

# Universal Design

## In a Nutshell

Universal Design is a human-centered design process through which products, housing, and buildings are developed to be usable by anyone, regardless of age or ability. Making housing/buildings accessible to all is advantageous for everyone regardless of ability, because anyone can find themselves disabled at any point in their lifetime.

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## The “How To”

Households should be accessible, and products should be useable by everyone, regardless of a person’s age, size, abilities, or disabilities. The [Center for Universal Design](#) at North Carolina State University developed these seven principles to assist developers when creating Universal Design products:

### **PRINCIPLE ONE: Equitable Use**

The design is useful and marketable to people with diverse abilities

### **PRINCIPLE TWO: Flexibility in Use**

The design accommodates a wide range of individual preferences and abilities.

### **PRINCIPLE THREE: Simple and Intuitive Use**

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

### **PRINCIPLE FOUR: Perceptible Information**

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

### **PRINCIPLE FIVE: Tolerance for Error**

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

### **PRINCIPLE SIX: Low Physical Effort**

The design can be used efficiently and comfortably and with a minimum of fatigue.

### **PRINCIPLE SEVEN: Size and Space for Approach and Use**

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

AARP has a rather extensive presentation on Universal Design. Among other things, the presentation

highlights some of the key features a Universal Design building needs. For instance, everything that is needed for a resident to live comfortably needs to be on the first floor. An example of Universal Design in a community is the need to have well-designed and uninterrupted sidewalks with plenty of benches for resting.

Universal Design solutions are critical parts of creating [Multigenerational Communities](#). Increasingly, metropolitan regions are fragmented by communities and areas that are predominantly one particular age group. While this clustering phenomenon may not be entirely new, the separation of extended families negatively impacts the economic and social quality of life. For example, often college-aged students cannot find apartment housing in the communities where they grew up. At the same time, young families cannot find affordable starter housing. Similarly, older populations are forced to move miles away from where they have lived for decades. These are frustrating realities for many individuals who cannot live in the community of their choice or are forced to live long distances from family members.

## Planning & Zoning

Universal Design is more of a concept and an inspirational approach to building than it is a mandated practice. Designers, developers and contractors often simply follow code minimums and make claims like, "We've been doing it this way for years." Universal Design calls for a change in mindset in which the goal becomes to make communities accessible to everyone, regardless of age and physical ability. The best way to start is to integrate the seven principles of Universal Design into building codes, safety codes, zoning regulations, site-plan design reviews, and tax incentives. Such an approach would help senior citizens stay independent.

### Master Planning

[Universal Design & Visitability](#) brings Universal Design to a master planning level. The Zoning and Regional Planning section presents that accessibility in the form of UD can be integrated into regional and local planning. When planning neighborhoods for UD, the fundamental factors are walking distances, levels of incline, and landmark orientation. UD & Visitability discusses the importance for the main structure for city development to be placed around a nucleus that offer a variety of services, which increases the distance between areas of daily activity and diminishes accessibility.

### New York Universal Design

[Universal Design New York 2](#) provides best practice design strategies for implementing UD. UDNY covers a multitude of everyday designs such as parking and passenger loading zones, public amenities, human service facilities, renovations and additions, and more. Neighborhood officials, developers, designers may use UDNY 2 as a checklist for UD. For example, UDNY would require delivery of information in several languages and alternative information systems such as audio and visual signage. UDNY allocates seating at sporting and entertainment venues such as baseball stadiums and theaters so that all can enjoy themselves with their friends and family without inferior seating. Other information included relates to public amenities such as public restrooms.

## Dollars & Cents

Unfortunately, most people don't think much about the access to and through their home until confronted with a disability; either their own or a loved one's. Many "Baby Boomers" are now dealing with the difficult decision of moving their parents out of their homes and into assisted living facilities or nursing homes, because they

can't live comfortably in the home they've lived in for the last 20 or 30 years. There is a movement that says, "That's not going to be me, I don't want to end up there." These people are consciously looking for homes that will allow them to live comfortably into their oldest years; homes able to accommodate their needs as they deal with their own age related disabilities. Municipalities that have embraced Universal Design will find that people are staying in or moving to the housing and community environment they offer.

