

Permaculture Design Course Outline

Angus Soutar

Outline (course syllabus)

The outline is given in the [following three pages](#). (The remainder of the document consists of attachments, as explained below).

The outline is organised under the chapter headings of "Permaculture: A Designers' Manual". The topics listed are always covered in the PDC's that I teach.

Although the topics are always included, the curriculum is reviewed at the start of each course and the programme is often given a short period of design to adapt to the course setting. Factors under consideration include:

- format - a diversity of timetables to meet the needs of the participant group
- venue and accessible examples of design in the nearby landscape
- the needs and values of the participants .

Format and timetables (curriculum)

Because of these variations, I have included some attachments to show how the core syllabus is included, regardless of variations in delivery.

Any departures from the curriculum of Bill Mollison's 72 hour course are made consciously, from experience, with the express purpose of assuring that all participants can carry out a piece of permaculture design before they complete the course. As well as regard for the course content, the course length is maintained at 72 hours ("72 hours is no accident" and my experience confirms that original assertion).

Experience has thrown up issues with some courses where some participants get "lost" in the dense groupings of the subject areas, with the feedback that the sessions are "too intense" and that "there is no time to take it all in". This has led to departures from the original format by "threading" the topics so that design, systems and pattern are taught every day and cross-linked into the other "chapters". I hold myself and my associates to the objective that "every session presents an opportunity to learn about design".

The other main variation is with the formatting of delivery. The "two week" format works well with "itinerant teachers", or with "visiting students" from an economic point of view. However, in densely populated "developed world" areas such as western europe we have considerable demand for 2x1 week, 6 weekends, and other 12 day formats.

The "threaded" course fits well with the more "extensive" formats of the course where intervals between course days/weekends allow time for private study, practice and consolidation. (We are developing an additional and optional guided learning programme to fit around the course).

This is discussed further in my "course notes" document. For illustration here, I have shown a current "standard 12 day extensive plan" programme in [Attachment 1](#), below. This is as published on our Northern School website . To help you appraise this particular plan, I have mapped it against a programme for Geoff Lawton's course in [Attachment 2](#).

Angus Soutar – PDC sessions by Designers Manual Chapters

Chapter no	Session	Plan number (day / session number)
1	Introduction	
	Introductions - history - Permaculture One: Bill and Dave's excellent adventure	1.1
	- Global Gardener: Bill develops the PDC - welcome to a new global nation	1.1
	- reintegrating people into landscape - course outline	1.1
	The Parable of the chicken	1.2
	Ethics of Permaculture - resource use and design- prime directive of Permaculture	1.5
2	Concepts and themes in Design	
	Lessons from the chicken parable – what is a system?	1.3
	- inputs and outputs – work and pollution – cycling	1.3
	- polycultures	1.3
	Design cycle: Observe, Assess, Design, Implement	1.3
	Importance of observation - walk - debrief	1.4
	- thematic and non-thematic observation	1.4
	Ethics and action through design	2.1
	- monoculture to polycultures and agriculture to gardening	2.1
	- how is permaculture design different to other forms of design?	2.1
	Our creation story – the basic elements of life, the universe (and everything)	2.4
	Water, Carbon and the basics of life	2.4
	- hydrocarbons and carbohydrates - combustion and respiration	2.4
	- storage and release of solar energy in Nature	2.4
	Basic ecology – food web – trophic levels – succession	2.5
	Characteristics of natural systems - Permaculture defined	2.6
	- permaculture design defined (overview)	3.5
	Permaculture design defined, continued (material, strategic and conceptual components)	4.2
	Categories of resource and resource management	4.2
	Design and systems – yields, elements, functions	4.5
	- systems and energy – open and closed systems	6.2
	- the efficiency of natural processes - “exergy” and “lethargy”	6.2
	- emergent systems, growth and feedback loops	7.2
	- thinking and working at scale – purpose and function in (eco)systems and design	7.2
3	Methods of Design	
	Analysis and placement, work and materials flow, , relative location	2.2
	Site analysis - classic homestead pattern – zoning	2.3
	Systems and Design – elements / relationships /functions	3.3
	Design – site analysis – sector analysis	3.5
	- design cycle (O-A-D-I) revisited	3.5
	Design cycle – BREDIM and other memorable made-up words	4.2
	Design tools – Relative Permanence	4.2
	Identifying yields - multifunctional elements	3.3
	Design – objectives and directives, design for risks and events	5.3
	Polycultures, plant guilds, interaction matrix	4.3
	Design and systems: objectives and directives - “limiting factors” in design	6.2
	Design, systems and pattern – design as a system – entity and relationship mapping	7.2
	Design – random assembly – options and decisions – overlays and exclusion method	8.2
	- design methods summary	8.2
	The client and the brief – working with other people to get more done	9.2
	- project design and management	9.2
	Design – course design project selection and brief - summary of design process	9.3
	Design presentations - "to the client" - learning from each other	12.1

