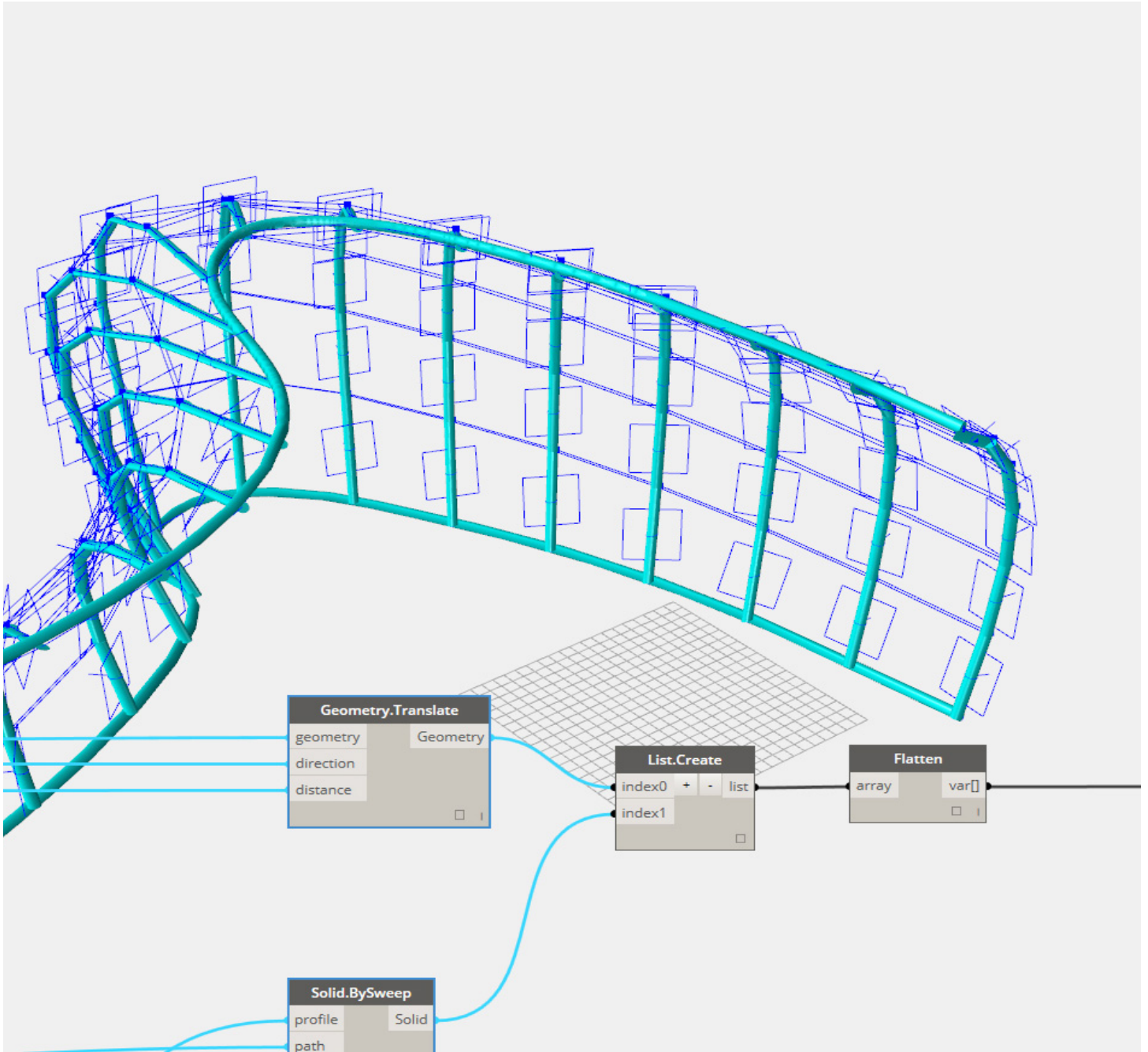


# Design Information Management

# CODE2270

Week 11 – 14 Lectures: 9 – 10 am & 4 – 5 pm, Tuesdays and Fridays, Square House 103 (Tues) / 104 (Fri)

Week 11 – 14 Tutorials: 10 – 1pm & 2 – 4 pm, Tuesdays and Fridays, Square House 103 Tues) / 104 (Fri)



Scan this QR code to be taken to the course UNSW Handbook site:



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## 1. Course Description

This course is part of the practice orientated teaching trajectory 'Calibrating' combining Stream 2: Optimisation and Decision Support and Stream 7: BIM Modelling.

The course focuses on computer-aided building simulation and optimisation, to apply systems that analyse existing conditions, support planning decisions, improve performance optimise efficiencies and achieve financial savings. Students will engage in debate about findings in structural engineering, environmental engineering, finance, and science to study how the built environment can be simulated and optimised. Projects in this course will predict future performances and deliver simulated findings. To be followed by further study of results to overcome the discrepancies between simulated and actual building performance.

There are two lectures each day that will introduce students to the topic. The lectures will relate to experiences and challenges in research and practice by presenting projects and investigations.

The projects designed in the course are small software packages (tools) that address very specific aspects of optimisation and/or life cycle monitoring. As the course is in an intensive five-week mode projects and engagement in projects will vary from individual work to assignments that are done in groups of five students up to larger groups for final assignments. Each student will have specific tasks within these group assignments.

