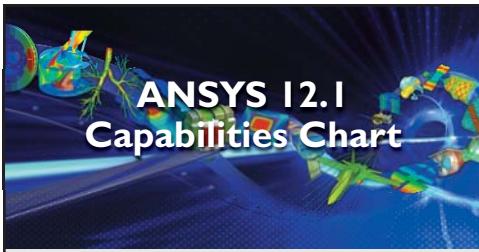


ANSYS 12.1 Capabilities Chart

ANSYS Solver Product Solutions

	ANSYS® Multiphysics™	ANSYS® Mechanical™	ANSYS® Structural™	ANSYS® Professional™ NLS	ANSYS® Professional™ NLT	ANSYS® DesignSpace®	ANSYS® Explicit STR™	ANSYS® AUTODYN®	ANSYS® LS-DYNA®	ANSYS® CFD™		ANSYS® CFD-Fllo™	ANSYS® POLYFLOW™	HFSS™	Maxwell®	ANSYS® Emag™ [C-I]
	ANSYS® FLUENT®	ANSYS® CFX®														
2-D Solver								•								
Fluid structure interaction (FSI)								•								
Implicit-explicit deformations							•	•		•						
Implicit-explicit material states							•	•								
Thermal Analysis																
Analysis Types																
Steady state	•	•		•	•	•					•	•	•			
Transient	•	•			•						•	•	•			
Thermal Modeling																
Conduction	•	•		•	•	•					•	•	•			
Convection	•	•		•	•	•					•	•	•			
Radiation	•	•			•	•					•	•	Δ			
Phase change	•	•			•						•	•	Δ			
Fluid Dynamics																
Modeling Capabilities																
Variety of inlet and outlet b.c.	•										•	•	•			
Steady-state flow	•										•	•	•			
Transient flow	•										•	•	•			
2-D flow - dedicated solver option											•	•	•			
2-D flow - using thin 3-D segment	•										•	•	•			
3-D flow	•										•	•	•			
Time-dependent boundary conditions	•										•	•	•			
Incompressible flow	•										•	•	•			
Compressible flow	•										•	•	•			
Natural convection	•										•	•	•			
Fan model	•										•	•	•			
Periodic domains	•										•	•	•			
Porous media	•										•	•	•			
Heat transfer	•										•	•	•			
Conjugate heat transfer	•										•	•	•			
Non-Newtonian viscosity	•										•	•	•			
Viscoelasticity													•			
Turbulence - isotropic	•										•	•	•			
Turbulence - anisotropic/RSM/LES	•										•	•	•			
Turbulence - transitional/SAS/DES											•	•	•			
Rotating equipment - MRF/frozen-rotor											•	•	•			
Rotating equipment - sliding-mesh/stage											•	•	•			
Dynamic/moving-deforming mesh	•										•	•	•			
Immersed-solid/MST method for moving parts	•										•	•	•			
Flow-driven solid motion (6DOF)											•	•	•			
Internal radiation - participating media	•										•	•	•			
Internal radiation - transparent media											•	•	•			
External radiation											•	•	•			
Solar radiation and load											•	•	•			
Species modeling	•										•	•	•			
Flow pathlines (massless)	•										•	•	•			
Particle tracking (with mass)											•	•	•			
Coupled discrete phase modeling											•	•	•			
Acoustics - source export	•										•	•	•			
Acoustics - noise prediction											•	•	•			
Chemical reaction											•	•	•			
Combustion											•	•	•			
Cavitation	•										•	•	•			
Multiphase - Eulerian											•	•	•			
Multiphase - free surface	•										•	•	•			
Fluid structure interaction option	•										•	•	•			
Internal optimization for flow													•			
Specialty extrusion models													•			
Specialty blow molding models													•			
Specialty fiber spinning models											•	•	•			
Specialty fuel cell models											+	•	•			
Solver Options																
Pressure-based coupled solver	•										•	•	•			
Density-based coupled solver											•	•	•			