4	Pattern Understanding	
	Observation and Pattern – observation walk/exercise	3.4
	Observation exercise – spirals in Nature – spiral patterns	5.4
	Branching patterns – observation - range and function - transfer systems	8.4
	- orders of form in rivers and sand dunes	8.4
	Patterns of succession and stacking	8.6
	Pattern - edge, how to use it - niche as an edge	9.4
	Patterns of Association – natural strengths and weaknesses of human group sizes	9.6
	Settlements: patterns, scales and sizes	10.1
	Village life – patterns of a settled society	10.2
	Communal organisation – “patterns of governance”	10.5
	- tribal societies - the city and civilisation	10.5
	Systems: Non-linearity in nature and society – “expect the unexpected”	11.3
	Patterns of patterns – a summary of the different types of patterns in nature	11.6
	- a general model?	11.6
5	Climate Factors	
	Climate – world climate zones and climate patterns	6.3
	Climate and landscape effects – landscape profiles – orographic rain - precipitation	6.5
	- valley circulation - siting of buildings and terracing	6.5
	Climate – weather systems – coriolis effect – climate and house design	7.3
6	Trees and their energy transactions	
	Trees and forests - energy transactions – photosynthesis	8.1
	- forests and rainfall - light and heat	
	- trees and wind - planting strategies and patterns, shelterbelt and hedges	8.1
7	Water	
	Water is essential for life	5.1
	- open structure – pH – dissolved salts – dissolved gasses	5.1
	- buffering – problems with acid rain and salting	5.1
	Water - its uses and duties	5.2
	Water for energy and transportation – density effects – surface tension	6.1
	- "living water", vortices, flowforms, Viktor Schauberg and implosion power	6.1
	Hydraulics and pneumatics - ram pumps, water wheels, trompe compressors	6.1
	Water in the Landscape – water for irrigation and settlements	6.4
	- the water cycle and Kravcik's work – sources, sinks and stores	6.4
	- strategies for water harvesting and flood control	6.4
	- swales - keyline planning and dam sites - reservoir and dam construction	6.4
	- sandpit demonstration (include demonstrations of patterns of entropy and critical state)	6.4
	Drylands – salting and fossil water - swales, limonia and boomerangs	6.6
	-drylands cultivation and irrigation strategies	6.6
	Ponds and lakes – functions and yields – ecologies	7.4
	- nitrogen cycle – eutrophication - oxygen BOD and COD – thermoclines	7.4
	- strategies and construction - edge, chinampas	7.4
	Natural wastewater treatment – living systems – domestic – industrial/remedial	7.4