## 2. Course Staff and Contributors

<b>Course Convenor: Paul Wintour</b>	
<b>Room:</b>	External Tutor
<b>Email:</b>	paulwintour@hotmail.com
<b>Consultation times:</b>	Directly before or after class, please contact tutor one day in advance per email to make a booking.
<b>External Staff: Suleiman Alhadidi</b>	
<b>Room:</b>	External Tutor
<b>Email:</b>	salhadidi@hassellstudio.com
<b>Consultation times:</b>	Directly before or after class, please contact tutor one day in advance per email to make a booking.
<b>External Staff: Sam Macalister</b>	
<b>Room:</b>	External
<b>Email:</b>	samuel.macalister@autodesk.com
<b>Consultation times:</b>	Directly before or after class, please contact tutor one day in advance per email to make a booking.
<b>Course Admin: Dr. M. Hank Haeusler</b>	
<b>Room:</b>	4023
<b>Email:</b>	m.haeusler@unsw.edu.au
<b>Consultation times:</b>	Per appointment with DD unit only.

### 3. Course Communication

Most course related announcements are made in the lectures. It is essential that you attend the lectures to receive these announcements. In addition to these formal communication paths, online discussion forums will be available that will allow everyone to post questions and respond to other people's questions. All students will be expected to participate in the online discussions in Moodle.

Individual student related communication, including the issue of assessment grades and feedback, will be via the Moodle. UNSW Student email will be used to communicate changes that occur with short notice. All students are assigned an e-mail account on the University's e-mail server, so that email address will be used as the primary means by which important correspondence is made. You must, therefore, get into the habit of checking your UNSW student email regularly.

Details on setting up your UNSW student email are provided at:

<https://www.it.unsw.edu.au/students/index.html>

To manage your UNSW account and password, use the IDM site:

<https://idm.unsw.edu.au/idm/user/login.jsp>

Questions that cannot wait until the next allocated class are best handled by posting a message on the online forums in Moodle. If there are important or urgent matters that require a personal meeting, you are able make an appointment with your course staff. See 3. Course Staff and Contributors for more information on how and when to communicate with course coordinator and tutors.

### 4. Course Websites

**Moodle** – this is the UNSW wide online teaching platform and has many capabilities. You can access Moodle via: <https://moodle.telt.unsw.edu.au/login/index.php>

Use <https://teaching.unsw.edu.au/moodle-orientation> to familiarise yourself with Moodle. Please see section 7.1 Online Teaching for more information.

Note: There is the potential that your lectures will be automatically recorded under the echo 360 platform:

<https://teaching.unsw.edu.au/unsw-lecture-recordings-process>

All OH&S and workshop training courses are as well located on Moodle. Please follow the Moodle instructions to complete UNSW's OH&S requirements.

## 5. Lectures

Studio will start in 6. October 2015 and end in 6. November 2015, lectures and tutorials are on the following dates (9 – 5pm).

	WEEK 1		WEEK 2		WEEK 3		WEEK 4		WEEK 5	
	Day 1 6.10.15	Day 2 9.10.15	Day 14.10.15		Day 4 20.10.15			Day 5 30.10.15		Day 6 6.11.15
<b>Morning 9 - 12pm</b>	Lec 1	Lec 3	Lec 5		Lec 7			Class Intern.		Final
	Class	Class	Class Midt.		Class					
<b>Aftern. 1 - 5pm</b>	Lec 2	Lec 4	Lec 6		Lec 8					

### Week 1 / Day 1 Morning Topic

#### Lecture 1: Grasshopper to Revit (Paul Wintour)

This lecture will explore various workflow options for exporting geometry from Grasshopper into Revit. We will cover some of the existing plug-ins including Chameleon, Hummingbird, Geometry Gym and Grevit, and explore the possibilities and limitations of each workflow.

#### Readings:

Davis, D. & Peters, B. (2013, Mar/Apr). Design Eco-system. In Architectural Design: Computational Works, pp.124-131. London: John Wiley & Sons.

Hummingbird. <http://www.food4rhino.com/project/hummingbird?ufh>

Wintour, P. (2015). Chameleon. Available: <http://parametricmonkey.com/2014/11/30/chameleon/>

Wintour, P. (2015). Hummingbird. Available: <http://parametricmonkey.com/2015/06/24/hummingbird/>

#### Tutorial activities:

Paul short text of the activities of the day

### Week 1 / Day 1 Evening Topic

#### Lecture 2: Dynamo Stand alone (Suleiman Alhadidi)

This lecture and tutorial sessions will introduce how to visually script geometries using Dynamo in Revit. Students will explore in the tutorial and lecture how Dynamo can be used as a tool for studying complex forms and creating parametric morphologies.

#### Readings:

Alhadidi, S; Kimm, G. (2014) Computational Design Strategies in Revit – Building complex form using Dynamo; Hand out at the 2014 Revit Technology Conference Australasia.

### Week 1 / Day 2 Morning Topic

#### Lecture 3: Embedding Intelligence (Paul Wintour)

This lecture will explore the fundamental difference between CAD platforms such as Rhino, and BIM platforms, such as Revit. We will explore how intelligence is embedded into objects and discuss the notion of 'FastBIM' and how the Elefront plug-in for Grasshopper can be used to embed intelligence within a Rhino model.

#### Readings:

Edwards, S. (2013, Mar/Apr). Embedding Intelligence. In Architectural Design: Computational Works, pp.104-109. London:

John Wiley & Sons.

Elefront. Available: <http://www.food4rhino.com/project/elefront?ufh>

Tutorial activities: TBC

**Week 1 / Day 2  
Evening Topic**

**Lecture 4: Dynamo on Revit, FormIt, Navisworks and Robotics (Suleiman Alhadidi)**

Today's lecture will outline other outputs of Dynamo then Revit in particular FormIt, Navisworks and Robotics. In the second half of the lecture the topic shifts towards the first project of the course: Form Scripting – Building a parametric tower using Dynamo and Revit. The lecture addressed basic Computational Design form finding areas such as repeat, transform, parametrize and analyse.

