Acting Head of Department  
Mr. Daniel Wasi, Master of Project Management (QUT), Bachelor Arch & Bldg (UNITECH), Member PNGIOB.

Deputy Head of Department:  
Professor & Director of Architecture Courses:  
Dr. Cletus K. Gonduan, PhD (AITA), Masters of Infrastructure Planning (University of Stuttgart, Germany), PG Cert. MLF Eng. US ETI, (Washington), PGDipl. T&CP (Sydney Uni), Bachelor of Arch & Bldg (UNITECH), PNGIA, FPNGIA.

Senior Lecturer:  
Dr. Andrew C. Sariman, PhD (AITA), MSc in Construction Project Management (Heriot-Watt University, Edinburgh, UK), Postgraduate Diploma in Building Science (Sydney Uni), Bachelor of Arch and Bldg (UNITECH), Member PNGIA.

Director of Building Course:  
Mr. Jerry J. Walliah, Master of Management (UNRE), Bachelor of Bldg (UNITECH), Diploma in Building, Member PNGIOB.

Lecturers:  
Mr. Ali Bou, Bachelor of Architecture (UNITECH), Member PNGIA, Fellow PNGIA.  
Mr. Mathew Pomoso, Bachelor of Building (UNITECH), Post Graduate Diploma in Education (Goroka Uni), Diploma in Building (UNITECH), Member (PNGIOB)  
Mrs Magdalene Kulwah, Masters of Project Management (Curtins Uni), Bachelor of Building (UNITECH), Diploma in Building (UNITECH), Member PNGIOB.

Architectural Heritage Centre of Papua New Guinea

Principal Technical Officer:  
Mrs. Shirley Owen, BA in Applied Science (Curtin University, Perth, Australia), Postgraduate Diploma in Library Science (University of Canberra, Australia).

Technical Staff:  

Mr. Rodney Wahune, Tradesman Carpenter (Ok Tedi Mining Ltd.), Diploma in Building (POLYTECH)  
Mr. Martin Kundi, Certificate in Carpentry Joinery (St. Joseph’s Technical School, Lae)  

Administrative Officer:  
Ms. Veronica Michael, Certificate in Library & Information Science (ADCOL), Certificate in Information Technology, Certificate in Office Management, Certificate in Debt Recovery (UNITECH)  

Secretaries:  
Mrs. Anita Kami, Certificate in Secretarial Studies (POLYTECH)  
Ms. Atakia Karimu, Certificate in Secretarial Studies (POLYTECH)  

DEPARTMENT OF ARCHITECTURE AND BUILDING

GENERAL INFORMATION

The mission of the Department of Architecture and Building at the Papua New Guinea University of Technology is to serve as the regional centre for:

- Training qualified architects and building managers with an emphasis on developing design skills in architecture, problem solving design skills in building, and a commitment to the concepts of professionalism and intellectual endeavour.
- Conducting research and development work to promote environmentally, culturally and economically sustainable forms of tropical architecture and building, conservation of architectural heritages, beneficial utilisation of local natural resources, and advance the creative, technical and entrepreneurial talents of indigenous architects and building managers.

The educational philosophy balances academic with professional learning and the Department's staff training and localisation policy is designed to reinforce this philosophy by providing opportunities for staff to develop their professional skills in tandem with their academic interests.

Research priorities are closely aligned with the Department's mission with a major effort being centred on the preparation of a comprehensive survey of traditional architecture under the auspices...
of The Papua New Guinea Architectural Heritage Centre. Other research projects focus on the development and promotion of contemporary architectural forms in response to local cultures and climatic conditions, locally produced building materials, grass roots tourist accommodation, management procedures for national building contractors, and investigations of appropriate housing solutions for the poor.

Consulting work is undertaken by staff to realise the Department's mission and educational aims in the professional world by enabling staff to engage in consulting work through the University's consulting arm Unitech Development & Consultancy Ltd. and its subsidiary UDC Architects Ltd. The Department runs undergraduate courses in architecture and building and a post-graduate course in physical planning, the latter in conjunction with the University of Papua New Guinea.

Tuition in all courses is by means of lectures and studios and examination is by continuous assessment or written examination or a combination of both. Entry into the undergraduate courses requires:

- a PNG Secondary School Certificate with C passes or higher in English, Physics, and Maths A [or, alternatively, a B pass or higher in Maths B]¹; or
- equivalent overseas matriculation certificate; or
- a Diploma in Building, Architectural Drafting, or Civil Engineering for the Lae Polytechnic Institution or equivalent.

**STRUCTURE OF COURSES**

Entry into both architecture and building courses is through a common first semester:

**BACHELOR OF ARCHITECTURE AND BACHELOR OF BUILDING**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Weekly Hours</th>
<th>(Credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1 First Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR101</td>
<td>Introduction to Architecture and Building</td>
<td>8</td>
<td>(18)</td>
</tr>
</tbody>
</table>

**BACHELOR OF ARCHITECTURE (BARC)**

Towards the end of the first semester of the first year, students may opt, with the guidance and approval of the Department, to pursue an architectural vocation and, after a further four and a half years study, graduate with a Bachelor of Architecture.

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Weekly Hours</th>
<th>(Credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2 First Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR201</td>
<td>Architectural Design III</td>
<td>8</td>
<td>(18)</td>
</tr>
<tr>
<td>AR262</td>
<td>Modern Architecture</td>
<td>3</td>
<td>(9)</td>
</tr>
<tr>
<td>AR232</td>
<td>Building Systems III</td>
<td>4</td>
<td>(18)</td>
</tr>
<tr>
<td>AR242</td>
<td>Structures II</td>
<td>2</td>
<td>(9)</td>
</tr>
<tr>
<td>AR282</td>
<td>Computer Applications</td>
<td>2</td>
<td>(6)</td>
</tr>
<tr>
<td>Year 2 Second Semester</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR301</td>
<td>Architectural Design IV</td>
<td>8</td>
<td>(18)</td>
</tr>
<tr>
<td>AR321</td>
<td>Architectural Presentation</td>
<td>2</td>
<td>(6)</td>
</tr>
<tr>
<td>AR331</td>
<td>Building Systems IV</td>
<td>4</td>
<td>(18)</td>
</tr>
<tr>
<td>AR341</td>
<td>Structures III</td>
<td>2</td>
<td>(9)</td>
</tr>
<tr>
<td>AR361</td>
<td>Theory of Architecture</td>
<td>2</td>
<td>(6)</td>
</tr>
</tbody>
</table>

¹Note: for architecture, a high pass in Expressive Arts may substitute for an inadequate grade in one of the required Grade 12 subjects. Entry into the postgraduate course requires an appropriate first degree and professional experience.
BACHELOR OF BUILDING (BBLD)

Alternatively, towards the end of the first semester of the first year, students may opt, with the guidance and approval of the Department, to pursue a building vocation and, after a further four and a half years study, graduate with a Bachelor of Building.

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Weekly Hours</th>
<th>(Credits)</th>
</tr>
</thead>
</table>
| Year 1 Second Semester
| LA122 | English Composition II          | 2            | (9)       |
| BL102 | Quantities & Estimating I       | 4            | (12)      |
| AR132 | Building Systems                | 4            | (18)      |
| BL112 | Building Technology Studio I    | 4            | (12)      |
| BL162 | Construction Surveying I        | 3            | (5)       |
|       |                                 | **17**       | **(56)**  |
| Year 2 First Semester
| AR231 | Building Systems II             | 4            | (18)      |
| AR241 | Structures I                    | 2            | (9)       |
| BL211 | Building Technology Studio II   | 6            | (16)      |
| BL221 | Construction Management I       | 3            | (12)      |
| BL241 | Building Economics I            | 2            | (9)       |
| BL281 | Building Law                    | 2            | (9)       |
|       |                                 | **19**       | **(73)**  |
| Year 3 First Semester
| AR331 | Building Systems IV             | 4            | (18)      |
| AR341 | Structures III                  | 2            | (9)       |
| BL301 | Quantities & Estimating III     | 4            | (14)      |
| BL311 | Building Technology Studio III  | 4            | (9)       |
| BL321 | Construction Management III     | 4            | (18)      |
|       |                                 | **18**       | **(68)**  |
| Year 3 Second Semester
| AR342 | Structures IV                   | 2            | (9)       |
| AR382 | Computer Aided Design           | 5            | (16)      |
| BL322 | Construction Management IV      | 3            | (12)      |
| BL332 | Building Systems V              | 4            | (18)      |
| BL342 | Building Economics II           | 2            | (9)       |
|       |                                 | **19**       | **(73)**  |
|       | BL362 | Construction Surveying II       | 3            | (9)       |
|       |                                 | **19**       | **(73)**  |

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Weekly Hours</th>
<th>(Credits)</th>
</tr>
</thead>
</table>
| Year 4 First Semester
| AR401 | Architectural Design VI        | 8            | (18)      |
| AR411 | Architectural Design Theory    | 2            | (6)       |
| AR451 | Urban Development              | 2            | (6)       |
| AR491 | Special Study I                | 3            | (9)       |
| various External Elective | 2           | (12)      |
|       |                                 | **17**       | **(51)**  |
| Year 4 Second Semester
| AR402 | Architectural Design VII       | 8            | (18)      |
| AR432 | Site Design                    | 2            | (6)       |
| AR462 | Urban Design Theory            | 2            | (6)       |
| AR492 | Special Study II               | 3            | (9)       |
| various External Elective | 2           | (12)      |
|       |                                 | **17**       | **(51)**  |
| Year 5 First Semester
| AR402 | Design Thesis                  | 9            | (20)      |
| AR561 | Urban Design I                 | 2            | (6)       |
| AR591 | Research Project               | 2            | (6)       |
| BL581 | Professional Practice          | 4            | (18)      |
|       |                                 | **16**       | **(48)**  |
| Year 5 Second Semester
| AR501 | Architectural Design VIII      | 8            | (18)      |
| AR561 | Urban Design I                 | 2            | (6)       |
| AR591 | Research Project               | 2            | (6)       |
| BL532 | Project Management             | 3            | (12)      |
| various External Elective | 3           | (12)      |
|       |                                 | **17**       | **(50)**  |