ANSYS 12.1 Capabilities Chart

ANSYS Solver Product Solutions

	ANSYS® Multiphysics™	ANSYS® Mechanical™	ANSYS® Structural™	ANSYS® Professional™ NLS	ANSYS® Professional™ NLT	ANSYS® DesignSpace®	ANSYS® Explicit STR™	ANSYS® AUTODYN®	ANSYS® LS-DYNA®	ANSYS® CFD™		ANSYS® CFD-Fllo™	ANSYS® POLYFLOW™	HFSS™	Maxwell®	ANSYS® Emag™ [C-1]
										ANSYS® FLUENT®	ANSYS® CFX®					
Pressure-based segregated solver											•					
Parallel solving on local PC option	•							•	•		•		•			
Parallel solving over network option	•							•	•		•		•			
Customizable, scripting and user functions	•										•		•			
Electromagnetics – Low Frequency																
Electrostatics	•														•	•
AC conduction	•														•	•
DC conduction	•														•	•
DC insulator field															•	•
Magnetostatics	•														•	•
Adaptive field mesh															•	•
AC harmonic magnetic	•														•	•
AC harmonic electric	•														•	•
Electric transient	•														•	•
Ion optics	•															•
Magnetic Transient																
Rigid motion visualization															•	•
Translational motion	•														•	•
Rotational motion	•														•	•
Double-layer rotational motion															•	•
Cylindrical motion															•	•
Automatic matching boundaries															•	•
Winding definition															•	•
Automatic coil connections across boundaries															•	•
Advanced circuit coupling with Simplorer®															•	•
Circuit coupling with adaptive time stepping															•	•
Advanced Material Characteristics																
Nonlinear anisotropic materials															•	•
Functional magnetization direction															•	•
Advanced permanent magnet demagnetization modeling															•	•
Nonlinear magnetization characteristics															•	•
Core loss modeling															•	•
Automatic projects creation using UDPs															•	•
Insulation sheet to model cracks															•	•
Electromagnetics - High Frequency																
Modal														•		
Q factor														•		
Harmonic analysis driven by 2-D ports														•		
Harmonic analysis - voltage and current sources														•		
Scattering of plane waves														•		
Scattering of cylindrical waves														•		
Perfect electric and magnetic conductors														•		
Impedance boundaries														•		
Boundary conditions for thin layers and screens														•		
Lumped RLC components														•		
Perfectly matched absorber boundaries														•		
Near- and far-field extension														•		
Periodic structures														•		
Frequency-selective surface (FSS)														•		
EMI/EMC														•		
Antenna radiation patterns														•		
Radar cross section														•		
Specific absorption rate (SAR)														•		
Coupled Physics (Sometimes Requires Two or More Products)																
Acoustics	•	•									•	Δ	Δ			
Acoustics-structural	•	•														
Electric-Magnetic	•													•	•	•

ANSYS 12.1 Capabilities Chart	ANSYS Solver Product Solutions															
	ANSYS® Multiphysics™	ANSYS® Mechanical™	ANSYS® Structural™	ANSYS® Professional™ NLS	ANSYS® Professional™ NLT	ANSYS® DesignSpace®	ANSYS® Explicit STR™	ANSYS® AUTODYN®	ANSYS® LS-DYNA®	ANSYS® CFD™		ANSYS® CFD-Fllo™	ANSYS® POLYFLOW™	HFSS™	Maxwell®	ANSYS® Emag™ [C-1]
										ANSYS® FLUENT®	ANSYS® CFX®					
Fluid-structural	•	•									+	+	+			
Fluid-thermal	•	•									•	•	•			
Electromagnetic-fluid	•										+	+	+		•	
Magnetic-structural	•															•
Electromagnetic-thermal	•													•	•	•
Piezoelectric	•	•														
Piezoresistive	•	•														
Thermal-electric	•	•														
Thermal-structural	•	•		•	•	•										
Thermal-electric-structural	•	•														
Electromagnetic-thermal-structural	•													•	•	•
Electrostatic-structural	•															
Reduced order modeling (ROM)	•	•													•	•
Multi-field general purpose solver	•	•									•	•	•			•
Preprocessing																
Modeling Capabilities																
IGES/STEP geometry reader	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Beam modeling	•	•	•	•	•	•	•	•	•	•						
Meshing Capabilities																
Defeaturing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic surface meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic tetrahedral meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic prism inflation layers	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic hexa-core meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic swept hex meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Automatic hexa-dominant meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Thin-sweep meshing	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Curvilinear elements														•	•	
Adaptive mesh refinement											•			•	•	
Mesh editing											•			•	•	
Mesh repair (remeshing, etc.)											•			•	•	
Boundary Conditions																
Solid model loads and boundary conditions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Tabular loads and boundary conditions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Function loads and boundary conditions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Apply temperature loads	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Post-processing																
Report generator	•	•	•	•	•	•	•	•	Δ	Δ	•	•	•	•	•	•
Contour displays	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Vector displays	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Isosurface displays	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Slicing planes	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Quantitative calculations	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Particle tracing	•										•	•	•	•	•	•
Animation	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output (images, Excel® data)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
CFD turbomachinery post-processing											•	•	•			
General																
ANSYS® Engineering Knowledge Manager™ (EKM™) data management ready	+	+	+	+	+	+	+	+			+	+	+	+		+
Parallel solvers (HPC licenses required)	+	+	+	+	+				+	+	+	+	+	+	+	+
Solver scripting language	•	•	•	•	•	•	•	•			•	•	•	•	•	•
Parameter manager	•	•	•	•	•	•	•	•	Δ		•	•	•	•	•	•

Δ = Limited set of feature capabilities

+ = Additional product required

[C-1] Add-on module for ANSYS Mechanical

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