Readings: Alhadidi, S; Kimm, G. (2014) Form Scripting – Building a parametric tower using Dynamo and Revit; Hand out at the 2014 Revit Technology Conference Australasia.

**Week 2 / Day 3  
Morning Topic**

**Lecture 5: Analysis (Paul Wintour)**

Students will transcode selected components from the open-source Ladybug Grasshopper plug-in (written in Python) and develop a custom node in Dynamo with similar functionality or improved functionality. These nodes will then be published to the Dynamo Package Manager in order to contribute to the open-source development of Dynamo.

Readings: Non

Tutorial activities: **Midterm presentations** of first Assignment (Building / Tower shape) to panel see Assignment below for hand in criteria. Students will get feedback on their design in order to continue working on the second assignment.

**Week 2 / Day 3  
Evening Topic**

**Lecture 6: Python in Dynamo (Suleiman Alhadidi)**

The lecture and session in the afternoon today will introduce three main concepts of how to use programming languages such as Python to build tools for Dynamo in Revit. Students will learn and explore through these techniques how coding can be used as a useful tool in BIM workflows.

Readings: Alhadidi, S; Kimm, G. (2014) Form and Code: Kicking off essential coding skills in Dynamo with Python. Hand out at the 2014 Revit Technology Conference Australasia.

**Week 3 / Day 4  
Morning Topic**

**Lecture 7: Workshop Dynamo (Sam Macalister)**

This full day workshop with Sam Macalister from Autodesk give students the opportunity to discuss and develop their project with the help of an expert from Autodesk. The Lecture will give you an overview to Revit's visual programming language, Dynamo from an Autodesk perspective. We will explore the Dynamo package manager and evaluate the custom nodes already developed by the open-source Dynamo community. In particular, we'll focus on Rhynamo and its potential for linking Rhino/Grasshopper geometry into Revit.

Readings: The Dynamo Primer. Available: <http://dynamoprimer.com/>  
 Miller, N. (2015). Rhynamo: Free, as in 'Free Speech'...Not 'Free Beer'. Available: <http://www.case-inc.com/blog/what-is-rhynamo>  
 Wintour, P. (2015) Available:

<http://parametricmonkey.com/2015/05/02/rhynamo/>

Tutorial activities: Full day workshop with Autodesk

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**Week 3 / Day 4 Lecture 8: Projects that used Dynamo (Sam Macalister)**

**Evening Topic**

The evening lecture will give an overview of projects from around the world that has successfully used Dynamo and Revit. The presentation gives an overview about the challenges and opportunities enabled through the software and introduces future directions and applications for the AEC (Architecture Engineering Construction) Industry.

Readings: Non

Tutorial activities: Full day workshop with Autodesk

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**Week 4 / Day 5 Interim presentation**

Readings: Non

Tutorial activities: **Interim presentation** presenting work by students in the morning of the class. Afternoon is reserved to discuss and define next steps towards the final presentation.

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**Week 5 / Day 5 Final presentation**

Readings: Non

Tutorial activities: **Final presentation**

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**Week 15 PARITY SESSION of all courses in the semester**

Presentation of all work of all courses. THIS IS ONLY COMPULSORY FOR CODE PROGRAM STUDENTS via a selection of the five best images with descriptions presented one poster for each course. Hand in on Wednesday in Week 15 before 1 pm at the DD unit on Level 4. See Parity Session for detailed information.

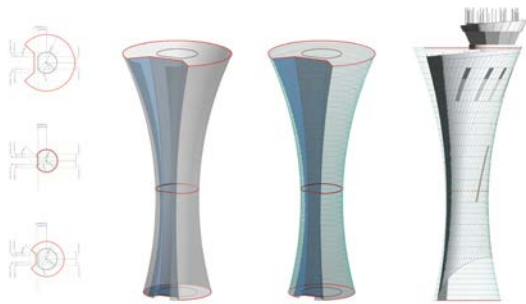
Online Learning: N/A

Tutorial activities: Parity session hand in at Wednesday week 1 prior to 1pm at DD unit.  
 Parity session set up for Year 1 students from 9 – 10pm;  
 Parity session for tutors with compulsory students attendance between 10 – 1pm;  
 Take down of work Year 1 from 1 pm onwards.  
 Parity session set up for Year 2 students from 1 – 3pm;  
 Parity session for tutors with compulsory students attendance between 3 – 5pm;  
 Take down of work Year 2 from 5 pm onwards, followed by drinks.

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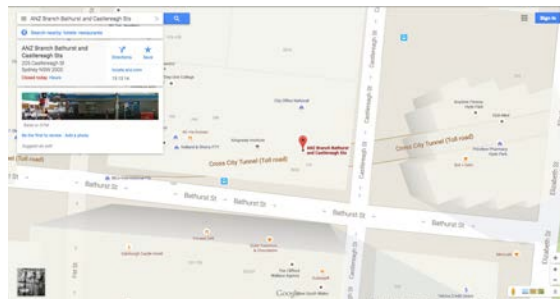
## 6. Design Project

*Learning stage 1: Form scripting: Building a parametric tower using parametric tools*



*Image Learning stage 1 Form scripting: Building a parametric tower using Dynamo and Revit © <http://cdn.archinect.net/images/1200x/ar/ar1m8czrf0hp61h7.jpg>*

The first project is the development of a high-rise tower. In this exercise we do not concern ourselves too much with the interior and program of the tower, all we need to concentrate is that the envelope response to site by using plug-ins such as Grasshopper's Kangaroo, Lunchbox or similar. The site for the tower is situated in Sydney's CBD on the corner Castlereagh and Bathurst Street (site of the ANZ bank branch).