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Weekly Hours</th>
<th>(Credits)</th>
</tr>
</thead>
</table>
| Year 4 First Semester
| BL471 | Industrial Training I          | 60           |           |
| Year 4 Second Semester
| BL472 | Industrial Training II         | 60           |           |
| Year 5 First Semester
| AR591 | Research Project               | 2            | (3)       |
| BL501 | Quantities and Estimating IV   | 5            | (18)      |
|       |                                 | **19**       | **(73)**  |
SUBJECTS TAUGHT BY THE DEPARTMENT:

Subjects marked with a * are common to both courses.
BL231 Building Construction for Land Managers I
BL232 Building Construction for Land Managers II
BL242 Building Economics II*
BL521 Construction Management IV

ELECTIVE SUBJECTS:
AR420 The Art of Composition
AR430 Photographic Composition

RECOMMENDED ELECTIVE SUBJECTS TAUGHT BY OTHER DEPARTMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Weekly Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FIRST SEMESTER</td>
<td></td>
</tr>
<tr>
<td>LC131</td>
<td>Negotiating Skills</td>
<td>3</td>
</tr>
<tr>
<td>LA201</td>
<td>Advanced Academic &amp; Research Skills</td>
<td>2</td>
</tr>
<tr>
<td>LC211</td>
<td>Language in Society</td>
<td>3</td>
</tr>
<tr>
<td>LC231</td>
<td>Conflict: Origins and resolution</td>
<td>3</td>
</tr>
<tr>
<td>LC233</td>
<td>Critical Thinking</td>
<td>3</td>
</tr>
<tr>
<td>LC311</td>
<td>Developing Communication and Communicating Development</td>
<td>3</td>
</tr>
<tr>
<td>LC321</td>
<td>Environmental and Social Impact Monitoring</td>
<td>2</td>
</tr>
<tr>
<td>LC341</td>
<td>Technology and Society</td>
<td>3</td>
</tr>
<tr>
<td>LC361</td>
<td>Development Studies I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>SECOND SEMESTER</td>
<td>25</td>
</tr>
<tr>
<td>LC112</td>
<td>PNG Languages &amp; Communication</td>
<td>4</td>
</tr>
<tr>
<td>LC151</td>
<td>Melanesian Society and Politics</td>
<td>4</td>
</tr>
<tr>
<td>LC202</td>
<td>Media Studies</td>
<td>3</td>
</tr>
<tr>
<td>LC212</td>
<td>Principles of Translation</td>
<td>4</td>
</tr>
<tr>
<td>LC232</td>
<td>Public and Community Relations</td>
<td>4</td>
</tr>
<tr>
<td>LC212</td>
<td>Land Disputes Settlement</td>
<td>2</td>
</tr>
<tr>
<td>LC322</td>
<td>Social Change</td>
<td>-</td>
</tr>
<tr>
<td>LC352</td>
<td>Special Projects</td>
<td>2</td>
</tr>
<tr>
<td>LC362</td>
<td>Development Studies</td>
<td>23</td>
</tr>
</tbody>
</table>

AR101: INTRODUCTION TO ARCHITECTURE AND BUILDING

Lecture hours per week: 8
Laboratory hours per week:
Credits: 18

Learning Outcomes
To provide an orientation for beginners into the disciplines of architecture and building. On completing the subject, the student should be able to:
1. Demonstrate foundation skills in drawing, surveying and measuring, and designing and making practical things;
2. Show an aptitude for either architecture or building;
3. Make an informed choice for the preferred vocation.

Syllabus
Introductory lectures on the role of architects and builders in design and construction accompanied by visits to a construction site and to the offices of an architect and a contractor followed by project modules covering foundation skills, including architectural drawing: line work, dimensioning, scales, lettering, orthographic, isometric and axonometric projection; Survey techniques [optional]: surveying and recording of a settlement and preparing measured drawings of existing buildings; Practical building: working with tools, workshop practice, making useful things, setting-out a building [optional]; Elementary design: introductory exercises in creative design; Participation in scheduled Architecture and Building Seminars as required by Department.

Assessment
Continuous assessment 100%
AR102: ARCHITECTURAL DESIGN I

Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR101

Learning Outcomes
To bring forth and reinforce individual talent for self-expression through creative explorations of the fundamental elements of form. On completing the subject, the student should be able to:
1. Engage the creative impulse with confidence and vigour;
2. Use a variety of graphic and model making media;
3. Delineate simple perspectives.

Syllabus
A series of creative exercises on designing with solids, voids, planes, frames, textures, and colours using a variety of graphic, craft, sculptural and model-making media in combination with an introduction to drawing and perspective. Participate in scheduled Architecture Seminars and Master Class.

Assessment
Continuous assessment & submission of portfolio with interview 100%

---

AR132: BUILDING SYSTEMS I

Lecture hours per week: 4
Laboratory hours per week:

Credits: 18

Learning Outcomes
To introduce timber, masonry, and lightweight steel building systems commonly used in domestic-scale construction. On completing the subject, the student should be able to:
1. Describe the various domestic-scale construction systems;
2. Prepare construction drawings showing how the materials are placed and fixed into position;
3. Explain the function of written technical specifications and write sample clauses.

Syllabus
Common building materials: properties and use in construction; Substructure: excavation, foundations, and ground floor construction; Superstructure: external walls, internal partitions, joinery items including doors, windows, wardrobes, cupboards, staircases; Roofs: types of roof construction, covering material, storm water drainage; Finishing trades: plastering, fair face block work, proprietary boards, painting and tiling; Services: water, electricity, gas, telephone, surface water drainage; External works: landscaping, drives, footpaths, fencing.

Textbook
Architectural Technical Specification, PNG Department of Works
Building Act, Chapter 301, PNG Structural Manual for Domestic Buildings.

Reference
Selected readings related to subject topics.

Assessment
Continuous assessment 40%
Written examination 60% (1 × 3 hrs.)

---

AR161 VERNACULAR BUILDING TRADITIONS

Lecture hours per week: 2
Laboratory hours per week:

Credits: 9

Learning Outcomes
Firstly, to develop an awareness and appreciation of the special universal aesthetical and technical qualities of vernacularism and its place in built environment education, professional development and practice. Secondly, to develop an awareness and appreciation of Melanesian vernacular architecture and its building practices and traditions in the context of its socio-cultural and socio-economical parameters.

On completing this subject, the students should be able to:
1. Describe the environmental and cultural forces, which shape vernacular architecture and building practices;
2. Comprehend the importance of conservation of vernacular building traditions;
3. Appreciate the traditional forms and methods of building process and construction;
4. Articulate the potential for adaptation of re-interpretation of vernacular traditions in the design of forms, structures and ornamentation of contemporary buildings;
5. Comprehendsymbolic, social and cultural relationship and user-setting transactional relationships of place and place-making.

Syllabus
A survey of vernacular architecture and building traditions of the Melanesia region with respects to their environmental, social, cultural and technological context with special emphasis on Papua New Guinea and the neighbouring countries in the Asia-Pacific region. Assignments and projects based on researching selected buildings and making investigations aided with scaled drawings and models where appropriate.

Reference
Reading material referred throughout the course. Selected readings related to assigned projects.

Assessment
Continuous assessment 100%

AR162: HISTORY OF ARCHITECTURE I

Lecture hours per week: 3
Laboratory hours per week:

Credits: 12
Prerequisite: AR161

Learning Outcomes
To introduce some western traditions whereby architecture is seen to arise when urbanity develops and people start to live in cities, and that cities and urbanity have taken root in this region, and that universally cities are the context for most current architectural developments. On completion of the subject students must be able to:

1. Understand the role of architecture in society and the complimentary role of social, technological and geographic influences of the production of architecture;
2. Analyse, discuss, and document architectural issues.

Syllabus
Cross cultural survey from ancient to modern times, but based on settlements and cities as the generators and the contexts for architecture, culture, art, technology and man-environment relationships. Architecture as the shaper of city form and its evolving ‘genius loci’, and architects-designers as the shapers of that built fabric. Contextual factors that shaped cities over time: materials and technology, customs and beliefs, resources, power, knowledge, and so on. A range of cities, over time and across cultures, and in varying geographic situations, is presented to display the dynamic relationships of factors interacting to produce distinctive cities, and to introduce key architectures of various civilizations.

Textbook
Students are required to read widely in books on cities, architecture and building in various cultures and through time.

Reference

Assessment
Continuous assessment 70%
Written examination 30% (1×2 hrs.)

AR171: BUILDING SCIENCE

Lecture hours per week: 4
Laboratory hours per week:

Credits: 18

Learning Outcomes
Introduce the student to the crucial relationship that
exists between climate, human beings, and buildings. More importantly, explain the function of building materials as physical barriers between the macro and micro climates of a building. On completing the subject, the student have to be able to:

1. Define the major climate types that exist in the world, especially those of the tropical regions;
2. Comprehend the need for human beings to adapt to their climates in order to survive and sustain their livelihood;
3. Comprehend the influence of climate on the architecture of different regions of the world;
4. Comprehend the importance of understanding the nature of various available building materials and how these may be used to advantage in the design and construction of buildings.

Syllabus
Introductory lectures on the crucial relationship between climate, human beings, and buildings are to be conducted, emphasizing the principles of passive building design. The concept of thermal performance and thermal comfort must be advocated with emphasis given on the understanding of all available building materials such as: timber, concrete, steel, masonry, glass, hardboards, and hardware. General properties of building materials, which need to be covered include: density and specific gravity, strength, optical properties, electrical properties, thermal properties and insulation, acoustic properties, deformations, deterioration, fire-resistant, appearance, and health aspects, etc.

Reference
Warren, J., Lighting: basic concepts, Department of Architectural and Design Science, University of Sydney, Sydney, Australia, 2006.