8	Soils	
	Introduction to soils	3.1
	Life in soil - organisms, micro-guilds, pests	3.2
	Soil building in nature - patterns of soil-building - succession	3.6
	Soil structure - what makes a good soil? - carbon stores and losses	3.6
	- composition of soils, classification and testing	3.6
	Agriculture, horticulture and soil - soil as a growing medium	3.6
	- the importance of "edge" in soils	3.6
	- soil variations across climate zones, effects of cultivation, cultivation strategies	3.6
	Nutrients in soil – nutrition for plants, animals and humans	4.1
	- nutrient availability and uptake	4.1
	The nitrogen cycle in soils - importance of nitrogen fixers	4.3
	Life in soils – pulsing, ethylene, ferrous/ferric switch	4.4
	Soil building in zones 1 and 2 (composts, fertilisers and mulches)	4.6
9	Earthworking and earth resources	
	Soil as a construction material (terraces, roads, dams, houses)	4.7
	- the basics of earthworks - working with machines	4.7
10 to 12	Climate Design	
	Polycultures in zones 1 and 2 - home gardens, market gardens, small livestock	4.6
	Polycultures in Zone 3 – livestock and climate	5.5
	- rangelands, permanent pastures, mob stocking and "holistic management"	5.5
	Polycultures in Zone 3 - alley cropping	5.5
	- cereals or root crop? - strategies and techniques for cereal growing	5.5
	Climate – weather systems – coriolis effect – climate and house design	7.3
	Cultivating in climate zones - creating microclimate – food forests	
	Woodland and cultivation – in tropics and in temperate climates – nitrogen fixers	8.5
	- food crops - planting patterns - sylvan polycultures - forest garden as a pattern	8.5
	- management, nutrient cycling. mulch and composting, Jean Pain method, Hugel mounds	8.5
13	Aquaculture	
	Aquaculture - systems and strategies - natural wetland eco-systems	7.5
	- hydroponics and intensive systems	7.5
	Aquaculture - fish farming and aquaponics	
14	The strategies of an alternative global nation	
	A sense of place – bioregions and social zoning – integrate people into landscape	7.1
	- valuing and evaluating heritage - basis of local governance	7.1
	Teamwork observed – diversity of "strengths" and "weaknesses" of individuals	9.5
	- basic needs - providing for community needs	10.2
	- questions and issues of scale of settlements	10.2
	"Wealth" and Right Livelihood - what is wealth? - right livelihood	10.3
	- hints and tips "from the front line"	10.3
	- creating linkages, beneficial relationship	10.3
	- complex societies - cultural evolutions - alternative nations	10.5
	Useful patterns of organisation and business - Enterprise Facilitation (Sirolli)	10.6
	- growth and scale (Greiner) - Chaordic organisation - Permaculture organisation	10.6
	"Community trading" and "community money"	11.1
	Community economics and firms - "trinity of management" - project financing - share systems	11.2
	- Open Source strategies and Open Source Guilds - use of "Trust A / Trust B" model	11.2
	Designing aid programmes effectively – lifeboats and flagships	11.5
	- barefoot and without a parachute - "Ripples from the Zambezi"	11.5
	What's next? - Permaculture organisation local and global	12.4
	- diploma programmes – participants' projects - local and global networks	12.4

Attachment 1 - **Angus Soutar - 72 hour Design Course - Twelve-day plan**

Day 1 – Introduction to the course

Plan number	Session outline
1.1	Introductions – history - Permaculture One: Bill and Dave's excellent adventure - Global Gardener: Bill develops the PDC - welcome to a new global nation - reintegrating people into landscape - course outline
1.2	The Parable of the chicken
1.3	Lessons from the chicken parable – what is a system? - inputs and outputs – work and pollution – cycling - polycultures Design cycle: Observe, Assess, Design, Implement
1.4	Importance of observation - walk - debrief - thematic and non-thematic observation
1.5	Ethics of Permaculture - resource use and design - prime directive of Permaculture
1.6	How the course will be organised – participation, dates, work exchange - references for guided home study, on-line library

Day 2 – Introduction to permaculture design

2.1	Ethics and action through design - the parable of the chicken and the introduction to systems - monoculture to polycultures and agriculture to gardening - how is permaculture design different to other forms of design? Design cycle (O-A-D-I)
2.2	Analysis and placement, work and materials flow, , relative location
2.3	Site analysis - classic homestead pattern – zoning
2.4	Our creation story – the basic elements of life, the universe (and everything)
2.4	Water, Carbon and the basics of life - hydrocarbons and carbohydrates - combustion and respiration - storage and release of solar energy in Nature
2.5	Basic ecology – food web – trophic levels – succession
2.6	Characteristics of natural systems - Permaculture defined Course organisation – review, allocation of tasks, issues

Day 3 – Soils and life

3.1	Introduction to soils
3.2	Life in soil - organisms, micro-guilds, pests
3.3	Systems and Design – elements / relationships /functions - identifying yields - multifunctional elements
3.4	Observation and Pattern – observation walk/exercise
3.5	Design – site analysis – sector analysis - design cycle (O-A-D-I) revisited - permaculture design defined (overview)
3.6	Soil building in nature - patterns of soil-building - succession Soil structure - what makes a good soil? - carbon stores and losses - composition of soils, classification and testing Agriculture, horticulture and soil - soil as a growing medium - the importance of "edge" in soils - soil variations across climate zones, effects of cultivation, cultivation strategies

