Subject - name:	Geometric modeling		Kod:	M180
Level of studies:	I			
Type of studies:	Stacjonarne			
Major:	MiBM/MTR/IPEH			
Kind of subject:	Compulsary			
Specialisation	All specialisations			
Form:	30L, 15L			

Professor:	Jerzy Pokojski, prof. dr hab. inż.

Outline:	
Introduction to Geometric Modeling Laboratory:	1. Profile 2D creation. Constraints modeling in profile. Dimension constraints of profile. Solid objects creation via extrusion (subtraction, addition). Creation of holes, filets and champfers. 2. Creation of objects via revolution. Creation of reference objects (plane, line, point). 3. Advanced tools for creating profiles. Creation of objects via sweeping. 4. Creation of objects via multisection solids. Shell. 5. Methods of coping objects. Mirror, rectangular/polar array, user's array. 6. Creation of helix line, modeling of spring. Part parameterization. 7. Parts assembly, application of boolean algebra. 8. Axial modeling (shaft). 9. Body modeling. 10. Pipe modeling. 11. Modeling of assemblies. Analysis of assemblies, collisions finding. 12. Creation and simulation of mechanisms. 13. Creation of 2D part documentation.

Advanced Geometric Modeling Laboratory:	1. Part modeling. Creation of curves in wireframe modeling. Creation of revolution surface, swept surface, multisection surface on basis of existing model. Surface edition. Creation of hybrid model. 2. Part modeling. Creation of curves in wireframe modeling . Creation of edge surface, extrusion surface on basis of existing model. Surface edition. Creation of hybrid model. 3 i 4. Geometric modeling of parts in 3D CAD systems for 3D CAM further processing. CNC path generation for milling machine and virtual simulation of manufacturing process for bodies. 5. Part modeling. Creation of automotive body panels on basis of existing geometric models. Creation of metal sheet deep pressed models. Representation of welded joints and glue joints in documentation of automotive body. 6. Geometric modeling of dynamic systems. Creation of dynamic models of vehicles and their suspensions. Influence of suspension parameters on driver's comfort in case of model with two degrees of freedom. Calculation of frequences and forms of free vibrations on basis of automotive model with 6 degrees of freedom. 7. Geometric modeling of dynamic systems. Application of collision theory to modeling of two body contact. Creation of dynamic automotive models applied to reconstruction of traffic accidents. Creation of mechanical models with body contact modeling. Simulation of two vehicle collision with lack of mass and moment of inertia symmetry. Influence of center of mass placing and moment of inertia on value and direction of speed after vehicles' collision.