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

AR172: ARCHITECTURAL SCIENCE

Lecture hours per week: 2
Laboratory hours per week:

Credits: 9
Prerequisite: AR171

Learning Outcomes
Introduce the student to the concepts of indoor environmental quality and how these contribute to healthier, safer, and productive living by the occupants and users of buildings. The following environmental aspects need to be covered: architectural acoustics, indoor & outdoor lighting, thermal performance of buildings. On completing the subject, the student should be able to:
1. Comprehend the concepts of architectural acoustics, lighting, heating, and cooling;
2. Undertake simple calculations in order to reinforce theoretical knowledge indicated above;
3. Apply this knowledge in his/her building design work.

Syllabus
Architectural acoustics: room acoustics, noise control; Lighting: photometric concepts and units, vision, visual performance, glare, comfort, electric lamps, light control, lighting design consideration, lumen method; Thermal performance of buildings: heat loss, heat gain, sun shading devices, tropical building design principles, passive design strategies.

Reference
Stein, B., Reynolds, J., Mechanical and Electrical
AR181: COMMUNICATION FOR ARCHITECTURE AND BUILDING

Lecture hours per week: 3
Laboratory hours per week:

Credits: 12

Learning Outcomes
To provide professional communication skills to beginners in architecture and building. On completing the subject the student should be able to:

1. Demonstrate skills in computing for word processing and spreadsheets;
2. Demonstrate skills in using internet and simple computer graphic programmes;
3. Demonstrate skills in research using the library and styles of referencing;
4. Develop an attitude towards effective self-directed learning in architecture and building.

Syllabus
Introduce basic computing for word processing and spreadsheets; Use of internet and surfing the web as a research tool, use of library and referencing using various styles; Introduce oral presentation skills and the use of computer programmes such as power point presentation; Mentoring of students learning to develop professional attitudes in their education as well as among peers; Promote self-directed attitudes in students.

Reference
Reading as directed.

Assessment
Continuous assessment 100%

AR201: ARCHITECTURAL DESIGN II

Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR102

Learning Outcomes
To develop skills for designing basic architectural forms for human use. On completing the subject the student should be able to:

1. Apply elementary rules of design to resolve simple architectural problems;
2. Design architectural forms to suit human dimensions;
3. Present design concepts both orally and by means of a range of graphic and modelling media.

Syllabus
A series exercises exploring each step of the design process including problem statement, analysis and creative synthesis using the elementary rules of design. Human dimensions and their application to common building elements. Introduction to oral communication skills and graphic presentation techniques. Participation in scheduled Architecture Seminars and Master Class when offered.

Textbook

Reference
Grillo, P. J., Form, function and design, Dover Publications, New York, USA, 1975.

Assessment
Continuous assessment 100%

AR202: ARCHITECTURAL DESIGN III

Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR201

Learning Outcomes
To develop skills for designing simple buildings by applying the social, environmental and cultural principles involved in designing the traditional buildings of PNG. On completing the subject the student should be able to:
1. Analyse simple building programs;
2. Resolve the spatial layout, form and structure of simple buildings;
3. Comprehend to adapt traditional architectural forms for contemporary use;
4. Resolve major connection details of one of the projects.

Syllabus
A series of design projects for simple buildings based on outline programs and involving the simultaneous resolution of plan, form and structure using traditional architecture for inspiration. Participation in scheduled Architecture Seminars and Master Class when offered.

Textbook

Reference
Selected readings related to assigned projects.

Assessment
Continuous assessment 100%

AR221 VISUAL ART

Lecture hours per week: 2
Laboratory hours per week:
Credits: 6

Learning Outcomes
To develop perception and drawing skills as means to understanding natural form and structure and to enhance the student’s ability to graphically communicate that understanding. On completing the subject the student should be able to:
1. Record a range of common images using a variety of graphic media;
2. Use a variety of graphic media for presentation of architectural designs.

Syllabus
Multiple free-hand drawing exercises using commonly available media such as soft pencil, pen and ink, colour pencils, marking pens, and collage. Drawing subjects will include a variety of natural - plant, animal and human - as well as manufactured and built forms. Exercises challenge preconceptions and require the student to see objects as they actually are.

Textbook

Reference

Assessment
Continuous assessment 100%

AR231 BUILDING SYSTEMS II

Lecture hours per week: 4
Laboratory hours per week:
Credits: 18
Prerequisite: AR132

Learning Outcomes
To introduce construction systems commonly used for low-rise commercial and industrial applications. On completing the subject the student should be able to:
1. Describe the concepts of common commercial and industrial construction systems;
2. Prepare construction drawings to show the placement and fixing of materials;
3. Prepare simple technical specifications.

Syllabus
Materials and methods of construction in the following categories: Substructure: excavation, footings and ground floor construction; Superstructure: main frames in steel, concrete and timber, cladding systems, fire requirements, glazed areas, common stairways; Roofs: types of roof construction, covering material, water drainage and collection; Finishes: various trade works, specialist contractors, security applications, proprietary partitioning; Services: integration of services into the building fabric, special requirements for industrial waste; External works: hard landscaping.
delivery and storage requirements, parking, lighting and security systems.

Textbook
Architectural Technical Specification, PNG Department of Works

Reference
Selected readings relating to subject topics.

Assessment
Continuous assessment 50%
Written examination 50% (1 × 2 hrs.)

AR232: BUILDING SYSTEMS III

Lecture hours per week: 4
Laboratory hours per week:

Credits: 18
Prerequisite: AR231

Learning Outcomes
To introduce the basic concepts relating to the various types of building services. On completing the subject the student should be able to:

1. Define the terminology relating to various building services;
2. Identify the type, range and functions of the various external and internal building;
3. Make appropriate choices and recommendations for the various supply and distribution systems based on economics and efficiency.

Syllabus
External services: water sources and supply, drainage, external lighting, alternative energy sources; Internal services: sanitary plumbing (fixtures and fittings), heating, cooling and ventilation, electrical supply and distribution, communication and security systems, fire warning and control systems, lifts and escalators, artificial lighting and acoustics; Inter-relationship between structure, services and finishes, incorporation of plant and accessories into the building fabric; Implications of new technologies and the changing nature of work; Life-cycle cost considerations of various service systems.

Textbook

Reference
Selected reading related to subject topics.

Assessment
Continuous assessment 50%
Written examination 50% (1 × 2 hrs.)

AR241: STRUCTURES I

Lecture hours per week: 2
Laboratory hours per week:

Credits: 6

Learning Outcomes
To appreciate basic structural mechanics. On completing the subject the student should be able to:

1. Determine the axial forces in plane pin-connected trusses and frames;
2. Understand the internal forces in statically determinate beams and properties of areas.

Syllabus
Determination of moment of forces, forces at supports, shear forces and bending moments, centre of gravity, centroid, second moment of area, section modulus.

Textbook

Departmental modules

Assessment
Continuous assessment 100%

AR242: STRUCTURES II

Lecture hours per week: 2
Laboratory hours per week:

Credits: 6

Prerequisite: AR241
Learning Outcomes
To understand the considerations for selection of structural sizes in timber, steel and reinforced concrete. On completing the subject, the student should be able to:
1. Determine design loads for buildings;
2. Understand elements of lateral stability for structural frames;
3. Calculate bending and shear stresses and deflection of structural elements.

Syllabus
Determination of loading of buildings, lateral stability, bending and shear stresses, deflection of beams, slabs and columns.

Textbook

Assessment
Continuous assessment 100%

AR261: HISTORY OF ARCHITECTURE II

Lecture hours per week: 3
Laboratory hours per week:

Credits: 12
Prerequisite: AR162

Learning Outcomes
This subject assumes students have a basic understanding of architecture and building terms and proceeds to use architecture, building, and landscape to examine the development of architecture in the surrounding region. On completion of the subject students should be able to:
1. Have an understanding of historic and contemporary influences on architectural production in the region, mainly in historic times;
2. Demonstrate critical analytical, representational and documentation skills in the area of discourse.

Syllabus
An examination of the imposition of empires and colonies, of architectural productions and their influences, of issues of nationalism and identity, hybridity is undertaken. Modern regionalism, and local and global practices are raised in terms of the practice of contemporary architecture in the region.

Reference

Students are required to read widely in books and recent journals.

Assessment
Continuous assessment 70%
Written examination 30% (1×2 hrs.)

AR262: MODERN ARCHITECTURE

Lecture hours per week: 3
Laboratory hours per week:

Credits: 9
Prerequisite: AR261

Learning Outcomes
To explore theoretical, technological, social and other factors involved in the development of modern architecture. To develop an awareness of current issues that shape the various forms of contemporary architecture and the discourses that surround it. The subject recognizes PNG’s regional context. On completing this subject, the student should be able to:
1. Identify and discuss the major canonical movements, works and figures in modern architecture;
2. Explain the principles employed and the influences on the making of the architecture of a number of keydesigners of modern architecture;
3. Analyse, discuss and communicate architectural issues pertinent to the design
and practice of contemporary architecture in the region including aesthetic and cultural aspects.

**Syllabus**
An overview of the key canonical figures and works making up modern architecture and the issues of modernity driving the making of this architecture. An examination of some specific manifestations of modern architecture in the region, the origins and influences that shape(d) this architecture, the debates that surround such modern, colonial and postcolonial, and regional, design practice.

**Textbook**

**Reference**
Students are required to read widely from a number of sources including:
Curtis, W., Modern architecture since 1900, Prentice Hall, Upper Saddle River, USA, 1996.

**Assessment**
Continuous assessment 100%
Learning Outcomes
To develop skills for designing moderately complex and contextually responsive buildings. On completing the subject the student should be able to:

1. Prepare preliminary designs for low-rise, single-purpose buildings;
2. Lay out buildings and associated site works to fit well in the landscape and in relation to other buildings;
3. Make appropriate responses to local environmental, cultural and economic factors when designing buildings;
4. Resolve major construction details of one of the projects.

