Nature Inspired Architecture
Design Brief

“Nature is a designers source book, full of shapes and colours that have inspired visual invention...” Alan Powers – Nature in Design. Utilise this philosophy to design and make an architectural dwelling based on natural forms. Your solution should include a detailed business plan, client visuals and a detailed model to an appropriate scale.

The founder of ‘Apple’, Steve Jobs said, “I think the biggest innovations of the 21st century will be at the intersection of biology and technology. A new era is beginning.” The crossroads that he spoke of actually has a name –
Biomimicry

It has been helping inventors, designers and architects innovate in genius ways for centuries, its value has become even more apparent in the past few years as we realize that Mother Nature is one of the universe's most incredible designers.

There are examples of biomimicry all around us, Velcro, airplanes and buildings modelled after termite mounds. If you're an architect, designer or inventor facing a design dilemma that you simply can't get past, or if you're just feeling stuck in a rut, the answer might be right in front of you.
All things natural are so hot in the fashion and design world these days and here we have yet another nature-inspired piece of décor. Designed by Janne Kyttanen for Materialise, the Lily.mgx lamp is made meticulously to resemble a lily-pad and combines art and technology to bring a magnificent glow to even the densest of interiors. The lamp was crafted especially using 3D material printing process to help capture the precious and delicate form of the flower and retailing for $502, and presents a tempting way to infuse any room with a fresh lease of life.
This concept track bike is inspired from nature. It’s kind of like the evolution of a frog into lighting fast fixed gear.
POTENTIAL STUMBLING BLOCKS

• This is a difficult project

• You need to listen

• You need to identify a site and conduct a site survey to get top marks

• You need to look at surrounding area and buildings in order for your building to blend, comply with building regs, not block views etc to get top marks. PHOTOGRAPHS ESSENTIAL and help you manufacture a detailed model.

• All tackled this last year properly, all internet based secondary research and pretty useless

• Design site on 2D design this may require you tracing up on 2D design. this can be exported onto Google sketch up and 3D cad drawings completed in its surrounding area. this was completed at the end and last minute and did not give views of how the building would look in its surroundings

• The use of 2D design and sketch up properly allows you to transfer onto Cam and accurately manufacture good models unless your workshop skills are excellent.

• Once site and area of design known start designing early

• Too long spent on useless research last year. copying of internet is easy anyone can do that!

• Good sketchbook work essential, use of sketching initial concepts, isometric and perspective drawings ESSENTIAL to get top marks. Use the help tutorials to teach you these drawing techniques IN YOUR OWN TIME. Sketches alone will not get top marks

• Scale is key as well as high quality finish. They are looking for a unique building not a simple square shape, TAKE RISKS!

• SPEND A LOT OF TIME IN WORKSHOPS, DESIGNING, TESTING PRODUCING CAD DRAWINGS, GOING OVER TUTORAILS, GRADE A*-C happen at the beginning not in the last two weeks rushing to finish.
WELL KNOWN ARCHITECTS

- Norman Foster
- Zaha Hadid
- Jørn Utzon
- Hopkins Architects
- Herzog and de Meuron
- PTW Architects
- Maxwan architects
- Paul de Ruiter
- Luca D'Amico
- Luca Teslo

USEFUL WEBSITES

- www.yankodesign.com
- www.treehugger.com/galleries
- www.bdp.com
- buildipedia.com/go-green/sustainable-materials-and-methods
- inhabitat.com/architecture/
It is one thing to be inspired by nature and a whole other to be able to replicate it to any extent of competency. But the design by Arthur Azoulai and Melody Rees take the concept of Biomimicry to whole new plane with its sweeping design, flowing lines and ecological implication. Designed to function as a connecting structure between existing spaces, the ‘Praxis of Flow’ allows you to explore eco architecture in a brand new way.
The designers drew inspiration from Italian Spaghetti and the South American Ant-Eater to build this winding and twisted green structure. It not only focuses on the main building, but also on the space outside that connects it with its surrounding structures. With such design and space offered, various green gardens are put in place along with food markets.
Nature has always been a source of inspiration for humans and when it comes to solving complex architectural design problems, architects seek shelter from it to understand and learn the natural way of dealing with things. The process in which inspiration from nature and its elements like tree, plants, hills, etc. determines the course of architecture, has been termed as ‘biomimicry’. Learning from nature not only helps in solving design related problems, but allows integration of sustainability for constructing eco sound structures.