Day 4 – Nurturing Soils

- 4.1 Nutrients in soil – nutrition for plants, animals and humans
 - nutrient availability and uptake
- 4.2 Permaculture design defined, continued (material, strategic and conceptual components)
 - categories of resource and resource management
 - Design cycle – BREDIM and other memorable made-up words
 - Design tools – Relative Permanence
- 4.3 Polycultures, plant guilds, interaction matrix
- 4.4 The nitrogen cycle in soils - importance of nitrogen fixers

- 4.4 Life in soils – pulsing, ethylene, ferrous/ferric switch
- 4.5 Design and systems – yields, elements, functions
- 4.6 Soil building in zones 1 and 2 (composts, fertilisers and mulches)
 - Polycultures in zones 1 and 2 - home gardens, market gardens, small livestock
- 4.7 Soil as a construction material (terraces, roads, dams, houses)
 - the basics of earthworks - working with machines

Day 5 - Water and life

Recap – design directives – one function served by many elements

- 5.1 Water is essential for life
 - open structure – pH – dissolved salts – dissolved gasses
 - buffering – problems with acid rain and salting
- 5.2 Water - its uses and duties
- 5.3 Design – objectives and directives, design for risks and events

- 5.4 Observation exercise – spirals in Nature – spiral patterns
- 5.5 Polycultures in Zone 3 – livestock and climate
 - rangelands, permanent pastures, mob stocking and "holistic management"
- 5.6 Polycultures in Zone 3 - alley cropping
 - cereals or root crop? - strategies and techniques for cereal growing
 -

Day 6 Water in the landscape

- 6.1 Water for energy and transportation – density effects – surface tension
 - "living water", vortices, flowforms, Viktor Schauberg and implosion power
 - Hydraulics and pneumatics - ram pumps, water wheels, trompe compressors
- 6.2 Design and systems: objectives and directives - "limiting factors" in design
 - systems and energy – open and closed systems
 - the efficiency of natural processes - "exergy" and "lethargy"
- 6.3 Climate – world climate zones and climate patterns

- 6.4 Water in the Landscape – water for irrigation and settlements
 - the water cycle and Kravcik's work – sources, sinks and stores
 - strategies for water harvesting and flood control
 - swales - keyline planning and dam sites - reservoir and dam construction
 - sandpit demonstration (include demonstrations of patterns of entropy and critical state)
- 6.5 Climate and landscape effects – landscape profiles – orographic rain - precipitation
 - valley circulation - siting of buildings and terracing
- 6.6 Drylands – salting and fossil water - swales, limonia and boomerangs
 - drylands cultivation and irrigation strategies

Day 7 Design and systems

- 7.1 A sense of place – bioregions and social zoning – integrate people into landscape
- valuing and evaluating heritage - basis of local governance
- 7.2 Design, systems and pattern – design as a system – entity and relationship mapping
- emergent systems, growth and feedback loops
- thinking and working at scale – purpose and function in (eco)systems and design
- 7.3 Climate – weather systems – coriolis effect – climate and house design
- 7.4 Ponds and lakes – functions and yields – ecologies
- nitrogen cycle – eutrophication - oxygen BOD and COD – thermoclines
- strategies and construction - edge, chinampas
- 7.5 Aquaculture - systems and strategies - natural wetland ecosystems
- hydroponics and intensive systems
- 7.6 Natural wastewater treatment – living systems – domestic – industrial/remedial

Day 8 Forests and woodlands

- 8.1 Trees and forests - energy transactions – photosynthesis
- forests and rainfall - light and heat
- trees and wind - planting strategies and patterns, shelterbelt and hedges
- 8.2 Design – random assembly – options and decisions – overlays and exclusion method
- design methods summary
- 8.3 Cultivating in climate zones - creating microclimate – food forests
- 8.4 Branching patterns – observation - range and function - transfer systems
- orders of form in rivers and sand dunes
- 8.5 Woodland and cultivation – in tropics and in temperate climates – nitrogen fixers
- food crops - planting patterns - sylvan polycultures - forest garden as a pattern
- management, nutrient cycling, mulch and composting, Jean Pain method, Hugel mounds
- 8.6 Patterns of succession and stacking