Syllabus
A series of design projects based on low-rise, single-purpose buildings in both urban and rural settings with an emphasis on environmental, cultural and economic responsiveness and including an introduction to the basic principles and practice of site planning and grading. Participation in scheduled Architecture Seminars and MasterClass when offered.

Textbook

Reference

Selected readings related to assigned projects.

Assessment
Continuous assessment 100%

AR302: ARCHITECTURAL DESIGN V

Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR301

Learning Outcomes
To develop skills for designing in detail, the exterior and interior spaces of moderately complex buildings using computer software. On completing the subject the student should be able to:

1. Prepare detailed designs for exterior and interior spaces of low rise, single and multi-purpose buildings;
2. Utilise computer software to make orthographic and three-dimensional drawings;
3. Demonstrate fitness to undertake architectural design at the degree level;
4. Show structural plans and major construction details of one of the project.

Syllabus
A series of design projects based on low-rise, single- and multi-purpose buildings with an emphasis on detailed resolution of exterior and interior spaces and introducing, in the second half of the semester, the application of computer-aided design and presentation techniques. Participation in scheduled Architecture Seminars and Master Class when offered.

Textbook

Reference

Selected readings related to assigned projects.

Assessment
Continuous assessment 100%

AR321: ARCHITECTURAL PRESENTATION

Lecture hours per week: 2
Laboratory hours per week:

Credits: 6
Prerequisite: AR221

Learning Outcomes
To develop visualization and representation skills required for the professional communication of architectural concepts and project proposals. On completion of this subject the student should be able to:

1. Demonstrate skills in a variety of media for the representation of architectural designs;
2. Evaluate effectiveness of architectural representations.
**Department of Architecture and Building**

**Syllabus**
Advanced free-hand and drafted problems in perspective, using such commonly available media as soft pencil, pen and ink, coloured pencils, collage, as well as digital rendering in 3D CAD Photoshop. A collection of exercises in architectural analysis, composition and representation.

**Reference**
Latest issues of architectural journals. 
Yearbooks of final year Architecture students’ work at overseas universities. 
Monographs by architectural practices renowned for their presentation skills. 
Websites of architectural practices.

**Assessment**
Continuous assessment 100%

**AR331: BUILDING SYSTEMS IV**

**Lecture hours per week:** 4
**Laboratory hours per week:**

**Credits:** 18
**Prerequisite:** AR232

**Learning Outcomes**
To introduce the basic concepts of high rise construction. On completing the subject the student should be able to:
1. Describe advanced construction systems;
2. Evaluate the economic use of construction systems and components;
3. Make considered judgements on the selection and specification of construction systems and components with regard to future maintenance requirements.

**Syllabus**
The principles of high rise construction including consideration of fire protection and seismic design; 
Substructure: deep excavation, piled footing, basements, underpinning, retaining structures, ground water control; 
Superstructure: main frames in steel, reinforced concrete, composite floor systems, curtain walling, in-situ concrete finishes; 
Roofs: roofing systems suitable for high rise buildings, access systems for maintenance; 
Finishes: selection of finishes for various grades of building, quality control of the construction process; 
Services: consideration of specialised services in high rise construction and integration into the construction process, fire code of practice; 
External works: access to the building, waste disposal, general landscaping and security.

**Textbook**
National Building Specification, PNG Department of Works 

**Reference**
Selected readings related to subject topics.

**Assessment**
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

**AR341: STRUCTURES III**

**Lecture hours per week:** 2
**Laboratory hours per week:**

**Credits:** 9
**Prerequisite:** AR242

**Learning Outcomes**
To introduce the theory and design of structural elements in timber. On completing the subject the student should be able to:
1. Understand the constituents and properties of structural timber;
2. Describe the various strength, durability and quality tests applicable to structural timber;
3. Expound on basic structural theory as related to the design of structural timber members;
4. Use relevant structural tables to evaluate the forces acting on typical structural timber members and calculate sizes;
5. Detail structural timber members and connections.

**Syllabus**
Structural timber technology, Timber testing; 
Analysis, design and detailing of structural timber flooring, bearers, joists, beams, posts and footings.
**Textbook**

**Hough, R., Structures design package, UNSW Press, Sydney, Australia, 1985.**

**PNG Structural Manual for Domestic Buildings.**

**Departmental Modules**

**Assessment**

Continuous assessment 100%

---

**AR342: STRUCTURES IV**

**Lecture hours per week:** 2

**Laboratory hours per week:**

**Credits:** 9

**Prerequisite:** AR341

**Learning Outcomes**

To introduce the theory and design of structural elements in reinforced concrete and structural steel. On completing the subject, the student should be able to:

1. Understand the constituents and properties of reinforced concrete and structural steel;
2. Describe the various strength, durability and quality tests applicable to reinforced concrete and structural steel;
3. Expound on basic structural theory as related to the design of reinforced concrete and structural steel elements;
4. Use relevant structural tables to evaluate the forces acting on typical reinforced concrete and structural steel elements and calculate sizes;
5. Detail reinforced concrete and structural steel members and connections.

**Syllabus**

Structural steel and reinforced concrete technology; Structural steel and reinforced concrete testing; Analysis, design and detailing of structural steel and reinforced concrete elements.

**Textbook**

**Hough, R., Structures design package, UNSW Press, Sydney, Australia, 1985.**

**Departmental Modules**

**Reference**


---

**AR341:**

**PNG Standard 1002.**

**PNG Standard, Reinforced Concrete Structures,**

**Makowksi, Z. S., Steel space structures, Michael Joseph, London, 1965.**

**Lin, T.Y., Stotesbury, S.D., Structural concepts and systems for architects and engineers, Van Nostrand Reinhold, New York, USA, 1988.**

**Assessment**

Continuous assessment 100%

---

**AR361: THEORIES OF ARCHITECTURE**

**Lecture hours per week:** 3

**Laboratory hours per week:**

**Credits:** 6

**Prerequisite:** AR262, AR202, or a comprehensive understanding of architecture terms and a familiarity with the key canons and figures of modern architecture, and preferably done some design subjects.

**Learning Outcomes**

To develop literacy and understanding of theory as it affects the design and meaning of architectural production. To understand the key areas of theory which have been identified as important in architectural design, and designing as a cultural activity. On completion of the subject student must be able to:

1. Understand how theories of architecture can affect their own self-awareness in design;
2. Demonstrate an ability to analyse designs presented in discourse (such as in recent journals);
3. Critically analyse critiques in discourse, and to engage meaningfully in informed discussion and writing.

**Syllabus**

An overview of the areas of theory applied to architecture is undertaken. There is an emphasis on key theoretical critiques and theoretical propositions that influenced and changed the directions of modern architecture. An introduction to the idea of crises in modernity and architecture, and to the issues of ‘progress’, ‘utopia’, and ‘development’.

---

139
Reference

Subject Reader.

Students are required to read widely in books and recent journals.

Assessment

Continuous assessment 100%

AR372: ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Lecture hours per week: 2
Laboratory hours per week:

Credits: 6
Prerequisite: AR172

Learning Outcomes

To introduce the student to the concepts of ecologically sustainable development, and energy conscious building design. Buildings consume great quantities of materials, energy and other resources in their design, construction, operation and eventual demolition. At each stage, the consumption of these resources may have significant environmental impact at the global, local and personal levels. By ensuring that any undesirable impact is minimized and the benefits maximized, architects and other building design professionals can play a major role in energy conservation and responsible resource usage. On completing the subject, the student should be able to:

1. Understand the role of architects in shaping the physical environment which surrounds and supports human existence;
2. Appreciate that designers need to be sensitive to the environment in a balanced way – that many are not aware of the long term environmental implications of their building design decisions;
3. Be aware of the source of materials that they specify and the energy consumed in the manufacture of these materialsof the source of that energy.

Syllabus

Review sustainable strategies outlined in the RAIA BDP Environment Guide 2001. as a base. Lectures to cover the following important concepts:

- Biodiversity – protect and restore ecological diversity, health and functionality;
- Resources – optimize their use, especially non-renewable resources;
- Pollution – minimize pollution of soil, air and water;
- Quality of Life – improve the health, safety, and comfort of building users.

Reference


Assessment

Continuous assessment 60%
Written examination 40% (1×2 hrs.)

AR382: COMPUTER-AIDED DESIGN

Lecture hours per week: 5
Laboratory hours per week:

Credits: 16
Prerequisite: AR282

Learning Outcomes

To develop skills in the use of architectural design and drafting software. On completing the subject, the student should be able to:

1. Work with architectural design and drafting software;
2. Produce 2D architectural presentation and technical drawings.

Syllabus

Introduction to CAD software for orthographic drawing and basic customising of CAD programs.
Reference
Selected software manuals.

Assessment
Continuous assessment 100%

AR401: ARCHITECTURAL DESIGN VI
Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR302

Learning Outcomes
To develop skills for designing complex buildings in tropical settings. On completing the subject, the student should be able to:

1. Demonstrate a mature approach to complex architectural problems;
2. Design buildings, and spaces within buildings, to suit given parameters of thermal, lighting, acoustic and materials performance;
3. Resolve major construction details of one of the project.

Syllabus
A series of design projects based on complex buildings for sites in both coastal and highlands situations and covering, in varying depth, all stages of the design process, including: brief preparation and analysis, site investigation, research and data collection relating to project type, preparation and evaluation of alternative spatial configurations and structural proposals, refinement of proposed solutions to developed design stage, and execution of high-quality presentation (with the option of using CAD software). Participation in scheduled Architecture Seminars and Master Class when offered.

Reference
Selected readings related to assigned projects.

Assessment
Continuous assessment 100%

AR402: ARCHITECTURAL DESIGN VII
Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR401

Learning Outcomes
To develop skills for designing complex buildings on challenging sites. On completing the subject, the student should be able to:

1. Resolve architectural problems involving multiple functions;
2. Design using sound site planning, grading and landscaping practices suited to tropical environments;
3. Propose structural framing and resolve construction details of one of the project.