The architecture firm ‘Mad Architects’ is the designer of fake hills, a housing society that takes the shape of hills, and is aimed to be part of the city of Beihei. The buildings have undulated roofs and cuts that maximize the view of the dwellers. The design draws inspiration from nature when it comes to sustainability. The shape of the building allows automatic cleaning of the air. Sunlight filters through the structure naturally, making the building energy efficient without the use of electricity.
“Parasite Office”. This hanging building is wedged between two existing high rises, creating space for a new office without disrupting the flow of traffic below as well as using land etc. Ease the housing shortage?
No more land being built so vertical maybe the answer

According to lot of researchers and architects, the available land for farming continuously decreases. Hence future farming will be performed on skyscrapers that are designed especially for agriculture purpose. Victorian Eco Innovation Lab (VEIL) has introduced novel and improved designs for vertical farms that will grow crops hydroponically on framework of the structure of the building. According to the opinion of VEIL designers, the traditional method of indoor growing of food is not feasible. The two-storied building will have structures with large floor plates. The internal side of the floor will be kept open allowing entering maximum sunlight and air to filter through. It will almost reduce the use of artificial lightening and temperature regulation offering crops to grow in natural ventilation and natural light.
It is annoying listening humming sound of dragonfly when it whistles around your nose when you are preparing fine barbeque. However, Vincent Callebaut architect was obsessed with dragonfly planned 600m tall dragonfly wing-shaped structure in the skyline of green New York. This vertical farm named as Dragonfly is designed to have 132 floors that can accommodate production of 28 different agricultural crops of vegetables, fruits and dairy items.
Architects have designed an incredible 65-storey 'earth-scraper' which plunges 300 metres below ground. The stunning upside down pyramid in the middle of Mexico City is designed to get around height limits on new buildings in the capital. The subterranean building will have 10 storeys each for homes, shops and a museum, as well as 35 storeys for offices.
Epic scale: The enormous complex is intended to get round the city's planning laws, which state that buildings can be no more than eight storeys high.
A glass floor covers the massive 240m x 240m hole in the city's main square to filter in natural light from the world above. Landmark: The earth-scraper would be located in the city's main square, and topped with an enormous Mexican flag.
Scary: The core is all made of glass to ensure that all parts of the building receive natural sunlight from the world outside
Heritage: The earth-scraper is expected to contain a museum and cultural centre which will explore the history of Mexico and its pyramids.
'New infrastructure, office, retail and living space are required in the city but no empty plots are available.

'Federal and local laws prohibit demolishing historic buildings and even if this was so, height regulations limit new structures to eight storeys.

'The city's historic centre is in desperate need of a makeover but we have nowhere to put it, this means the only way to go is down.

'The Earthscraper preserves the iconic presence of the city square and the existing hierarchy of the buildings that surround it.

'It is an inverted pyramid with a central void to allow all habitable spaces to enjoy natural lighting and ventilation.

'It will also allow the numerous activities that take place on the city square year round such as concerts, open-air exhibitions and military parades to go ahead.'

Read more: http://www.dailymail.co.uk/news/article-2048395/Earth-scraper-Architects-design-65-storey-building-300-metres-ground.html#ixzz1afoWEfHF
Unobtrusive: One advantage of the unusual structure is that it would create space in the centre of Mexico City, which is full of historic buildings which cannot be demolished.
Pyramids play a large part in the architectural history of Mexico, as the country's ancient civilisations have often build huge pyramid structures. When the Aztecs first came into the Valley of Mexico they built their pyramids on the lake they found there. As the Aztec Empire grew in size and power they conceived a new and bigger pyramid, but instead of looking for a new site they just built it on and around the existing one. The traditional pyramids are therefore composed of different layers of historical periods.
Today: The plaza, shown as it looks currently, would be transformed by the radical plan.
Are these the answer to the threat of rising sea levels? One architect believes floating cities could offer a safe haven for people who have lost their homes to flooding.

