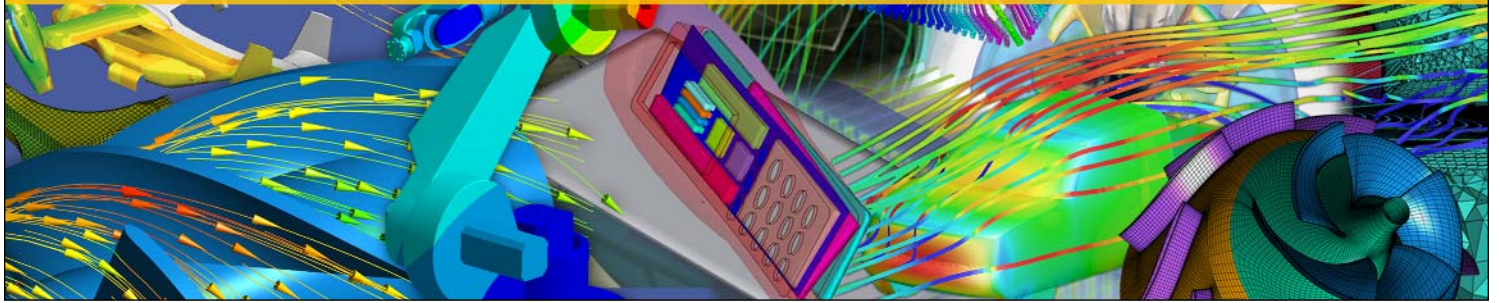


11.0 RELEASE



### Product Descriptions

## ANSYS® Mechanical Products

ANSYS DesignSpace -  
Structural

ANSYS DesignSpace®

ANSYS Professional

ANSYS Professional -  
NLS

ANSYS Structural

ANSYS Mechanical

### Structural Analysis

#### Analysis Types

Static	•	•	•	•	•	•
Modal	•	•	•	•	•	•
Buckling	•	•	•	•	•	•
Transient (Full)					•	•
Transient (Mode Superposition)			•	•	•	•
Harmonic (Full)					•	•
Harmonic (Mode Superposition)			•	•	•	•
Random vibration					•	•
Spectrum			•	•	•	•
Shape optimization	•	•	•	•	•	•

#### Geometric Nonlinearity

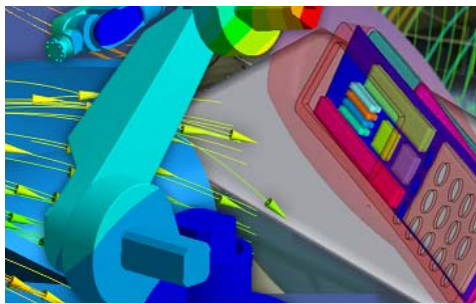
Large strain			[C-1]	•	•	•
Large deflection			[C-1]	•	•	•
Stress stiffening			[C-1]	•	•	•
Spin softening			[C-1]	•	•	•

#### Material Modeling

Elasticity (Isotropic/Orthotropic)	•	•	•	•	•	•
Elasticity (Anisotropic)					•	•
Hyperelasticity (Isotropic/Anisotropic)				[C-2]	•	•
Plasticity				[C-2]	•	•
Gasket Material					•	•
Shape Memory Alloys					•	•
Viscoplasticity/ Viscoelasticity					•	•
Material Damping					•	•
Temperature Dependent	•	•	•	•	•	•
Material Damping					•	•
User Materials					•	•

#### Advanced Analysis

Rotordynamics					•	•
Component mode synthesis					•	•
Cyclic symmetry analysis			•	•	•	•
Substructuring					•	•
Rezoning					•	•
Submodeling			•		•	•
Element birth and death					•	•
Composites Modeling			•	•	•	•
Fracture Mechanics			•	•	•	•



## Product Descriptions

ANSYS DesignSpace - Structural	ANSYS DesignSpace®	ANSYS Professional	ANSYS Professional - NLS	ANSYS Structural	ANSYS Mechanical
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### Elements Support