Day 9 Design for positive social change

- 9.1 Aquaculture - fish farming and aquaponics
- 9.2 The client and the brief – working with other people to get more done
- project design and management
- 9.3 Design – course design project selection and brief - summary of design process
- 9.4 Pattern - edge, how to use it - niche as an edge
- 9.5 Teamwork observed – diversity of “strengths” and “weaknesses” of individuals
- 9.6 Patterns of Association – natural strengths and weaknesses of human group sizes

Day 10 Settlements and communities

- 10.1 Settlements: patterns, scales and sizes
- 10.2 Village life – patterns of a settled society
- basic needs - providing for community needs
- questions and issues of scale of settlements
- 10.3 “Wealth” and Right Livelihood - what is wealth? - right livelihood
- hints and tips "from the front line"
- creating linkages, beneficial relationship
- 10.4 Design projects – tutorial
- 10.5 Communal organisation – “patterns of governance”
- tribal societies - the city and civilisation
- complex societies - cultural evolutions - alternative nations
- 10.6 Useful patterns of organisation and business - Enterprise Facilitation (Sirolli)
- growth and scale (Greiner) - Chaordic organisation - Permaculture organisation

Day 11 Community finance and economic transition

- 11.1 "Community trading" and "community money"
- 11.2 Community economics and firms - "trinity of management" - project financing - share systems
- Open Source strategies and Open Source Guilds - use of "Trust A / Trust B" model
- 11.3 Systems: Non-linearity in nature and society – "expect the unexpected"
- 11.4 Design projects – tutorial
- 11.5 Designing aid programmes effectively – lifeboats and flagships
-- barefoot and without a parachute - "Ripples from the Zambezi"
- 11.6 Patterns of patterns – a summary of the different types of patterns in nature
- a general model?

Day 12 Design projects and completion

- 12.1 Design presentations - "to the client" - learning from each other
- 12.2 Feedback – stacking with design process and evaluation tools
- 12.3 Certificates
- 12.4 What's next? - Permaculture organisation local and global
- diploma programmes – participants' projects - local and global networks

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Attachment 2 - Geoff Lawton's course mapped with Angus Soutar's PDC sessions

Geoff Lawton Session	Angus Soutar Session Reference
Chapter 1: Introduction	
Human past, present and future Permaculture design philosophy. Holistic thinking.	1.1, 1.2
Key problems: Soil erosion, Deforestation, Pollution.	1.2
Ethics of Permaculture – Earth care, People care, Return of surplus	1.5
Definitions of Permaculture. Sustainability outcomes. History of Permaculture.	1.1, 2.6
Permanent culture. Urban Permaculture. Permaculture repair	1.3, 1.5
Permaculture aid work. The PRI Master Plan.	11.5, 12.1
Permaculture in society.	1.1, 1.2
Permaculture as an holistic design	2.1
Chapter 2: Concepts & Themes in Design	
Sustainable systems	2.1
Hierarchy of soil creation in natural systems	3.6
Permaculture is primarily a design for a sustainable, human-controlled support systems.	1.5
The Prime Directive of Permaculture.	1.5
Principles of natural systems and design. Elements -needs and products	1.2, 2.6
An example of designing elements into a system Tagri Farm Nth NSW Australia	2.2, 3.3
Guiding principles of permaculture design:- Permaculture design concentrates on function.	
The web of life and net of functional relationships of designed ecosystems.	2.5
• Entropy extension	6.2
Potential energy capture within systems energy flows to useful life niches or storages available as yield.	2.5
Categories of resources and their management	4.2
Diversity is related to stability	2.5
Yield	1.3, 1.5
Mollisonian Permaculture Principals	2.6
Chapter 3: Methods of Design	
Design emphasizes patterning of landscape, function, and species assemblies.	3.5
Approaches to design	3.5
Analysis of elements	3.3
Maps	3.5
Sector planning	3.5
Observational	1.4, 9.3
Experiential	1.4, 9.3
Zones	2.3
Sectors	2.5
Slope	6.5
Orientation	7.3
Putting it together Listing possibilities Selection of ransom assemblies	8.2
Connecting components in a system	3.3
Chapter 4: Pattern Understanding	
Seeing pattern as valuable connections	3.4, 8.6
Growth patterns and explosive patterns	11.3
Scale of orders of size	8.4
Edge events and pressure between media	9.4
Recognizing pattern	5.4, 8.4
Pattern evolutions	11.6
Applying patterns in productive design	5.4
Information dense pattern as teaching systems	11.6
Traditional uses of pattern	10.5, 11.6