Syllabus
A series of design projects based on complex programs involving the resolution of multiple functions and practical problems of site planning, grading and landscaping and covering, in varying depth, all stages of the design process, including: brief preparation and analysis, site investigation, research and data collection relating to project type, preparation and evaluation of alternative spatial configurations and structural proposals, refinement of proposed solutions to developed design stage, and execution of high-quality presentation (with the option of using CAD software). Participation in scheduled Architecture Seminars and Master Class when offered.

Reference
Readings related to selected topics.

Assessment
Continuous assessment 100%

AR411: ARCHITECTURAL DESIGN THEORY
Lecture hours per week: 2
Laboratory hours per week:

Credits: 6
Prerequisite: AR361, AR302
Learning Outcomes
To develop a deeper understanding of theories of architecture and their application and manifestation in design practice, and requires students to examine a range of examples of contemporary theory and architecture in depth, and to meaningfully participate in seminar discussions. On completion of the subject students should be able to:

1. Make serious, well informed, and articulate critiques of architecture and design issues productions in their own societies, nation, region and internationally;
2. Display skill in the writing of well-informed and well-argued illustrated critical essays, including articulate their own architectural position for design projects.

Syllabus
An analysis in depth of areas of theory applied to personal practice of design in architecture, with an emphasis on key theoretical critiques and theoretical propositions influencing current directions of contemporary and regional architecture. An examination is undertaken of issues in contemporary practice and discourse, particularly concepts of post-modernity, post-colonialism, critical regionalism, and as they are manifested in the region.

Reference
Subject Reader
Students are required to read widely in books and themed issues of AD and recent journals.

Assessment
Continuous assessment 100%

AR432: SITE DESIGN

Lecture hours per week: 2
Laboratory hours per week:
Credits: 6

Learning Outcomes
On completing this subject, the student should be able to:

1. Have a working and contextual knowledge of the cultural and critical issues of society, polis, architecture, place and nature;
2. Meaningfully utilize advanced, culturally conscious and ecologically sensitive, approaches to landscaping, urban space manipulation, architecture, and ecology;
3. Produce imaginative and credible landscape proposals. Be aware and display skills in integrating architectural designs (such as a nominated known building, or a suitable studio design project) and landscape concepts, including the detailing of key landscape elements.

Syllabus
A pluralist overview of some key concepts and techniques of landscape architecture: sitting and setting, nature and context. A review of different and their built landscapes with an emphasis on regional and tropical examples. Site planning and manipulation, utilization of topographic and natural features, principles of plant selection and placement, sculpture-art and hard elements of landscape, landscape composition and expression.

Textbook

Reference

Assessment
Continuous assessment 100%
AR451: URBAN DEVELOPMENT

Lecture hours per week: 2
Laboratory hours per week:
Credits: 6

Learning Outcomes
On completing this subject, the student should be able to:
1. Develop an understanding of the essence of human settlement development;
2. Relate urban development to relative urban developmental forces;
3. Read the urban profile using various urban development and control instruments;
4. Identify different urban growth patterns in the global and local context to primary urban growth theories and models;
5. Carryout simple to complex urban planning and development assessments and projects related to urban growth development;
6. Integrate urban planning principles in urban architectural projects and developments;
7. Appreciate urban planning as a tool for developing urban quality living.

Syllabus
Part One: An overview of the historical developmental and growth patterns of settlements and the forces shaping urbanization both in the global and the local context; The understanding of the origins and development of modern town planning practice and the formulation of policies to police and govern systemized urban growth.

Part Two: Through projects and assignments relate urban growth and developmental patterns to local experiences; Use urban planning instruments and regulatory controls in projects and assignments to appreciate urban planning.

Assessment
Continuous assessment 100%

AR462: URBAN DESIGN THEORY

Hours per week: 2 Credit: 6

Learning Outcomes
On completing this subject, the student should be able to:
1. Understand the technical underlying theory and bases in which urban design relationships enable quality urban characterization and architecture;
2. Carryout simple to complex urban design assessments and projects related to urban quality development;
3. Systematically understand their architectural project developments with a more informed urban design understanding;
4. Integrate urban design principles in urban architectural projects and developments;
5. Appreciate urban design as enhancing to for developing urban quality living.

Syllabus
A series of leading lectures will be presented throughout the semester in addressing urban design theory with selective illustrations from simple to complex urban design experiences throughout the world. The aim will be generating student interest and motivation to appreciate the need to create qualitative and liveable urban built environments.

Reference

Assessment
Continuous assessment 100%

AR491: SPECIAL STUDY I

Lecture hours per week: 3
Laboratory hours per week:
Credits: 9

Learning Outcomes
To develop research and presentation skills in specialised study area of interest to the staff and the student. On completing the subject, the student should be able to:
1. Pursue a program of supervised study;
2. Present oral and written discourses on the selected study topic.

Syllabus
Elective topics be developed with selected
specialist staff on the following currently available optional areas of study: 3D-CAD modelling, rendering and slide presentation, introduction to macro-programming; Traditional architectural and settlement patterns through the Architecture Heritage Centre; Contemporary studies in urban settlements and low cost housing solutions; Advanced problems in tropical architecture; Problems in architectural psychology.

Reference
As advised by the examiner.

Assessment
Assignments and reports as directed by the examiner.
Continuous assessment 100%

AR492: SPECIAL STUDY II

Lecture hours per week: 3
Laboratory hours per week:

Credits: 9
Prerequisite: AR491

Learning Outcomes
To develop research and presentation skills in specialised study area of interest to the student. On completing the subject, the student should be able to:

1. Pursue a program of supervised study;
2. Present oral and written discourses on the selected study topic.

Syllabus
Elective topic from AR491 continued or new topic to be developed with selected specialist staff from one of the following currently available optional areas of study: 3D-CAD modelling, rendering and slide presentation, introduction to macro-programming; Traditional architectural and settlement patterns through the Architecture Heritage Centre; Contemporary studies in urban settlements and low cost housing solutions; Advanced problems in tropical architecture; Problems in architectural psychology.

Reference
As advised by the examiner.

Assessment
Continuous assessment 100%

AR501: ARCHITECTURAL DESIGN VIII

Lecture hours per week: 8
Laboratory hours per week:

Credits: 18
Prerequisite: AR402

Learning Outcomes
To develop skills for designing complex and multiple buildings for urban settings. On completing the subject, the student should be able to:

1. Resolve architectural problems involving multi-storey, mixed-use developments;
2. Develop architectural solutions based on sound urban design practice;
3. Propose construction materials and typical construction details of one of the projects.

Syllabus
Projects involving multi-storey, mixed-use buildings on urban sites and covering, in varying depth, all stages of the design process, including: brief preparation and analysis, site investigation, research and data collection relating to project type, preparation and evaluation of alternative spatial configurations and structural proposals, refinement of proposed solutions to developed design stage, and execution of high-quality presentation (with the option of using CAD software). Participation in scheduled Architecture Seminars and Master Class when offered.

Reference
Selected readings related to assigned projects.

Assessment
Continuous assessment 100%

AR502: DESIGN THESIS

Lecture hours per week: 9
Laboratory hours per week:

Credits: 18
Prerequisite: AR501
Learning Outcomes
To develop the skills to research, define and resolve an advanced architectural problem. On completing the thesis, the student should be able to:
1. Independently research and report on all aspects of an architectural problem;
2. Utilise a broad range of design tools and knowledge to create an elegant design response;
3. Demonstrate fitness to graduate as an architect.

Syllabus
The subject is administered by the Design Thesis Committee in accordance with a set of published guidelines. Approved topics will involve the design of a single large-scale project carried out in four stages. Preparation of a 5000 word illustrated Design Thesis Report to include detailed brief preparation and analysis, site investigation, research and data collection relating to project type. Conceptual Design Stage involving the preparation and evaluation of alternative spatial configurations and structural proposals, selection and refinement of preliminary design proposal. Design Development Stage to refine spatial configuration and structural solution. Final Design Stage and preparation of comprehensive presentation (using CAD software if desired). Participation in scheduled Architecture Seminars and Master Class when offered.

Reference
Selected readings related to thesis topics.

Assessment
Continuous assessment 100%

AR561: URBAN DESIGN I

Lecture hours per week: 2
Laboratory hours per week:

Credits: 6
Prerequisite: AR462

Learning Outcomes
To introduce the discipline and explore the goals of urban design in relation to architecture, town planning and community expectations in the international and PNG context. On completing the subject, the student should be able to:
1. Understand and use common survey and information gathering techniques;
2. Draw reference to historic and contemporary example of urban design;
3. Apply criteria derived from good theory and practice to urban design problems;
4. Discuss political, historical, sociological, geographical and economic factors influencing decision-making in the realm of urban design.

Syllabus
Lectures, seminars and studio projects based on model urban design projects of relevance to the development and redevelopment of selected residential neighbourhoods, industrial areas and commercial centres of towns in PNG.

Textbook
PNG Physical Planning Act 1989.
PNG Physical Planning Regulation 1990.

Reference
Selected readings related to subject topics.

Assessment
Continuous Assessment - 100%

AR562 URBAN DESIGN II

Hours per week: 2
Credit: 6

Prerequisite: AR561

Learning Outcomes
To apply the understanding gained in AR 551 to the urban design aspects of AR 502 Design Thesis. On completing the subject the student should be:
1. Able to relate the principles and practice of urban design theory to practical problems.

Syllabus
Weekly seminars on urban design issues and
reviews of reports, drawings and models.

Textbook
PNG Department of Physical Planning, Physical Planning Manual.
PNG Planning Act and Regulations, No 32.

Reference
Selected readings related to subject topics.

Assessment
Continuous assessment 100%

AR591: RESEARCH PROJECT

Lecture hours per week: 3
Laboratory hours per week: 6

Credits: 6

Learning Outcomes
To provide training for independent research in the fields of architecture, building, or physical planning. On completing the subject, the student should be able to:
1. Explain the role of research in academic and professional life;
2. Use research and analytical tools to prepare a substantial research report on a selected topic.

