Report of Validation Panel

Date of Meeting: 22nd May 2013

Named Award:	Bachelor of Science
Programme Title:	Bachelor of Science in Craft Technology – Mechanical Services
Award Type:	Bachelor of Science
Award Class:	Major Award
NFQ Level:	7
Intakes Commencing:	September 2013
ECTS/ACCS Credits:	120

PANEL MEMBERS

Name / Function / Institution
Mr Albert Byrne, Head of Department of Engineering Technology & Trade Studies, Waterford Institute of Technology (Chair)
Mr Tim O'Leary, Acting Head of School, Department of Construction Skills, Dublin Institute of Technology
Mr Mick O'Hanlon, Senior Supervisor, HA O'Neil, Jones Engineering Group
Ms Orla Flynn, Head of School, CIT Crawford College of Art and Design
Dr Catherine Frehill, Module Moderator, Office of the Registrar and Vice President for Academic Affairs, CIT

PROPOSING TEAM MEMBERS

Name / Function / Department
Mr Matt Cotterell, Head of School, Mechanical, Electrical & Process Engineering
Mr John Twohig, Head, Centre of Craft Studies
Mr Kevin Barry, Lecturer, Centre of Craft Studies
Mr Noel J Barry, Lecturer, Centre of Craft Studies
Mr Trevor Whelan, Lecturer, Centre of Craft Studies
Mr William Bateman, Lecturer, Department of Process, Energy and Transport
Mr Anthony Sexton, Lecturer, Centre of Craft Studies
Mr Eamonn Sheffron, Lecturer, Centre of Craft Studies

BACKGROUND TO THE PROPOSED PROGRAMME

The proposal seeks validation for a Bachelor of Science in Craft Technology – Mechanical Services. The proposed programme has been developed as part of the Centre of Craft Studies strategy to develop a suite of craft programmes to meet student demand whilst fulfilling the needs of industry for qualified graduates with applied practical skills.

In developing this programme the Centre of Craft Studies is endeavouring to create an opportunity for Leaving Certificate students who may have taken up an apprenticeship in the past which is at present no longer feasible. The course offers a strategic approach toward planning for an inevitable skills deficit due to a decline in apprenticeship training.

In addition to employer and industry surveys, several consultation meetings were held to ensure that the program would produce highly skilled, industry ready graduates.

FINDINGS OF THE PANEL

*NOTE: In this report, the term "**Requirement**" is used to indicate an action or amendment which in the view of the Panel **must** be undertaken prior to commencement of the Programme. The term "**Recommendation**" indicates an item to which the Institute/Academic Council/Course Board should give serious consideration for implementation at an early stage and which should be the subject of ongoing monitoring.*

The Panel has considered the documentation provided and has discussed the programme with the proposers. Based on this, the Panel has arrived at a number of Findings, Requirements and Recommendations as follows.

1. Programme-Level Findings

1.1 NEED FOR THE PROGRAMME

Validation Criterion: Is there a convincing need for the programme with a viable level of applications?
Overall Finding: Yes

1.2 AWARD

Validation Criterion: Are the level and type of the proposed award appropriate?
Overall Finding: Yes

1.3 LEARNING EXPERIENCE

Validation Criterion: Is the learning experience of an appropriate level, standard and quality overall?
Overall Finding: Yes, subject to certain Requirements and Recommendations

The proposed Programme Outcomes as presented to the Panel are attached as Appendix 1.
Findings, requirements and recommendations concerning individual modules (if any) are recorded in Section 3 below.

1.3.1. **Requirement**: The teaching and learning strategy for the programme must be added to the submission documentation.

1.3.2. **Recommendation**: The links with industry and employers should be fostered by site-visits, invited speakers etc. and included in the relevant module descriptors.

1.4 PROGRAMME STRUCTURE

Validation Criterion: Is the programme structure logical and well designed (including procedures for access, transfer and progression)?
Overall Finding: Yes, subject to certain Requirements and Recommendations.

The Semester Schedules as proposed to the panel on 22nd May 2013 are in Appendix 2. The revised semester schedules as proposed and for approval are in Appendix 3.

1.4.1 **Requirement**: The programme structure should be updated to reflect proposed semester schedule changes.

1.4.2 **Requirement**: Remap the module learning outcomes to the programme outcomes.

1.4.3 **Requirement:** Develop an assessment matrix for the programme and include in the programme submission documentation.

1.4.4 **Recommendation:** The panel recommends that every effort should be made to facilitate advanced entry for apprentices where appropriate. In order to facilitate advanced entry and Recognition of Prior Learning the qualifications of phase 6 apprentices should be mapped to the appropriate modules.

1.4.5 **Recommendation**: The panel recommends a placement module be offered in the programme as a free choice option.

1.5 PROGRAMME MANAGEMENT

Validation Criterion: Are the programme management structures adequate?
Overall Finding: Yes, subject to certain Requirements

Requirement: Expand on the proposed management structure with the programme submission documentation.

1.6 RESOURCE REQUIREMENTS

Validation Criterion: Are the resource requirements reasonable?
Overall Finding: Yes, subject to certain Recommendations

The Panel was assured on behalf of the President, Head of School and Head of Centre appropriate resources in terms of staffing and facilities will be put in place when the programme is validated.