*Image Learning stage 1: Site at the corner of Castlereagh and Bathurst Street.*



*Image Learning stage 1 Site view from Google*

For the purpose of the exercise there are no constraints and the total site has the dimension of 40 x 40 meters. Maximum height of the tower is 70 meters. Floor to ceiling height is 3.30m and the concrete floor is 0.25m thick. There is no consideration for entrance area, but the lobby on the ground floor has the double floor to ceiling height.

The exercise is a **group exercise with four students per group**, where each group of four produce a parametric model with four different building shapes. Hand in is in Week 2 / Day 3 in the morning session.

*Learning stage 2: Developing a parametric façade system*



*Image Learning stage 2 Developing a parametric façade system for building envelop © [https://kirhammond.files.wordpress.com/2015/05/03-ansicht-stockwerk\\_1.jpg](https://kirhammond.files.wordpress.com/2015/05/03-ansicht-stockwerk_1.jpg)*

Students in the next learning step are asked to develop a façade system / window-panelling system for the best tower study of the four tower studies the group has produced. Each student will develop their own façade system using the tools introduced in this class. Again the façade system should respond to parameters such as internal heat, view, internal solar gain, etc.

The exercise is a **group exercise with two students per group**, where each group of two produce a parametric model with two different facade types (i.e altering the importance of solar gain vs. heat gain. Hand in is in Week 4 / Day 5 in the morning session.



*Learning stage 3: Output of façade into a Revit environment*

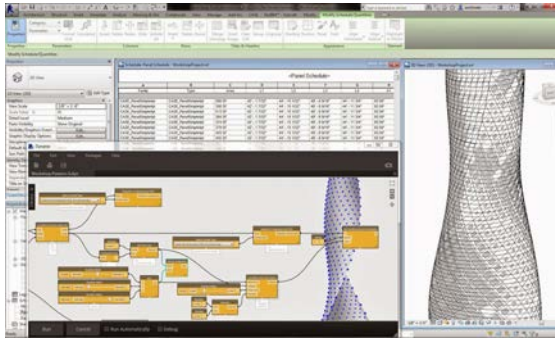


Image Learning stage 3 Output façade into Revit ©  
<http://inthe fold.autodesk.com/.a/6a017c3334c51a970b01a511d4e0f8970c-pi>

As the third part of the project students are required to feed their parametric model (tower shape and façade panelling system) into Revit and maximise the use of Revit.

The exercise is an **individual exercise**, where each student produces the outcome of the investigation in Revit. Hand in is in Week 5 / Day 6 in the afternoon session.

## 7. Assessment

Assessment task	Weight	Learning outcomes assessed	Graduate attributes assessed	Due date
1. Assignment / Learning Step 1 (Building shape)	20%	1,2,3,4	H	W 2 / Day 3
1. Assignment / Learning Step 1 (Building shape)	30%	1,2,3,4	H	W 4 / Day 5
1. Assignment / Learning Step 1 (Building shape)	50%	1,2,3,4	H	W 5 / Day 6
4. "Best of Semester" Parity and Moodle Submission	*)	1,2,3,4	H / A / D / I	W 15

\*) No weight but overall mark will be reduced by 10% if not handed in on time

Assignment 1:	
<b>Name:</b>	Learning stage 1: Form scripting: Building a parametric tower using parametric tools
<b>Description:</b>	<p>The first project is the development of a high-rise tower. In this exercise we do not concern ourselves too much with the interior and program of the tower, all we need to concentrate is that the envelope response to site by using plug-ins such as Grasshopper's Kangaroo, Lunchbox or similar. The site for the tower is situated in Sydney's CBD on the corner Castlereagh and Bathurst Street (site of the ANZ bank branch). For the purpose of the exercise there are no constraints and the total site has the dimension of 40 x 40 meters. Maximum height of the tower is 70 meters. Floor to ceiling height is 3.30m and the concrete floor is 0.25m thick. There is no consideration for entrance area, but the lobby on the ground floor has the double floor to ceiling height.</p> <p>The exercise is a group exercise with four students per group, where each group of four produce a parametric model with four different building shapes. Hand in is in Week 2 / Day 3 in the morning session.</p>
<b>Name:</b>	Learning stage 2: Developing a parametric façade system
<b>Description:</b>	<p>Students in the next learning step are asked to develop a façade system / window-panelling system for the best tower study of the four tower studies the group has produced. Each student will develop their own façade system using the tools introduced in this class. Again the façade system should respond to parameters such as internal heat, view, internal solar gain, etc.</p> <p>The exercise is a <b>group exercise with two students per group</b>, where each group of two produce a parametric model with two different facade types (i.e altering the importance of solar gain vs. heat gain. Hand in is in</p>

	Week 4 / Day 5 in the morning session.
<b>Name:</b>	Learning stage 3: Output of façade into a Revit environment
<b>Description:</b>	<p>As the third part of the project students are required to feed their parametric model (tower shape and façade panelling system) into Revit and maximise the use of Revit.</p> <p>The exercise is an <b>individual exercise</b>, where each student produces the outcome of the investigation in Revit. Hand in is in Week 5 / Day 6 in the afternoon session.</p>

## 8. Assessment criteria and standards

<i>Assignment 1 / Learning Stage 1 Submission Assessment Marking Sheet (20% of total mark)</i>									
<b>CODE2270 Design Information Management</b>									
<b>Project 1: Form scripting: Building a parametric tower using parametric tools</b>									
<b>STUDENT NAME:</b>									
<b>STUDENT #:</b>									
<b>#</b>	<b>Assessment Criteria:</b>	<b>%</b>	<b>US</b>	<b>S</b>	<b>G</b>	<b>VG</b>	<b>O</b>	<b>/ 100</b>	
1	TBC								
2	TBC								
3	TBC								
4	TBC								
5	TBC								
6	TBC								
7	TBC								
8	Relevance and effectiveness of verbal presentation								
9	Evaluates improvement of work using course concepts								
<b>OVERALL MARK out of 100</b>									
<b>FEEDBACK:</b>									