Chapter 5: Climate Factors

Climate and classic landscape profiles	6.5
Climate Differences Temperate Tropical, Drylands,	6.3
Continental effect the maritime effect and rain shadow	6.3
Orographic effects	6.5
Climate analogues	6.3
Classic landscape profiles	6.5
Major landscapes Humid and Arid	5.6, 6.6
Minor landscapes Volcanic, islands high and low, coasts, flatlands, wetlands, estuaries	6.3
Ecosystems as climate moderators	6.3, 8.1

Chapter 6: Trees and their Energy Transactions

Wind	8.1
Light	8.1
Rain	8.3
Types of forest	8.3, 8.5
Fuel – Forage – Structural – Shelter; animal barrier – Food – Natural –	
Role of fungi	8.5
Legumes as support species	8.5

Chapter 7: Water

Water harvesting earthworks	6.4
Rechargeable water and non-rechargeable water	6.6
The duties of water in landscape design	5.2
• Swales	6.4
• Gabions	6.4
• Limonia	6.6
Dams	6.4
Types of dams	
• Saddle dams	6.4
• Ridge dams	6.4
• Key point	6.4
• Valley dams	6.4
• Contour dams	6.4
• Evaporation strategy	6.6
• Hard surfaces like roofs and roads	6.6
• Irrigation rules for arid regions	6.6

Chapter 8 Soils

Collapsing soil fertility, difficult soils	3.6
Understanding soil erosion as number one global problem	3.6
Understanding where and why soils are conserved or increased	3.6
Understanding pH acid/alkaline analysis and interpret the consequence	4.1, 5.1
Role of Weeds as repair mechanisms	4.6, 5.6
Compost and the decomposition cycle of humus creation	4.6, 5.6
Berkley 18 day method of Compost Creation of humus in soil	4.6
The function of the hair roots of plants feeding on minerals and structuring soil with starch exchange.	3.2
Compost tea, biofertiliser, worm farms	4.6
Mineralising soils with animal feed	5.6

Chapter 9: Earthworking and Earth Resources

Earthworks and earth resources	4.4
Terra-forming	4.4, 6.4
Earthworks necessary and ethical	4.4
Landscape restitution	4.4
Moving earth with Machinery and Hand tools	4.4
Machines used in earthworks	4.4
Planning earthworks prior to the actual job	4.4
Soil tests	3.6
Surveying and site pegging	4.4, 6.4
Planting after earthworks	6.4
Slope measurements Levels and leveling	4.4
A design for water harvesting earthworks	6.4

Chapter 10: Climate Design

Climate comparisons -house design	7.3
Energy use	7.3
AspectHeating /Cooling	7.3
Waste systems	7.4
Garden design	4.6
Food Forest comparisons across climates	8.3
Main crop comparisons	8.3
Seasonal timing	8.5
Mulch and forage production	8.5
Small animals	4.6
Comaprison in zone 3	5.6
Comparisons in farm forestry	5.6

Chapter 11: Aquaculture

Chain of life in water design	7.4
Select species (plant and animals) for pond size.	7.5
Set up self-foraging systems for fish	9.1
Pond sizes	7.5
Aquaponics	9.1

Chapter 12: The Strategies of an Alternate Global Nation

Invisible structures	10.5, 10.6, 11.11, 11.2
Establishing permaculture community groups	10.2, 10.4, 12.5
Bioregional resilience	7.1, 10.5
Necessary legal structures	11.1, 11.2
Formal and informal financial strategies. Trade	11.1, 11.2
Village systems Community land development	10.2, 10.5
Establishing not for profit Permaculture Institutes	11.2

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