Syllabus
The subject is administered by the Research Project Coordinator in accordance with a set of published guidelines. Approved topics will involve the preparation of a 7-10,000 word illustrated report, or an approved combination of descriptive material and original measured drawings.
Advice from Research Project Advisers includes: orientation and guidance on undertaking structured research including carrying out literature surveys and field work in a systematic manner and using questionnaires and basic statistical methods and assessing their accuracy and reliability.
Advice from the Department of Language and Communication Studies includes: writing research reports using clear, concise language, logical exposition, and proper methods of attributing and documenting sources and reviewing of drafts on an as required basis.

Reference

Assessment
Continuous assessment 100%

AR592: DISSERTATION

Lecture hours per week: 2
Laboratory hours per week: 6

Credits: 6
Prerequisite: AR591

Learning Outcomes
To apply the skills gained in AR591 for researching and writing an individual research project relating to a chosen area of specialist planning concern. On completing the subject, the student should be able to:
1. Formulate a research proposal;
2. Conduct independent research on a selected planning topic;
3. Prepare a comprehensive report on the outcome of the research.

Syllabus
Research study program relating to one of the following areas of physical planning: Urban or rural development; Environmental planning; Residential area planning and Transport planning. Techniques for data collection, analysis and evaluation from primary and secondary sources. Preparation of 15,000 word illustrated paper.

Assessment
Continuous assessment 100%

BL102: QUANTITIES AND ESTIMATING I

Lecture hours per week: 4
Laboratory hours per week:
Credits: 12
Prerequisite: MA121

Learning Outcomes
To introduce the basic principles of measuring and estimating building works. On completing the subject, the student should be able to:
1. Explain the main processes of preparing bills of quantities;
2. Use the standard method of measurement of building works;
3. Describe items of building work in accordance with the standard method of measurement;
4. Apply the principles of taking off.

Syllabus
Introduction to quantity surveying and estimating; Principles of measurement; Use of the current edition of the Australian Standard Method of Measurement of Building Works; Project work in taking-off and calculating quantities based on simple buildings in masonry, timber and concrete.

Textbook
Australian standard method of measurement of building works, Australian Institute of Quantity Surveyors and Master Builders Australia, Deakin, Australia, 2012.

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL112: BUILDING TECHNOLOGY STUDIO I

Lecture hours per week: 4
Laboratory hours per week:

Credits: 12
Prerequisite: AR101

Learning Outcomes
To develop a practical understanding of building systems used in domestic-scale construction. On completing the subject, the student should be able to:
1. Appreciate the various building systems associated with domestic construction;
2. Apply the fundamental drawings skills developed, by preparing construction drawings, from information gathered from surveys of completed buildings;
3. Understand the compatibility of the materials and components used in the construction process;
4. Prepare scale models from construction drawings.

Syllabus
A range of studio projects designed to develop the students’ basic understanding of architecture and building, from theoretical concepts to practical application. Evaluation of the design and specification of existing and new domestic-scale buildings and their durability. Surveying and drawing up existing building structures in preparation for the construction of models. Site visits to selected materials manufacturers/suppliers, to observe and report on the range and properties of construction materials currently on the market.

Assessment
Continuous assessment 100%

BL162: CONSTRUCTION SURVEYING I

Lecture hours per week: 3
Laboratory hours per week:

Credits: 5

Learning Outcomes
To introduce the basic concepts of surveying and levelling. On completing the subject, the student should be able to:
1. Undertake surveys of small areas and simple buildings using chain, linear and theodolite surveying techniques;
2. Contour of construction sites for computation of quantities for earthworks.

Syllabus
Instruments, principles and operational methods for chain surveying, levelling surveying and theodolite
s surveying; Calculation of areas and volumes of earthworks from survey data.

Textbook
Whyte, W., Paul, R., Basic surveying, Taylor & Francis, Hoboken, USA, 2012.

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL202: QUANTITIES AND ESTIMATING II

Lecture hours per week: 5
Laboratory hours per week

Credits: 18
Prerequisite: BL102

Learning Outcomes
To introduce the preparation of bills of quantities and the calculation of unit rates for building work. On completing the subject, the student should be able to:
1. Work up and prepare a simple draft bill from quantities taken off by others;
2. Calculate all-in costs of labour, plant and materials.

Syllabus
Project work in calculating quantities and preparing bills for different work sections of the ASMM based on buildings in masonry, reinforced concrete and timber.

Textbook
Australian standard method of measurement of building works, Australian Institute of Quantity Surveyors and Master Builders Australia, Deakin, Australia, 2012.

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL211: BUILDING TECHNOLOGY STUDIO II

Lecture hours per week: 6
Laboratory hours per week: 

Credits: 16
Prerequisite: BL112

Learning Outcomes
To develop a practical understanding of building systems relevant to light industrial and commercial construction. On completing the subject, the student should be able to:
1. Appreciate the various building systems associated with industrial and commercial construction;
2. Consider the appropriate use of materials and the quality of finishes achieved;
3. Understand the range of basic plant and equipment used during the construction process;
4. Prepare schedules of materials from given drawings.

Syllabus
A range of studio projects designed to develop the students’ basic understanding of the construction of commercial and industrial buildings from theoretical concepts to practical application. Visits to construction sites for the evaluation of designs and specifications in term of user requirements and maintenance of the building fabric. Consideration of resource implications of the various construction systems under review. The process of scheduling materials and other building components.

Textbook
Bond, G., Civil engineering drafting, UNITECH Printery, Lae

Assessment
Continuous assessment 100%

BL221: CONSTRUCTION MANAGEMENT I

Lecture hours per week: 3
**Laboratory hours per week:**
**Credits:** 12

**Learning Outcomes**
To introduce the nature and principles of management and provide an understanding of the role of management in construction. On completing the subject, the student should be able to:

1. Understand the structure of the construction industry;
2. Prepare and interpret organisation charts for small and medium businesses;
3. Explain and comment on the fundamental statutes regulating the formation and running of construction businesses.

**Syllabus**
Introduction of the nature of the construction industry. The types of clients who require construction services. The internal structure of various construction organisations and levels of responsibility within them. Elementary business practices.

**Textbook**

**Reference**

**Assessment**
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

---

**BL.222: CONSTRUCTION MANAGEMENT II**

<table>
<thead>
<tr>
<th>Lecture hours per week: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory hours per week:</td>
</tr>
</tbody>
</table>

**Credits:** 18
**Prerequisite:** BL.221

**Learning Outcomes**
To provide an understanding of the principles of resource allocation and coordination in construction. On completing the subject, the student should be able to:

1. Lay out and organise a site for simple construction projects;
2. Prepare construction programs for simple projects;
3. Analyse and determine labour plant and materials requirements for various construction operations.

**Syllabus**
Statutory requirements for building works in PNG; Preparation of construction strategies, planning and programming using basic planning techniques; Basic layout and organisation of the construction sites; Resources and their capabilities; Delivery and storage of materials; Consideration of wastage during the construction process.

**Textbook**

**Reference**

**Assessment**
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

---

**BL.241: BUILDING ECONOMICS I**

<table>
<thead>
<tr>
<th>Lecture hours per week: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory hours per week:</td>
</tr>
</tbody>
</table>

**Credits:** 9

**Learning Outcomes**
The nature of economics and the economic environment in which construction activities take place. On completing the subject, the student should be able to:

1. Construct a basic economic model;
2. Explain the concept of planning for the efficient allocation of resources;
3. Describe how economic modelling can predict the present and future pattern of economic growth, inflation and unemployment;
4. Expound on the principles and procedures of international trade.
Syllabus
Introduction to general economics, opportunity cost, supply and demand, marginal analysis, market intervention; Price floors and price ceilings and their effects; Examples of the foregoing concepts as applied to the building industry; The national income account, gross national product; Unemployment and inflation: statistical price indices; Money and the banking system, the central bank and commercial banks, monetary policy and the national economy; Budget deficits, interest rates and inflation, monetary and fiscal measures: government control methods; Productivity and growth in national wealth; International economics, international trade, exchange rates, balance of payments; Payment for imports, letters of credit, telegraphic transfers, bills of exchange; Forward cover, import duties, taxes of the foregoing concepts as applied to the building industry; Imported equipment, duties, exchange rates, risks, contracts with foreign firms.

Textbook

Reference

Assessment
Continuous assessment  60%
Written examination  40% (1×2 hrs.)

BL281: BUILDING LAW I

Lecture hours per week: 2
Laboratory hours per week: 2
Credits: 9

Learning Outcomes
To introduce the legal system of Papua New Guinea and provide an appreciation of the basic concepts of the laws of tort and contract. On completing the subject, the student should be able to:

1. Describe the historical development of the legal system and the place of precedence, statute, and local custom and practice in legal processes;
2. Explain the legal system operating in PNG and the structure of the judicial system;
3. Expound on the basic concepts of the laws of tort and contract.

Syllabus
The origin of law in contemporary PNG; The PNG constitution and legal system; Legal bodies and authorities; The principles of law of contract; The essentials of a valid contract: offer and acceptance, intention, capacity, consideration, legality, possibility of performance, genuineness of consent, voidance, unenforceable and illegal contracts; Remedies for breach of contract; The nature of tort and general defences.

Textbook

Reference
Selected readings related to subject topics.

Assessment
Continuous assessment  60%
Written examination  40% (1×2 hrs.)

BL282: BUILDING LAW II

Lecture hours per week: 2
Laboratory hours per week: 2
Credits: 9
Prerequisite: BL281

Learning Outcomes
To expand on the legal aspects of contract and tort, and employment and insurance with particular respect to the construction industry. On completing the subject, the student should be able to:

1. Understand the basic statutory controls relating to building works in PNG;
2. Explain the general principles of the law with regard to contracts and tort as applied to construction;
3. Explain the general principles of the law with regard to various forms of business organisation, employment and insurance;
4. Understand how the legal concepts above are applied in day to day operations within the building industry.
Syllabus
Laws of contract and tort in relation to construction; Legal differences between various forms of business organisation within the construction industry; Laws regulating employment; Introduction to insurance law, basic concepts underlying insurance law, procedures for effecting insurance, classes of insurance, fire insurance, insurance of construction work, accident insurance, employers’ liability, public liability, professional liability insurance.