Assignment 1 / Learning Stage 1: Assessment Criteria	
<p><b>Unsatisfactory</b></p> <p>Fail 0-49</p>	<ul style="list-style-type: none"> <li>• Research statement has no coherence, misses the point.</li> <li>• Poor quality and Inappropriate selection of hand in materials</li> <li>• No coherence and poor quality of hand in detailing</li> <li>• No coherence and poor quality of hand in compositions</li> <li>• Inappropriate methods of applying software and machines</li> <li>• Unsophisticated use of programs</li> <li>• Poor quality and inappropriate presentation of model and images</li> <li>• Irrelevant and or inappropriate presentation of skills</li> <li>• Unable to evaluate work using course concepts</li> </ul>
<p><b>Satisfactory</b></p> <p>Pass 50-64</p>	<ul style="list-style-type: none"> <li>• Research statement lists points without making connections.</li> <li>• Low quality and ineffective selection of hand in materials</li> <li>• Lacks coherence and Quality of hand in detailing</li> <li>• Lacks coherence and quality of hand in compositions</li> <li>• Ineffective methods of applying software and machines</li> <li>• Minimal adaption of required programs to sophisticated level.</li> <li>• Low quality and minimally effective presentation of model and images.</li> <li>• Low quality and minimally presentation of skills.</li> <li>• Minimal evaluation of work using course concepts.</li> </ul>
<p><b>Good</b></p> <p>Credit 65-74</p>	<ul style="list-style-type: none"> <li>• Research statement makes connections between points but does not create an overall scope or argument of the nature data set.</li> <li>• Somewhat appropriate and substantiated hand in benchmarking</li> <li>• Somewhat coherent and quality of hand in detailing</li> <li>• Somewhat coherence and quality of hand in compositions</li> <li>• Somewhat effective methods of applying software and machines</li> <li>• Somewhat sophisticated and independent adaption of programs</li> <li>• Good quality and somewhat effective presentation of model and images</li> <li>• Somewhat relevant and or partially effective presentation of skills</li> <li>• Good evaluation of improvement to work using course concepts</li> </ul>
<p><b>Very Good</b></p> <p>Distinction 75-84</p>	<ul style="list-style-type: none"> <li>• Synthesises points into concise and thorough research statement</li> <li>• Appropriate and substantiated hand in benchmarking</li> <li>• Coherent and high quality hand in detailing</li> <li>• Coherent and high quality hand in compositions</li> <li>• Adaptation of effective methods of applying software and machines</li> <li>• Sophisticated and independent adaption of programs</li> <li>• Quality and effective presentation of model and images</li> <li>• Relevant and effective presentation of skills</li> <li>• Evaluates improvement of work using course concepts</li> </ul>
<p><b>Outstanding</b></p> <p>High Distinction 85-100</p>	<ul style="list-style-type: none"> <li>• Highly coherent. Synthesises points into concise and thorough research statement. Beyond expectation.</li> <li>• Highly appropriate and substantiated hand in benchmarking</li> <li>• Highly coherent and highest standard of hand in detailing</li> <li>• Highly coherent and highest standard of hand in compositions</li> <li>• Highly effective methods of applying software and machines</li> <li>• Highly sophisticated and independent adaption of programs</li> <li>• Highest quality and highly effective presentation of models and images</li> <li>• Highly relevance and effective presentation of skills</li> <li>• Rigorously evaluates improvement of work using course concepts</li> </ul>

*Assignment 1 / Learning Stage 2 Submission Assessment Marking Sheet (30% of total mark)*

**CODE2270 Design Information Management**

**Project 2: Developing a parametric façade system**

**STUDENT  
NAME:**

**STUDENT #:**

#	Assessment Criteria:	%	US	S	G	VG	O	/ 100
1	TBC							
2	TBC							
3	TBC							
4	TBC							
5	TBC							
6	TBC							
7	TBC							
8	Relevance and effectiveness of verbal presentation							
9	Evaluates improvement of work using course concepts							

