	2						10		
			<ol> <li>Hastings,</li> <li>USA, Philad</li> </ol>				orrisor	n, M. (	2016).	.Hand:	s-on sta	art to Wolfram Mathematica	a (2nd Edition). Wolfram Med	lia, Ir
			2. Gallier, J. 3. Taha Soch Platform	& Gall	lier, J. 17), Ir	H. (20 itrodu	ction t	o Diffe	erentia	l Geor	netry c	of Space Curves and Surfaces	l algorithms. Morgan Kaufmai CreateSpace Independent Pu	ublis
		clude required and further readings, and most current)	<ol> <li>Shoshich</li> <li>Singapore (2)</li> </ol>		yashi -	Differ	ential (	Geom	try of	Curve	s and S	urfaces-(Springer Undergrad	uate Mathematics Series), Spi	ring
			5. David H.	von Se	ggern,	(2016	) CRC S	tanda	rd Cur	ves an	d Surfa	ces with Mathematica, Cha	pman and Hall/CRC.	
			6. Kristophe Internation				erentia	al Geo	metry	of Cur	ves and	Surfaces-(Undergraduate To	exts in Mathematics) ,Springe	er
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3	Project	20			1						4			
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