The cost of including Universal Design elements in new construction is very minimal. Expect costs to be around 2% of a conventional design; however, the cost of some of the less conventional elements will most likely go down, as they are more frequently requested by consumers and contractors become more familiar with the Universal Design elements. Universal Design elements can also be integrated within the community as older elements are replaced or new elements are added, so the cost is still relatively inconsequential and the return will be a sustainable community that attracts a stronger population.

## Measuring Success

Metrics that may make it possible to measure the success or impact of a Universal Design ordinance may include something as simple as the level of participation in advanced Universal Design certification. The education of consumers may be reflected by the number of requests for Universal Design certification in homes, businesses, and within the community. An increase in the median age of the population within the community may also indicate that people are capable of living in their homes longer, therefore providing a metric regarding the impact of Universal Design. Contacts regarding requests for additional information about Universal Design elements would also show a level of interest which could be a metric.

UDNY2 provided a checklist designed to complete an audit of a design in process or a building currently in use. The checklist can be found on page 213 in [Universal Design New York 2](#).

Are the kitchen countertops mounted at varying heights, so they can be used while standing or seated? The [AARP](#) provides a checklist to see if your home is livable.

The City of Saint Louis and the Affordable Housing Commission provides both a Universal Design Checklist for [construction](#) and a Universal Design Checklist for [design](#).

## Discover More

### Universal Design Summit

The [Universal Design Summit](#) presents contemporary UD that can be incorporated into housing and neighborhoods. In collaboration with RL Mace Universal Design Institute, [Starkloff Disability Institute](#), these UD conferences features exhibits, design charrettes, workshops, and tour opportunities. The Fifth Universal Design Summit 2013 (UDS5) included a four-stop tour that featured buildings and places in the City of St. Louis that exemplify UD practices. The tour included 6 North Apartments, Leather Trade Artist Loft, Habitat for Humanity St. Louis, and City Garden.

### Additional Universal Design Resources

The [Global Universal Design Commission, Inc.](#) (GUDC) attempts to develop Universal Design standards for buildings, products, and services. Their efforts are to create corporation, government, and business guides that will achieve UD standards.

The Center for Inclusive Design and Environmental Access (IDeA) provides resources and technical expertise to achieve UD standards. Part of the [IDeA Education](#) section provides sources for teachings and study material for UD.

## Case Studies

### 6 North Apartment

#### Description



ated in the Central West End is one of the United States first 100% multifamily. This building provides space for live/work units and functions as a mixed-income building. It was completed with collaboration by universal design consultants Starkloff Disability Access and Berry Architects.

on the [6 North Apartment](#) case study

[Casa Cabo Pulmo](#) Universal Design single-family residential. Casa Cabo Pulmo is a single-family beach house that reflects its surrounding natural desert landscape and uses Universal and Green Design features. Casa Cabo Pulmo is a two-story house with the bedrooms on the second floor. Cabo's upper story is accessible by a 165-foot ramp. Multiple landings along the switchback ramp provide resting places and spaces to view the natural landscape. The bathroom and bedrooms feature a 5-foot turning radius. Roll-in showers and hand-held sprayers are installed in the bathrooms. Cabo Pulmo has many cabinets and furniture arrangements, replacing walls. Light switches and electrical outlets are easy to access.

### The Universal Design Living Laboratory

#### Description

The [Universal Design Living Laboratory](#). This Universal Design home serves as an education facility and office. After an accident caused Rosemarie to become paralyzed, parts of her current two-story home were not accessible. When attempting to find a home in their area with universal standards, they found finding builders not incorporating UD standards. They drew up plans and created a UD home from scratch. Including in this plan are materials, fixtures, appliances, and technology. The dishwasher is elevated for Rosemarie comfort. The microwave and oven are mounted in the lower cabinets and have side-hinged doors that make putting food in and taking food out easier. The refrigerator is a side-by-side. The house features multi height counters. The hallways and rooms have plenty of maneuvering space. The garden outside features raised beds and wheelchair accessible pathways. The glass panel doors allow everyone to see who is at the door. No ramps or lifts are

needed to gain entry from the outdoors. The toilets are at comfortable height and showers bathing facility includes handle bars.

With LEED design features, this Universal Design house is working towards LEED certification and NAHB Green Building certification.

**Cost \$0**