**OVERALL MARK out of 100**

**FEEDBACK**

Assignment 1 / Learning Stage 2: Assessment Criteria	
<p><b>Unsatisfactory</b></p> <p>Fail 0-49</p>	<ul style="list-style-type: none"> <li>• Research statement has no coherence, misses the point.</li> <li>• Poor quality and Inappropriate selection of hand in materials</li> <li>• No coherence and poor quality of hand in detailing</li> <li>• No coherence and poor quality of hand in compositions</li> <li>• Inappropriate methods of applying software and machines</li> <li>• Unsophisticated use of programs</li> <li>• Poor quality and inappropriate presentation of model and images</li> <li>• Irrelevant and or inappropriate presentation of skills</li> <li>• Unable to evaluate work using course concepts</li> </ul>
<p><b>Satisfactory</b></p> <p>Pass 50-64</p>	<ul style="list-style-type: none"> <li>• Research statement lists points without making connections.</li> <li>• Low quality and ineffective selection of hand in materials</li> <li>• Lacks coherence and Quality of hand in detailing</li> <li>• Lacks coherence and quality of hand in compositions</li> <li>• Ineffective methods of applying software and machines</li> <li>• Minimal adaption of required programs to sophisticated level.</li> <li>• Low quality and minimally effective presentation of model and images.</li> <li>• Low quality and minimally presentation of skills.</li> <li>• Minimal evaluation of work using course concepts.</li> </ul>
<p><b>Good</b></p> <p>Credit 65-74</p>	<ul style="list-style-type: none"> <li>• Research statement makes connections between points but does not create an overall scope or argument of the nature data set.</li> <li>• Somewhat appropriate and substantiated hand in benchmarking</li> <li>• Somewhat coherent and quality of hand in detailing</li> <li>• Somewhat coherence and quality of hand in compositions</li> <li>• Somewhat effective methods of applying software and machines</li> <li>• Somewhat sophisticated and independent adaption of programs</li> <li>• Good quality and somewhat effective presentation of model and images</li> <li>• Somewhat relevant and or partially effective presentation of skills</li> <li>• Good evaluation of improvement to work using course concepts</li> </ul>
<p><b>Very Good</b></p> <p>Distinction 75-84</p>	<ul style="list-style-type: none"> <li>• Synthesises points into concise and thorough research statement</li> <li>• Appropriate and substantiated hand in benchmarking</li> <li>• Coherent and high quality hand in detailing</li> <li>• Coherent and high quality hand in compositions</li> <li>• Adaptation of effective methods of applying software and machines</li> <li>• Sophisticated and independent adaption of programs</li> <li>• Quality and effective presentation of model and images</li> <li>• Relevant and effective presentation of skills</li> <li>• Evaluates improvement of work using course concepts</li> </ul>
<p><b>Outstanding</b></p> <p>High Distinction 85-100</p>	<ul style="list-style-type: none"> <li>• Highly coherent. Synthesises points into concise and thorough research statement. Beyond expectation.</li> <li>• Highly appropriate and substantiated hand in benchmarking</li> <li>• Highly coherent and highest standard of hand in detailing</li> <li>• Highly coherent and highest standard of hand in compositions</li> <li>• Highly effective methods of applying software and machines</li> <li>• Highly sophisticated and independent adaption of programs</li> <li>• Highest quality and highly effective presentation of models and images</li> <li>• Highly relevance and effective presentation of skills</li> <li>• Rigorously evaluates improvement of work using course concepts</li> </ul>

*Assignment 1 / Learning Stage 3 Submission Assessment Marking Sheet (50% of total mark)*

**CODE2270 Design Information Management**

**Project 3: Output of façade into a Revit environment**

**STUDENT  
NAME :**

**STUDENT #:**

#	Assessment Criteria:	%	US	S	G	VG	O	/ 100
1	TBC							
2	TBC							
3	TBC							
4	TBC							
5	TBC							
6	TBC							
7	TBC							
8	Relevance and effectiveness of verbal presentation							
9	Evaluates improvement of work using course concepts							

**OVERALL MARK out of 100**

**FEEDBACK:**



Assignment 1 / Learning Stage 3: Assessment Criteria	
<b>Unsatisfactory</b> Fail 0-49	<ul style="list-style-type: none"> <li>• Research statement has no coherence, misses the point.</li> <li>• Poor quality and Inappropriate selection of hand in materials</li> <li>• No coherence and poor quality of hand in detailing</li> <li>• No coherence and poor quality of hand in compositions</li> <li>• Inappropriate methods of applying software and machines</li> <li>• Unsophisticated use of programs</li> <li>• Poor quality and inappropriate presentation of model and images</li> <li>• Irrelevant and or inappropriate presentation of skills</li> <li>• Unable to evaluate work using course concepts</li> </ul>
<b>Satisfactory</b> Pass 50-64	<ul style="list-style-type: none"> <li>• Research statement lists points without making connections.</li> <li>• Low quality and ineffective selection of hand in materials</li> <li>• Lacks coherence and Quality of hand in detailing</li> <li>• Lacks coherence and quality of hand in compositions</li> <li>• Ineffective methods of applying software and machines</li> <li>• Minimal adaption of required programs to sophisticated level.</li> <li>• Low quality and minimally effective presentation of model and images.</li> <li>• Low quality and minimally presentation of skills.</li> <li>• Minimal evaluation of work using course concepts.</li> </ul>
<b>Good</b> Credit 65-74	<ul style="list-style-type: none"> <li>• Research statement makes connections between points but does not create an overall scope or argument of the nature data set.</li> <li>• Somewhat appropriate and substantiated hand in benchmarking</li> <li>• Somewhat coherent and quality of hand in detailing</li> <li>• Somewhat coherence and quality of hand in compositions</li> <li>• Somewhat effective methods of applying software and machines</li> <li>• Somewhat sophisticated and independent adaption of programs</li> <li>• Good quality and somewhat effective presentation of model and images</li> <li>• Somewhat relevant and or partially effective presentation of skills</li> <li>• Good evaluation of improvement to work using course concepts</li> </ul>
<b>Very Good</b> Distinction 75-84	<ul style="list-style-type: none"> <li>• Synthesises points into concise and thorough research statement</li> <li>• Appropriate and substantiated hand in benchmarking</li> <li>• Coherent and high quality hand in detailing</li> <li>• Coherent and high quality hand in compositions</li> <li>• Adaptation of effective methods of applying software and machines</li> <li>• Sophisticated and independent adaption of programs</li> <li>• Quality and effective presentation of model and images</li> <li>• Relevant and effective presentation of skills</li> <li>• Evaluates improvement of work using course concepts</li> </ul>
<b>Outstanding</b> High Distinction 85-100	<ul style="list-style-type: none"> <li>• Highly coherent. Synthesises points into concise and thorough research statement. Beyond expectation.</li> <li>• Highly appropriate and substantiated hand in benchmarking</li> <li>• Highly coherent and highest standard of hand in detailing</li> <li>• Highly coherent and highest standard of hand in compositions</li> <li>• Highly effective methods of applying software and machines</li> <li>• Highly sophisticated and independent adaption of programs</li> <li>• Highest quality and highly effective presentation of models and images</li> <li>• Highly relevance and effective presentation of skills</li> <li>• Rigorously evaluates improvement of work using course concepts</li> </ul>

## 9. Course assessment feedback strategy

Students will gain information about their process in class via 3 basic levels.

