The Academic Software Bundle for Motion & System Simulation (or Academic Motion Bundle, for short) provides several related software products focused on kinematics, rigid & flexible multibody dynamics, and schematic (block-diagram) simulations.

Representative systems to simulate with this bundle include rotating & translating linkages; gear sets; cables, belts & pulleys; as well as various actuators as found in machinery, latches & closures, mechatronic devices, robots, ground vehicles, aircraft landing gear & flaps, etc.

**Build:** Create simple graphical representations of systems using block diagrams, primitive geometries, or sophisticated geometries imported from CAD.

**Test:** Perform single simulations manually or parameterize your virtual prototypes and perform automated design sensitivity & optimization studies.

**Review:** Calculate displacements, velocities, & accelerations of parts & points in your system; motor forces & torques; hydraulic or pneumatic pressures; momentum; energy; frequencies; even dynamic stresses & fatigue hot spots. Visualize system behavior using animations & plots.

**Targeted Users & Goals**
- Professors striving to bring engineering principles to life and teach courses that are more dynamic, fun, and effective…
- Researchers seeking innovative engineering solutions…
- Students taking courses, doing research, or working on projects or competitions in search of the best possible engineering education…

…through motion & systems simulation!

**Benefits**
- **Affordable** - schools can obtain numerous licenses on a reasonable budget
- **Conveniently accessible** - run this software in a computer lab at school or on your own computer
- **Easily scalable to industrial-strength** - start with small models and progressively increase complexity and realism without hitting walls based on model size (Crawl-Walk-Run); do the same scale of simulations done by commercial companies.
- **Unrestricted simulation capability** - our academic licenses provide the same capabilities as commercial licenses for the software products in this bundle
- **Tailored licensing** - “academic user packs” are available based on your intended usage scenario
- **Complement engineering theory & textbooks for a richer education**

**Applications in Engineering Coursework, Research, & Student Projects**
- Dynamics
- Mechanism Analysis
- Vibrations
- Robotics
- Computer-aided Engineering
- Mechanics of Machinery
- Capstone Design
- Vehicle Engineering
- Mechatronics & Controls
- Advanced Dynamics
- Hydraulics & Pneumatics
- Wind Turbines
- Biomechanics
- Flexible-body Dynamics
- Formula SAE, Baja, Solar Car, Human Powered Vehicle, autonomous vehicles, etc.
Product Families & Modules*

This bundle contains software targeted at finite-element analysis (FEA) to assess the structural, thermal, crash- or impact-related characteristics of mechanical components & systems. The lists below identify which MSC products are currently included with this bundle and which optional 3rd-party products are currently available for an additional fee.

### Included:

<table>
<thead>
<tr>
<th>MD Adams</th>
<th>MD Adams/Car</th>
<th>Easy 5</th>
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<tbody>
<tr>
<td>• View</td>
<td>• Car</td>
<td>• Model Building</td>
</tr>
<tr>
<td>• Exchange</td>
<td>• Car Suspension</td>
<td>• Analysis</td>
</tr>
<tr>
<td>• Flex</td>
<td>• Car Ride</td>
<td>• MATLAB Interface</td>
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<td>• Controls</td>
<td>• Tire Handling</td>
<td>• Matrix Algebra Tool (MAT)</td>
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<tr>
<td>• Mechatronics</td>
<td>• 3D Road</td>
<td>• Library Developer</td>
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<tr>
<td>• Vibration</td>
<td>• SmartDriver</td>
<td>• Gas Dynamics/Pneumatics Library</td>
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<td>• Durability</td>
<td>• Driveline</td>
<td>• Multiphase Fluid Library</td>
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<td>• Solver</td>
<td>• Chassis</td>
<td>• Thermal Hydraulics Library</td>
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<td>• Solver Shared Memory Parallel (SMP)</td>
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<td>• Linear</td>
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### Optional:

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<td>• None</td>
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*To learn more about the detailed analysis capabilities of any of these products, see the associated datasheets.*