Textbook

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL301: QUANTITIES AND ESTIMATING III

Lecture hours per week: 4
Laboratory hours per week:

Credits: 14
Prerequisite: BL202

Learning Outcomes
To consolidate knowledge of the principles of taking off and to introduce methods of calculating unit rates for building work. On completing the subject, the student should be able to:

1. Work up and prepare draft bills for a complete project;
2. Build-up rates for building work;
3. Prepare schedules of materials.

Syllabus
Measuring, calculating quantities and preparing bills for different work sections of complete buildings; Calculation and build-up of unit rates; Preparation of schedules of materials for building projects.

Textbook
Australian standard method of measurement of building works, Australian Institute of Quantity Surveyors and Master Builders Australia, Deakin, Australia, 2012.


Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL311: BUILDING TECHNOLOGY

STUDIO III

Lecture hours per week: 4
Laboratory hours per week:

Credits: 9
Prerequisite: BL211

Learning Outcomes
To develop a practical understanding of building services and their integration within the construction process. On completing the subject, the student should be able to:

1. Identify the range of services expected to be incorporated into modern buildings and understand the basic terminology;
2. Define the basic terminology of building services and describe the materials and components used for them;
3. Appreciate the spatial requirements of building services within a structure;
4. Interpret construction and coordination requirements from building services drawings.

Syllabus
Studio projects designed to provide the practical application of building services; Industrial visits to materials suppliers and specialist contractors; Practical assessments of building services installed in existing structures; Consideration of the storage, security and movement of materials, components and equipment involved in building services, during the construction process.

Assessment
Continuous assessment 100%
Department of Architecture and Building

BL321: CONSTRUCTION MANAGEMENT III

Lecture hours per week: 4
Laboratory hours per week: 

Credits: 18
Prerequisite:BL222

Learning Outcomes
To introduce management theory, the concepts of motivation, and the importance of efficient and effective communications within the context of management. On completion of the subject the student should be able to:
1. Explain the various schools of management thinking;
2. Appreciate motivation theory and its relevance to the construction industry;
3. Understand the importance of good industrial relations policies;
4. Describe the forms of communication which take place and their effects on management practice.

Syllabus
Introduction to management theory, understanding and applying motivation theory to the construction process; A review of the industrial relations policies relevant to construction; Forms of communication, the importance of clear communication in management practice, procedures for formal meetings, providing correct documentation.

Textbook

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL322: CONSTRUCTION MANAGEMENT IV

Laboratory hours per week:

Credits: 12
Prerequisite: BL321

Learning Outcomes
To develop further knowledge of management as applied to building projects. On completing the subject, the student should be able to:
1. Prepare overall and short-term management programs using more advanced planning techniques;
2. Explain how to procure and coordinate the resources needed for efficient site management;
3. Prepare cash flow forecasts and monitor and control site costs of building projects;
4. Develop procedures for the efficient and effective utilisation of plant and equipment.

Syllabus
Project planning and scheduling using more advanced planning techniques; Mobilising onto a job; Purchasing, hire plant, subcontracting, Contractor's cash flow forecasting: defining, approving, monitoring and recording of reimbursable site costs; Monitoring and controlling site costs; Plant management, maintenance and depreciation.

Textbook

Reference

Assessment
Continuous assessment 50%
Written examination 50% (1×2 hrs.)

BL332: BUILDING SYSTEMS V

Lecture hours per week: 3
Laboratory hours per week: 

Credits: 18
Prerequisite: AR331
Learning Outcomes
To provide an understanding of the principles of production taking into consideration the use of plant and equipment and the issues of productivity, health and safety and quality control. On completing the subject, the student should be able to:

1. Critically examine various forms and methods of construction;
2. Assess methods of construction in the context of efficient and effective production;
3. Evaluate and promote methods of construction to promote health and safety;
4. Identify ways and methods of controlling quality of workmanship.

Syllabus
Expansion and development of building systems previously studied with an emphasis on urban situations and poor ground conditions; Temporary supports for deep excavations, and soil stabilisation; Plant and equipment used for construction; Transportation and storage of materials during construction; Access for plant and equipment; Temporary works including scaffolding, formwork and false work, methods of shoring; Health and safety issues; Quality control in construction.

Textbook

Assessment
Continuous assessment 50%
Written examination 50% (1×2 hrs.)

BL342: BUILDING ECONOMICS II

Lecture hours per week: 2
Laboratory hours per week: 
Credits: 9

Learning Outcomes
To introduce basic concepts about various types of business organisations and their establishment and management. On completing the subject, the student should be able to:

1. Select forms of businesses to suit various circumstances;
2. Prepare basic financial statements for small and medium-size construction and other related businesses;
3. Comment on the solvency and profitability of construction and related businesses.

Syllabus
Forms of business organisation, establishing and running a business, directors' responsibilities; Financial structure of construction and related businesses, financial management: assets and liabilities, working and fixed capital, sources of capital, useful financial ratios, profit, taxation, depreciation, dividends, general reserve; Market planning; Introduction to basic accounting and financial statements: profit and loss statements, analysis and interpretation of balance sheets, annual business returns, general office and project overheads, trading mark-ups, charge-out rates, basic office systems; Financial planning and control in construction, causes and prevention of financial instability and business failure.

Textbook

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL362: CONSTRUCTION SURVEYING II

Lecture hours per week: 3
Laboratory hours per week: 
Credits: 9
Prerequisite: BL162

Learning Outcomes
To learn the application of advanced site survey and levelling techniques. On completing the subject, the student should be able to:
1. Survey complex sites using linear level and theodolite;
2. Set out and level building and civil works.

Syllabus
Levelling surveys: linear levelling, longitudinal sections, cross sections; Theodolite surveys: angular measurements, distance measurements; Setting out building works: coordinates, grids horizontal and vertical dimensional control; Setting out civil works: works profiles, traverses, curves, roads, drains, excavations; Field exercise involving the application of the foregoing techniques.

Textbook
Whyte, W., Paul, R., Basic surveying, Taylor & Francis, Hoboken, USA, 2012.

Reference

Assessment
Continuous assessment 100%

BL471: INDUSTRIAL TRAINING I

Duration: 16 weeks minimum
Credits: 60

Prerequisite: Diploma of Building (DBLD)

Learning Outcomes
To expose students to real work situations and provide a firm and more mature base for the subsequent course work. On completing the program, the student should be able to apply the experience to enhance understanding of all the subjects comprising two semesters of the degree course.

Syllabus
A minimum of 16 weeks of supervised industrial experience from employers approved by the Department of Architecture and Building and including but not limited to building contractors, private professional practices, government and statutory organisations. The following areas of experience are recommended: Contracting organisations: Preparing bills of quantities; Estimating and preparing tender packages; Project planning for construction work; Preparing project budgets and cash flow forecasts; Levelling of construction sites and/or setting out construction work; Setting up site cost control systems and monitoring site costs; Preparing materials schedules; Purchasing, hiring plant and subcontracting procedures; Supervising and administering contracts including engaging in site meetings, dealing with superintendent's instructions, preparing weekly or monthly programs for on-going projects, reviewing progress against programs, and re-scheduling to allow for delays, changes in resources; Monitoring and recording site reimbursable costs; Preparing interim valuations for progress payments; Managing subcontractors' progress payments; Attending to contractual matters; Preparing and agreeing to statements of final project accounts; Engaging in construction on site. Professional practices and public bodies: Preparing and presenting bills of quantities; Preparing and editing schedules of rates; Advising on selection of tenderers, checking and evaluating tenders, preparing tender reports; Engaging in cost control of the construction; Preparing and reporting on interim valuations; Supervising and administering contracts; Preparing and agreeing to statements of final account; Visiting construction sites. General: Organising and managing business or public sector organisations and initiating and drafting contractual and related correspondences.

Assessment
Continuous assessment 100%

For the purpose of assessment 'experience' means carrying out duties on the student's own initiative in the capacity as an assistant or member of a group or as an observer of others carrying out relevant duties. Students are required to keep and maintain, according to rules to be set, a diary of work experience to be forwarded to the subject examiner at the end of each month. Assessment will comprise review of monthly diary reports and interviews with employers.
BL472: INDUSTRIAL TRAINING II

Lecture hours per week: 5
Laboratory hours per week: 
Duration: 16 weeks minimum

Credits: 60
Prerequisite: BL471

Learning Outcomes
To expose students to real work situations and provide a firm and more mature base for the subsequent course work. On completing the program, the student should be able to apply the experience to enhance understanding of all the subjects comprising two semesters of the degree course.

Syllabus
A minimum of 16 weeks of supervised industrial experience from employers approved by the Department of Architecture and Building and including but not limited to building contractors, private professional practices, government and statutory organisations. The following areas of experience are recommended:

- Contracting organisations: Preparing bills of quantities; Estimating and preparing tender packages; Project planning for construction work; Preparing project budgets and cash flow forecasts; Levelling of construction sites and/or setting out construction work; Setting up site cost control systems and monitoring site costs; Preparing materials schedules; Purchasing, hiring plant and subcontracting procedures; Supervising and administering contracts including engaging in site meetings, dealing with superintendent's instructions, preparing weekly or monthly programs for on-going projects, reviewing progress against programs, and re-scheduling to allow for delays, changes in resources; Monitoring and recording site reimbursable costs; Preparing interim valuations for progress payments; Managing subcontractors' progress payments; Attending to contractual matters; Preparing and agreeing to statements of final project accounts; Engaging in construction on site.
- Professional practices and public bodies: Preparing and presenting bills of quantities; Preparing and editing schedules of rates; Advising on selection of tenderers, checking and evaluating tenders, preparing tender reports; Engaging in cost control of the construction; Preparing and reporting on interim valuations; Supervising and administering contracts; Preparing and agreeing to statements of final account; Visiting construction sites. General: Organising and managing business or public sector organisations and initiating and drafting contractual and related correspondences.