Firstly, The goals of the class are clearly defined in the course outline and discussed at the beginning of each Assignment and the learning steps within the assignment in the weekly lecture. Here students will understand how their performance relates to the broad goals of the course.

Secondly, students will get feedback in each class (during the three tutorial hours) upon their performance. Tutors will help students in one-to-one sessions to discuss and analyse how successful they have been at addressing the task and its criteria of each assignment and the learning steps within the assignment.

Thirdly, students will get feedback in each class (during the three tutorial hours) in how their response to the assignment and the learning steps within the assignment could be improved. Tutors will help students in one-to-one sessions to discuss and analyse how improvements could be made and which resources students could consult for an improvement.

## 10. Resources

### 10.1 Readings, textbooks and UNSW Library resources

#### Essential readings

Following books and texts are part of this class and were used for developing the lectures and are their content is part of questions asked in the exam in Week 15. Items to be purchased by students are marked with an (\*), items that are at the UNSW library are marked with an (~) and online items are marked with an (^)

**Davis, D. & Peters, B.** (2013, Mar/Apr). Design Eco-system. In *Architectural Design: Computational Works*, pp.124-131. London: John Wiley & Sons.

**Hummingbird Grasshopper plugin:**  
<http://www.food4rhino.com/project/hummingbird?ufh>

**Wintour, P. (2015).** Chameleon. Avail.:  
<http://parametricmonkey.com/2014/11/30/chameleon/>

**Wintour, P. (2015).** Hummingbird. Avail.:  
<http://parametricmonkey.com/2015/06/24/hummingbird/>

**Alhadidi, S; Kimm, G.** (2014) Computational Design Strategies in Revit – Building complex form using Dynamo; Hand out at the 2014 Revit Technology Conference Australasia.

**Edwards, S.** (2013, Mar/Apr). Embedding Intelligence. In *Architectural Design: Computational Works*, pp.104-109. London: John Wiley & Sons.

**Elefront Grasshopper plugin** Available:  
<http://www.food4rhino.com/project/elefront?ufh>

**Alhadidi, S; Kimm, G.** (2014) Form Scripting – Building a parametric tower using Dynamo and Revit; Hand out at the 2014 Revit Technology Conference Australasia.

**Alhadidi, S; Kimm, G.** (2014) Form and Code: Kicking off essential coding skills in Dynamo with Python. Hand out at the 2014 Revit Technology Conference Australasia.

**The Dynamo Primer.** Available:  
<http://dynamoprimer.com/>

**Miller, N. (2015).** Ryhnamo: Free, as in 'Free Speech'...Not 'Free Beer'. Available:  
<http://www.case-inc.com/blog/what-is-ryhnamo>

**Wintour, P. (2015)** Available:  
<http://parametricmonkey.com/2015/05/02/ryhnamo/>

### 10.2 Online resources

#### Learning resources

See above for online resources as well as go to Food for Rhino homepage for further information.

#### Social network resources

UNSW CoDe has a Twitter, Instagram, Facebook and Youtube account and all lecturers are using these accounts to share

information with their students. Thus please join and follow us on @UNSWCoDe (for all above listed networks) we will use “UNSW” + “CODE” + the course number as a hash tag to help finding the relevant info (for this course #UNSWCODE2270). Feel also free to post images of your design on social media using the hash tag.

#### Video resources

Most lectures given in this course have videos embedded as part to illustrate what projects are and look like as well as give background knowledge to fabrication methods. In general I found these videos on the internet by searching either in Google or Youtube via the use of a search term. Naturally the lecture shows only one video out of potentially dozen of video clips. Thus search the internet for good clips and share them using social networks and use “UNSW” + “CODE” + the course number as a hash tag to help finding the relevant info (for this course #UNSWCODE2270).

#### Presentation resources

Final presentation poster template to be used for the final presentation exhibition in week 15 can be downloaded at the course website. It is a requirement to use this template with the fonts and logos embedded in the template. Class requirements.

#### Studio class requirements

It is expected that you will bring your laptop with the below mentioned software packages to each class. Not bringing a laptop means we cannot look, comment and help you with your work, as we do not run this class in a computer classroom. Using your friend's laptop means that he or she cannot work in the time given in class and thus is not an option either.

## 11. Expectations

The lectures and the tutorials are an integrated part of this class. Missing out on lectures will have the consequence that you will miss out on seeing and hearing about projects and concepts by industry.

If you experience and difficulties please refer to Special Consideration, Late Work and other policies in the BE Policy Outline at:

[https://www.be.unsw.edu.au/sites/default/files/upload/pdf/currentstudents/LearningTeaching/BE\\_AcademicPolicyOutline2014.pdf](https://www.be.unsw.edu.au/sites/default/files/upload/pdf/currentstudents/LearningTeaching/BE_AcademicPolicyOutline2014.pdf)

## 12. Learning experience and teaching strategies

The course is part of the fourth semester practice orientated teaching trajectory ‘Calibrating’ combining Stream 6: Optimization and Decision Support and Stream 7: BIM Modelling, its situated in the ‘Bridging Level’ in the student specialisation journey.

This is the third of three intensive courses running for five weeks in Year 2 Semester 2. The first course CODE2250 – Advanced Digital Fabrication in the semester weeks 1 – 5; the second course CODE2230 – Urban Interaction Design in semester weeks 6 – 10; and the third course CODE2270 – Design Information Management in semester weeks 11 – 15.