Rather than building up our city's defences with dams, architect Vincent Callebaut has put forward an alternative future for the victims of rising water if current climate change predictions take affect. The floating ecopolis, inspired by Amazonian lilypads, are designed to be completely self-sufficient in both power and water, through solar power, wind turbines and rainfall collection. Would you live in a floating cities like these?
Floating cities in the current state of affairs embody the Utopian ideal of modernistic cities floating on water and emanating their technological marvel. Moreover, as the congestion levels add to the already saturated densities of major cities, such ambitious conceptions can come forth and present to us that extra yet special kind of spatial element needed to house the increasing urban population. In effect, they could act as defined spaces with high ratio of rentable floor space per unit area and also as the symbols of urban power.
Forget designing for land -- let's just build some great homes that can float on the water. In case of a Waterworld eventuality, we'll relish in the ability to move our house wherever we want to go.

Floods and freak weather

When it rains, it pours. With increasingly unpredictable environmental conditions and the prevalence of catastrophic storms, building safe and secure flood-proof structures is becoming even more vital. Not only do we have to worry about natural disasters like hurricanes and floods, but we will have to battle with rising sea levels and having to build on flood plains due to lack of space.
The concept of harvesting energy from river waves to power. The first iterations of this design featured a set of open structures with faceted cladding and rib cage-like walkways. In Brian Novello’s version, the walkways are more like enclosed passageways inside of the swirling turbines, and a sleek and technical look has been given to the central connecting modules that act as green spaces for trees. This new look is similar to the pristine, yet engineered style of a brightly colored Dyson vacuum.
Rising Sea Levels

We currently face a rising population, not enough land to build on to meet supply so the demand has increased house prices with no sign of stopping.
New York City is undergoing a cultural shift away from the automobile, and designers Lawrence Zeroth, Jack Phillips, Brian Schulman and Eugene Lubomir have come up with a clever proposal to transform car lifts into housing pods. Space is at a premium in NYC,
What would 'elf and safety say? Stunning hotel for climbers planned for Barcelona... where customers sleep on rock ledges

Customers at Barcelona Rock harnessed to stop them falling in their sleep
Polish firm design 'unique' 100m tall rock hostel
Building would also include a cinema, bar, gym, and shops

Travellers staying in Barcelona come from across the world to see the Catalan city's stunning architecture, but many will never have seen a hotel as outlandish as this.
Polish architects who dreamt up the Barcelona Rock - a 100m hostel made especially for climbers - say guests can get their night's sleep perched perilously on a rock ledge overlooking the Spanish city.
It may be something of a health and safety nightmare and is certainly not what most would consider hotel comfort.
But thankfully those intrepid enough to sleep under the stars 100m from the ground are harnessed to the rock ledge to prevent them rolling off in their sleep.
The unusual concept hostel created by UGO was made for the Barcelona 2011 Bohemian Hostel for Backpackers international competition.
Competition rules asked designers to create a 100 metre tall tower hostel that includes relaxation areas, stores, cafe and at the same time created a new city landmark.
Polish firm UGO now hope the Barcelona Rock will become a 'unique place' in the Spanish city.
The proposed building will have fifty rooms, cinema, spa, cafe, pool, gym, bar, shops, and climbing walls for beginners.
Naturally, the architects planned the hostel so that those using the swimming pool can jump from the rock into the water.
The unique exterior would be made of rocks so advanced rock climbers can spend the night out using special equipment.
The elevation is made of stone blocks, each four meters high, mounted on stilts of reinforced concrete.
These blocks are fixed some distance from each other to ensure air penetrates the building. The advantage of using stone in this climate is that it radiates heat at night and cools the air during the day.

UGO boss Hugon Kowalski said: 'Barcelona Rock hostel is supposed to be a unique place. It is supposed to become a new symbol of Barcelona.'
'In search for inspiration we were trying to find something common for the city's architectural marks such as Sagrada Familia, Torre Agbar or the nearby Museum of Modern Art.

'We found it in Montserrat - in a mountain range near Barcelona, the highest elevation in Catalonia, you can see it from Barcelona.

'The stone from that mountain range was used for the buildings of the old city.' He said the idea was to make the building look like part of a mountain.

'The
It's hoped the structure would become a natural feature of historic importance in the centre of the metropolis. He added: 'There's a swimming pool, spa, gym, cinema, pub, shops and climbing walls for beginners. 'The outer elevation of the hotel forms climbing walls for more advanced climbers, who can spend the night there using special equipment. 'We hope the hostel will become a symbol of the city as Ayers Rock is for Australia.'
Task:

Research biomimicry
Research Alan Powers – Nature in Design
Research architectural dwelling
Research Natural Forms
Research Sites and potential architectural dwellings

Or

Research potential problems that can be solved

Look at concepts