Assessment
Continuous assessment 100%
For the purpose of assessment 'experience' means carrying out duties on the student's own initiative in the capacity as an assistant or member of a group or as an observer of others carrying out relevant duties. Students are required to keep and maintain, according to rules to be set, a diary of work experience to be forwarded to the subject examiner at the end of each month. Assessment will review of monthly diary reports, interviews with employers, and at the conclusion of the period of industrial training, examination of a Report on Industrial Training to be submitted by the 1st November of the year in which the training is undertaken.

BL511: BUILDING TECHNOLOGY STUDIO IV

Lecture hours per week: 4
Laboratory hours per week: 

Credits: 9
Prerequisite: BL332

Learning Outcomes
To develop practical understanding of building systems applied to large scale residential, commercial and high-rise construction. On completing the subject, the student should be able to:

1. Critically examine various construction methods and discuss their relative merits;
2. Make assessments about efficient and effective use of resources;
3. Prepare construction programs;
4. Use programming techniques to prepare cash flow forecasts and monitor and control site costs;
5. Develop procedures to make efficient and effective use of plant and equipment;
6. Evaluate design and specification effects on future maintenance costs.
Syllabus
Studio projects designed to effect an understanding of building systems and their implications on the production process. Site visits to consider practical applications of building design on construction. Construction details and evaluation of various alternative solutions. Application of programming technique to control progress and expenditure.

Assessment
Continuous assessment 100%

BL541: BUILDING ECONOMICS III

Lecture hours per week: 3
Laboratory hours per week:

Credits: 12
Prerequisite: BL342

Learning Outcomes
To provide an understanding of the principles used in assessing the economic viability of investments in the construction industry. On completing the subject, the student should be able to:
1. Explain the methods used to establish estimates of the initial costs of proposed construction projects;
2. Calculate the costs of proposed projects in terms of initial, annual and periodic costs;
3. Apply various appraisal techniques in making investment decisions.

Syllabus
Time value of money, compound interest formulae and tables; Project costs: initial costs, running costs, operating and maintenance costs; Introduction to life-cycle costing; Investment appraisal techniques: payback, average return, net present value, internal rate of return, break-even analysis, cost-benefit analysis; Approximate estimating techniques and building costs indices: their compilation and uses; Economics of building development and the concept of a developer's budget; Introduction to valuation processes and determinants of land values.

Textbook

Reference
Selected readings related to subject topics.

Assessment
Continuous assessment 50%
Written examination 50% (1×2 hrs.)

BL542: BUILDING ECONOMICS IV

Lecture hours per week: 3
Laboratory hours per week:

Credits: 12
Prerequisite: BL541

Learning Outcomes
To identify the design, locational and economic factors affecting the construction costs of buildings. On completing the student should be able to:
1. Determine the extent to which various design decisions change the cost of construction;
2. Advise on aspects of design that may be adjusted in order to get estimated cost within realistic limits;
3. Analyse building costs by elements;
4. Apply cost planning techniques in preliminary estimating of project costs.

Syllabus
Effects of design variables, construction methods, site and market conditions on construction costs; Elemental cost analysis, cost planning techniques, cost control in building design.

Textbook

Reference
Selected readings related to subject topics.

Assessment
Continuous assessment 50%
Written examination 50% (1×2 hrs.)
BL581: PROFESSIONAL PRACTICE

Lecture hours per week: 4  
Laboratory hours per week: 
Credits: 18

Learning Outcomes
To define the nature of professional practice, forms of building contracts, terms and clauses used in the administration of building contracts, and the procedures for dispute resolution. On completing the subject, the student should be able to:

1. Explain the key concepts and terms encountered in professional life; 
2. Define the nature, types and components of building contracts; 
3. Be familiar with the meaning of common terms and constituent clauses which typically comprise the general conditions of a contract; 
4. Know the options and steps for resolving contractual disputes.

Syllabus
The professional practitioner: professionalism in society and duty of care, professional societies, ethics, conditions and terms of engagement and fees for service, employment of other consultants, professional liability and indemnification; Building contracts: legal constituents of a contract, types of contracts, tendering process, negotiated contracts, contract preliminaries, and components of contract documents, including correspondences, drawings, specifications, and schedules; General conditions of contract: comprehensive review of clauses comprising a standard set of conditions; Disputes resolution: definition and comparison of mediation, arbitration, litigation, appointment, powers and duties of an arbitrator, arbitration procedures, submissions, hearings, awards, costs, rules of evidence.

Textbook
PNGIA Members Handbook. 
Reference scale of professional charges and conditions of engagement, Australian Institute of Quantity Surveyors, Australia, 1991. 
Australian Standard AS 2124. 
General conditions of contract with AS 2125 and AS 2127. 
Departmental and selected practice notes by Royal Australian Institute of Architects. 

Reference

Assessment
Continuous assessment 60% 
Written examination 40% (1×2 hrs.)

BL582: CONTRACT ADMINISTRATION

Lecture hours per week: 4  
Laboratory hours per week: 
Credits: 12

Prerequisite: BL501, BL581

Learning Outcomes
To introduce the principles and practice of administering building construction contracts with an emphasis on the financial calculations and adjustments to be made to the contract sum in accordance with the conditions of contract. On completing the subject students should be able to:

1. Assess the effects of variation orders, nominated works and supplies, rise and fall, and extension of time on the contract sum;
2. Prepare interim valuations for progress payments;
3. Prepare simple financial statements and reports forecasting the probable final cost of the project;
4. Set out a statement of final account.

Syllabus
The make-up of the contract sum; Variation orders, measurement and valuation of variations, the variations account, dayworks account, measurement and adjustment of provisional quantities. Adjustment of prime cost and provisional sums; Rise and fall (fluctuations): the traditional method of valuing and the use of indices; Valuation for interim certificates, certificates and payments, retentions and the pattern of release, retention security; Progress and site meetings, delays and extension of time, assessing the cost of delays, contractual claims, Financial statements and financial reports; Completion, defects and the preparation of statements of final account.

Textbook
Contract administration for the building team,
BL501: QUANTITIES AND ESTIMATING IV

Lecture hours per week: 5
Laboratory hours per week:

Credits: 18
Prerequisite: BL302

Learning Outcomes
To consolidate knowledge of measuring, estimating and tendering for building works. On completing the subject, the student should be able to:
1. Take-off quantities for the foundations and structure of reinforced concrete, steel-framed and timber buildings;
2. Build-up unit rates for all sections and trades involved in a building;
3. Prepare a tender package.

Syllabus
Taking-off quantities of foundations and structure of buildings constructed of reinforced concrete, steel framing and timber; Build-up of unit rates including the pricing of preliminaries and site overheads; Preparation of tenders, calculation of off-site overheads and profit margins, allowance for firm prices.

Textbook
Australian standard method of measurement of building works, Australian Institute of Quantity Surveyors and Master Builders Australia, Deakin, Australia, 2012.

Reference

Assessment
Continuous assessment 60%
Written examination 40% (1×2 hrs.)

BL502: QUANTITIES AND ESTIMATING V

Lecture hours per week: 5
Laboratory hours per week:

Credits: 18
Prerequisite: BL501

Learning Outcomes
To consolidate knowledge of the procedures involved in preparing bills of quantities for a complete building project and analysing tenders. On completing the subject, the student should be able to:
1. Take-off and prepare bill of quantities for a complete building project;
2. Prepare estimates and tender package for complete building project;
3. Analyse tenders and quotations and prepare tender reports;
4. Use computer to perform the above tasks.

Syllabus
Project work in advanced quantity surveying; Taking-off quantities for complete buildings; Writing specifications and preambles; Producing estimates and bills of quantities by computer; Analysing tenders and quotations; Selecting contractors, subcontractors and suppliers.

Textbook
Australian standard method of measurement of building works, Australian Institute of Quantity Surveyors and Master Builders Australia, Deakin, Australia, 2012.

Reference
Kwakye, A. A., Understanding tendering and
Assessment
Continuous assessment  60%
Written examination  40% (1×2 hrs.)

BL522: CONSTRUCTION MANAGEMENT V

Lecture hours per week: 4
Laboratory hours per week: 

Credits: 18
Prerequisite:  BL322

Learning Outcomes
To provide an insight into the management techniques used to improve productivity in construction. On completing the subject, the student should be able to:
1. Describe the characteristics, organisation and control of labour in the construction industry;
2. Apply the principles of work study to construction operations;
3. Employ the principles and procedures of negotiation;
4. Prepare a plan for marketing construction services.

Syllabus
Introduction to work study, method study, work measurement and the application in construction management; Development of human resources and labour analysis for construction firms; Marketing construction services and cost effective methods for winning work; Negotiating techniques; Implementation of quality assurance procedures; Managing safety; Maintenance management.

Textbook

Reference

Assessment
Continuous assessment  100%

BL532: PROJECT MANAGEMENT

Lecture hours per week: 3
Laboratory hours per week: 

Credits: 12

Learning Outcomes
To introduce the basic principles of managing construction projects on behalf of a client. On completing the subject, the student should be able to:
1. Explain the role of the project manager in the construction process;
2. Identify the types of projects for which project management may be required;
3. Describe the basic techniques used to manage design and construction of projects;
4. Use computers as a key project management tool.

Syllabus
Introduction to project management concept involved in running a project from inception to handover; The project management team and its responsibilities; Contractual arrangements for the provision of project management services, Project feasibility studies; Project planning and scheduling; Project budgets and cash flow analysis; Project monitoring and cost control; Introduction to cost engineering; Introduction to value engineering; Introduction to facilities management; Project safety management; Project quality management.

Textbook

Reference
Selected readings related to subject topics.

Assessment
Continuous assessment