The teaching strategy has students inspired meeting with their tutor weekly (Week 6 – 10) for 7 hours per week / 8 hours in the final week with final presentation (with 7 days a` 5 hour teaching over the five week period, 1 hour per day as a lecture and the remaining 4 for tutorials, thus a total of 36 hours over the duration of the course). Our strategy of teaching is based on the knowledge that effective learning occurs when students are actively engaged in the learning process, and are supported by a climate of inquiry to take up challenges offered to them.

Lectures in this course aim to provide broad conceptual knowledge, allowing students to understand and appreciate the principles that underlie the course content. Self-directed research aim to develop independent scholarship. Studio classes provide more active, participatory learning, where high levels of peer and tutor interaction will encourage students to develop interpersonal, professional, and

cognitive skills. This course also enables students to develop particular communications skills that will enhance their set of professional skills and competencies. It reflects a view that professional practice within the design-computing field will require advanced levels of communication to support its ongoing development and innovation.

This course takes a blended learning approach, where face to face learning and teaching is supplemented with the use of information & communication technologies. The inclusion of information & communication technologies as a key component in the course delivery aims to provide extended dialogue between students and academic staff, thus creating a community of learners.

It is essential that student takes responsibility for their own learning, and that we facilitate that learning by establishing a supportive, non-threatening, inclusive and stimulating environment that encourages students to seek a deeper learning. When students take responsibility for their own learning, they are more likely to develop higher-order thinking skills such as analysis, synthesis, and evaluation.

### 13. Course aims

**Course Aim 1:** The course will enable students to understand recent developments in parametric Building Information Model technology and are able to translate this knowledge into their own professional background.

**Course Aim 2:** Further students will gain first insides into computation and scripting using Dynamo to generate a workflow form a parametric model to an information model.

### 14. Learning outcomes

At the successful conclusion of this course the student will be able to:

- 1: Develop basic skills in Dynamo
- 2: Understand the ideas of a design information management system.

- 3: Have deepened their skills in Grasshopper and associated programs.


### 15. Parity Session

As part of creating a community and culture of showcasing work, students will be required to submit a selection of their best images (plans, renderings, model pictures, screenshots, etc.) from their final presentation as well as work in the progress during semester. This will also help in marking and feedback. The online submission is an essential requirement. Failing to do so will give you a (-) 10% of your overall mark. The collection of student works will also be employed for marketing purposes. As you know, we are a very young discipline and we want to share what you have designed and produced during the semester. The submission platform will be within Moodle. The following defines the expectations of what to submit.

For Moodle Submission:

- Five indicative images that best represent your work / designs during the semester.
- For landscape image (approx. 2480 x 3508 pixels @ 300 dpi) for portrait image (approx. 3508 x 2480 pixels @ 300 dpi)
- For each of the five images please provide five keywords in order to find images later.
- Upload images as explained in 4. Course Website.
- Deadline is day before parity session 5pm. (Moodle page will close).

Images for the Week 15 parity session / Moodle submission can be uploaded to the Moodle Gallery by:

- From the course home page, click the media collection link.
- In the collection page, click the Edit icon  for the gallery to which you want to begin adding items.
- On the gallery's home page, click Add an item.

- On the resulting page, click Expand all, then in the General section:
- Enter a Caption for the item.
- Add any Description necessary.
- Drag and drop a Content file, or click Choose a file and browse for a file.
- In the Advanced section, complete all the relevant fields.
- Click Save changes. The item displays with its thumbnail and caption on the galleries page.

For the Week 15 parity session:

- Create a poster with the five images you have uploaded onto Moodle. The poster will use the layout (parity layout template that can be downloaded on the Moodle page for each course) and has to be printed on white 3mm core flute.
- Pin up of poster with dates is outlined in Week 15 lecture / tutorial activity.
- The layout has either a portrait or a landscape format and students can use either one or the other or a mix of both to represent the four courses they have done in each semester.
- The size of the template is the same size as the black exhibition boxes UNSW uses for their exhibitions and you showed fix the core flute poster to the black boxes using i.e. adhesive tape.
- Students have each six of these black boxes to use four of them to attach their core flute posters and the remaining two to showcase any models or other physical outcome of the semester.
- Again you have to curate your work and choose the best to re-present your work.

## 16. Course Graduate Attribute

CODE2270 course Graduate attributes	Learning outcome	Activity/Assessment
H / Scholars who are digitally literate	1,2,3,4	Develop basic skills in Dynamo
A / Scholars who are understanding of their discipline in its interdisciplinary context	3,4	Understand the ideas of a design information management system.
D / Scholars who are able to apply their knowledge and skills to solving problems	1,2,3,4	Have deepened their skills in Grasshopper and associated programs.
I / Leaders who are enterprising, innovative and creative	1,2,3	Have deepened their skills in Grasshopper and associated programs.

## 17. Built Environment and UNSW Academic Policies

The **Built Environment Protocols and UNSW Policies & Procedures** document supplements this course outline providing detail on academic policies and other administrative matters. It is your duty as a student to familiarise yourself with the expectations as not adhering to them will be considered as academic misconduct. Ignorance of the rules is not an acceptable defence.

The document can be found in your Moodle course as well as:

<http://www.be.unsw.edu.au/student-intranet/academic-policies>

It covers:

- Built Environment Student Attendance Requirements
- Units of Credit (UOC) and Student Workload
- Course and Teaching Evaluation and Improvement (CATEI)
- Academic Honesty and Plagiarism
- Late Submissions Penalties
- Special Consideration - Illness & Misadventure
- Extension of Deadlines
- Learning Support Services
- Occupational Health & Safety