3D/2D Structural Solid	•	•	•	•	•
Structural Shell	•	•	•	•	•
Structural Beams	•	•	•	•	•
Structural Pipes			•	•	•
Structural Solid Shell	•	•	•	•	•
Structural Gasket			•	•	•
3D/2D Surface Effect	•	•	•	•	•
Rebars/Reinforcements			•	•	•
Springs/Bearings	•	•	•	•	•
Joint & Connections			•	•	•

### Contact Analysis

#### Geometry

Surface-to-surface	•	•	•	•	•
Node-to-surface	•	•	•	•	•
Node-to-node			•	•	•
Beam-to-beam			•	•	•
Beam-to-surface			•	•	•
Pretension (bolts, etc.)	•	•	•	•	•
Interface (gaskets)				•	•
Spot welds			•	•	•

#### Surface Behavior

Standard; Rough; Frictionless	•	•	•	•	•
Frictional				•	•

### Thermal Analysis

#### Analysis Types

Steady State		•	•	•	•
Transient			•		•

#### Thermal Modeling

Conduction		•	•	•	•
Convection		•	•	•	•
Radiation			•		•
Phase Change			•		•

### Elements Support

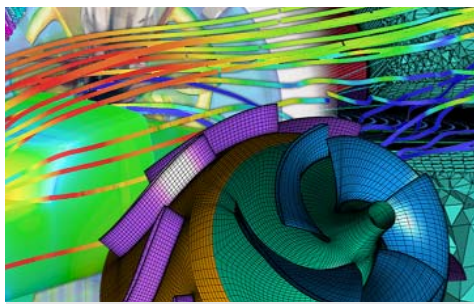
3D/2D Structural Solid		•	•	•	•
Thermal Shells			•	•	•
Thermal Links/Pipes			•	•	•
3D/2D Surface Effect		•	•	•	•

### Coupled Physics Analysis

Thermal/Structural	•	•	•	•	•
Acoustics/Structural					•
Thermal/Electric			•		•
Piezoelectric					•
ANSYS CFX One-way FSI			•	•	•
ANSYS CFX Two-way FSI					•

### Solvers

Iterative	•	•	•	•	•
Sparse Direct	•	•	•	•	•
Frontal (Wavefront)			•	•	•
Distributed PCG (DPCG)			•	•	•
Distributed JCG (DJCG)			•	•	•
Distributed Sparse (Dsparse)			•	•	•



**Product Descriptions**

	ANSYS DesignSpace - Structural	ANSYS DesignSpace®	ANSYS Professional	ANSYS Professional - NLS	ANSYS Structural	ANSYS Mechanical
<b>Geometry, CAD, Meshing, Prep/Post and Add-on Modules</b>						
<b>Geometry and Parameters</b>						
CAD Parameter Control	•	•	•	•	•	•
Parameter Manager	•	•	•	•	•	•
APDL Support			•	•	•	•
<b>Meshing</b>						
Automatic Surface Meshing	•	•	•	•	•	•
Automatic Tetrahedral Meshing	•	•	•	•	•	•
Automatic Prism Inflation Layers			•	•	•	•
Automatic Swept Hex-Meshing	•	•	•	•	•	•
Thin-Sweep Meshing	•	•	•	•	•	•
<b>Pre-Processing</b>						
Solid Modeling and Defeaturing			•		•	•
Solid Model Boundary Conditions	•	•	•	•	•	•
Tabular/Function Boundary			•	•	•	•
<b>Post-Processing</b>						
Contour displays	•	•	•	•	•	•
Vector displays			•	•	•	•
Isosurface displays			•	•	•	•
Probes/Charts	•	•	•	•	•	•
Slicing planes and Animations	•	•	•	•	•	•
Results Listing	•	•	•	•	•	•
Quantitative calculations			•	•	•	•
Annotated graphs			•	•	•	•
HTML Report Generator	•	•	•	•	•	•
<b>Add-on Modules</b>						
Fatigue Module	•	•	•	•	•	•
DesignModeler	•	•	•	•	•	•
DesignXplorer	•	•	•	•	•	•
Rigid Dynamics Module					•	•

[C-1] Not available for 2D Plane and 3D Solid elements

[C-2] Only Hyperelastic (Neo-Hookean; Ogden; Mooney(2) & Plasticity (BISO, BKIN)



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