Jobs that Use Passive Solar Skills and Knowledge

Passive solar knowledge and skills are applicable in a wide range of jobs at different education levels. These may include, Architects, various types of Engineers, Drafters, Interior Designers, Sales and Customer Service workers, Construction Managers, and skilled tradespersons such as roofers.

Passive Solar & Green Building in the U.S.
Part of a wider movement toward “green” building practices, passive solar design can help home and building owners reduce their energy use and costs. Like other types of green building in the United States, passive solar design is still an emerging area of building design. Very few businesses in the U.S. offer only passive solar design services, but a growing number offer green building and design services, which may include passive solar elements.

So, you may not spend all of your time thinking about passive solar in your future career, but you will likely find a growing number of opportunities to apply this knowledge, especially if you pursue a career in the building trades or interior design. As demand for green building of all types grows in the United States, more customers will expect those who work in businesses that design or build homes and commercial buildings to be knowledgeable enough to educate them about passive solar design principles.

Passive Solar Skills on the Job
If you decide to become a Sales, Marketing, or Customer Service Representative, an Interior Designer, Architect, Construction Manager, or a Skilled Tradesperson, such as a roofer you may be expected to explain to customers how passive solar elements work, how much they will save the customer in energy costs, and other benefits of adding passive solar design elements to a home or other building. To do this, you need to understand how passive solar works and have the math skills to calculate cost and energy savings, if needed. A Salesperson at a flooring store or an Interior Designer may make more sales if he or she can explain to customers the differences in the heat retention of stone, ceramic, or wood flooring and the potential savings in heating and cooling costs that each material can provide. To encourage a customer to invest more money in adding specialized lighting, window coverings, overhangs, and floor materials that provide passive solar benefits, those who work for construction, architecture, and interior design firms

Passive Solar Design in the Real World
The ultimate green building is a “passive house”, or a house (or other building) that cuts energy use up to 90% using strong insulation and passive solar design! In Germany and Austria – countries the size of Montana and Maine - over 16,000 passive solar buildings have been built in the last 10 years. In the U.S., there are fewer than 20.

Why is there such a difference? Two reasons: Cost and awareness. Green building is more expensive than normal construction, and Americans know little about the benefits of green building, including passive solar. In Europe, governments educate consumers and pay much of the added cost, making passive houses more affordable. In the U.S., businesses must “sell” customers on the benefits of passive solar and other green building options, and customers pay more of the cost.

While we have only a handful of “passive houses” in the U.S., design and building firms can add selected passive solar design elements to a new or existing building, such as awnings that block the sun in hot weather, that improve energy efficiency in more affordable ways.
must be able to inform customers about which elements provide the best value in energy savings over the long-term, putting math and science skills to use in these calculations.

Those who actually design and build passive solar elements for buildings, such as Architects, Architectural Drafters, Construction, Energy and Product Design Engineers, Construction Managers, Skilled Trades Workers and others may require the added ability to do the math and science needed to do the calculations to design, install, and maintain passive solar elements that work as expected over time. For example, Architects, Engineers, and Architectural Drafters may need to determine the correct angle for a window overhang given the positioning of the widow in relation to the sun.

Another area where people who have passive solar knowledge may work is in Software or Product design. Software developers create the computer programs that designers, architects, and construction personnel use to plan their work. Software developers can add specialized features to drafting programs and other applications that can help building and design professionals more easily add in passive solar elements or to calculate the energy and cost savings they can bring to customers. Similarly, Product Designers, Sales and Marketing staff, and Engineers who deal in products used in passive solar design, such as awnings, flooring, lighting, and others, need to understand the concepts, science, and math behind passive solar.

Finally, some of the knowledge you are learning in the Passive Solar module may help you to enter an “active solar” career in Photovoltaics, as well as other types of careers. This field, which involves solar panel installation and other “active solar products”, is somewhat more popular with consumers than passive solar, but involves similar jobs – Architectural Design and Construction, Sales and Marketing, and Manufacturing and Production. As with passive solar, installing active solar panels requires knowledge of the sun’s movement to determine (and avoid) installing panels in areas that will be in shadow. Other knowledge from passive solar is also transferable to Photovoltaics. The applied analytical, math, and science skills taught in the Passive Solar module can also be valuable in jobs that reach far afield from passive solar and the building trades.
**Education & Training Needed for Jobs**

All of the jobs noted above require education and training after high school, but not all require a four-year college degree. **Architects and Engineers** require the most education, usually more than a four-year degree. Most, but not all, **Architectural Drafters, Interior Designers, Marketing Professionals, Product and Software Designers, and Construction Managers**, have at least a four-year degree in their fields, especially those working in commercial building and design. Many **Skilled Trades** workers - those who actually build and maintain passive solar design elements - have an Associate’s degree or less, often learning what they need to know through trades programs, on the job, and through apprenticeships. **Customer Service and Sales Representatives** also often have less than a four-year degree, especially those working in small businesses.

**Jobs that use Passive Solar Knowledge and Related Skills**

**Design and Engineering**

- Architects
- Drafters
- Engineers
- Interior Designers
- Developer of software tools

**Construction**

- Construction Managers
- Skilled trades workers (masonry, carpentry, roofing, etc.)
- Construction Laborers

**Sales/Administration**

- Sales
- Customer service
- Office Support

**Manufacturing (to create new products designed specifically for passive solar use)**

- Product designers
- Engineers
- Manufacturing workers

Other careers that use problem-solving, hands-on skills, and spatial math: Too many to count! But if you do well in this course, you are strengthening core skills that you can use in broad career fields outside of the solar industry, including Engineering, Architecture, Construction, and many others!