Recommendation: Staff Continuing Professional Development should be facilitated and encouraged.

Recommendation: The panel recommends that the Centre of Craft Studies consider offering the course on a part-time basis as there may be considerable demand.

1.7 IMPACT ON THE INSTITUTE

Validation Criterion: Will the impact of the programme on the Institute be positive?
Overall Finding: Yes, subject to certain Recommendations

Recommendations: The institute needs to be clear in the marketing strategy for the programme in terms of graduate skill set.

2. Module-Level Findings

The Panel notes that 18 modules on the proposed programme are pre-approved modules which may be delivered across several CIT programmes.

The Panel was informed that the new draft modules have been the subject of internal scrutiny by the CIT module moderator (Dr Catherine Frehill).

In exercising its brief to consider the overall standard and appropriateness of modules, the Panel wishes to add the following findings, requirements and recommendations.

2.1 ALL MODULES

2.1.1 Requirement: Any revisions to Module Descriptors or Semester Schedules made to address the recommendations and requirements in this require sign-off from the CIT Module Moderator and the Registrar's Office prior to approval by the CIT Academic Council.

2.1.2 Requirement: The appropriate Reassessment Requirement should be selected for each module.

2.2 Various Modules

2.2.1 Requirement: The type and timing of assessments should be rechecked and modified where the panel has indicated changes would be appropriate.

2.2.2 Requirement: Reading lists including supplementary texts should be expanded and updated, in order to ensure currency of content.

2.2.3 Requirement: The part-time mode of delivery should be completed for all modules.

2.3. Module: Industrial Services

Requirements: The coursework breakdown should be completed.

2.4 Modules: Refrigeration Technology / Gas Technology / Industrial Oil Fired Equipment / Industrial Renewable Technology

Requirement: The coursework breakdown must be modified to include an End of Semester Formal Examination.

2.5. Module: Sanitary Drainage & Water Quality and Efficiency

Requirement: Confined Space Training should be included in this module.

2.6 Modules: Renewable Heating Technology / Workshop Pipe Fabrication / Estimating for Mechanical Services

Requirement: The assessment breakdown needs to be adjusted for this module.

2.7 Modules: Oil Fired Equipment

Recommendation: The assessment breakdown should be reconsidered as the module could be over-assessed.

2.8 Module: Gas Controls Systems

Recommendation: The proposers should consider based on Health and Safety requirements if there are modules which are requirements before enrolment in Gas Controls Systems.

2.9 Module: Mechanical Services Project

Requirement: The learning outcomes must be rewritten to include the written method statement and to identify, specify and obtain components for the project to be undertaken. The indicative content needs to be reviewed to highlight links to industry. The coursework breakdown must include assessment of a hazard analysis and safety report within the first three weeks of the project.

Recommendation: Additional support and guidance for the written component should be considered.

3. Other Findings

Findings: The panel wishes to compliment the programme proposers on the quality of the documentation received and the robust discussion and defence of the proposal at the validation panel meeting.

4. Conclusion

Based on the above findings, the Panel has arrived at the following Conclusions:

- The Programme meets the required standards for an award in the Science field of study at Level 7 of the National Framework of Qualifications.
- The Programme meets the criteria for validation of a new programme adopted by the Academic Council of Cork Institute of Technology.

The Panel therefore recommends that the Programme be validated for five academic years, or until the next programmatic review, whichever is soonest, subject to implementation of the Requirements above, and with due regard to the Recommendations made.

Implementation of Requirements and Recommendations
Requiring Registrar's Office Sign-Off:
All Requirements: Completed

Response from Proposers :BSc in Craft Technology – Mechanical Services

Requirement No.	Completed	Reason for not Completed / Comments
1.3.1	Yes	In progress – add to documentation
1.4.1	Yes	
1.4.2	Yes	JT to review
1.4.3	Yes	Add to documentation
2.1.1	Yes	
2.1.2	Yes	
2.2.1	Yes	
2.2.2	Yes	
2.2.3	Yes	
2.4	Yes	
2.5	Yes	
2.6	Yes	
2.9	Yes	
Recommendation No.	**Completed**	**Reason for not Completed / Comments**
1.3.2	Yes	Added to appropriate modules
1.4.4	In progress	Phases 2,4 & 6 plumbing apprentice programme - RPL by Oct 2013 Qualified Tradespersons will be RPL for experiential learning by application
1.4.5	In progress	Mr Eamonn Sheffron to write Module, add as free choice in Semester 4
1.6	In progress	PDP agree with relevant staff
1.6	In progress	Head of CCS to investigate demand for part time delivery
2.7	Yes	
2.8	Yes	Pre-requisite Learning - Other gas module included

APPENDIX 1 – Proposed Programme Outcomes

Programme Outcomes

On successful completion of this programme the learner will be able to :

PO1	**Knowledge - Breadth**	Demonstrate a knowledge of technologies and practices relevant to Mechanical Services design, installation , commissioning and maintenance.
PO2	**Knowledge - Kind**	Demonstrate the ability to develop and implement applied Mechanical Services solutions and to evaluate systems performance.
PO3	**Skill - Range**	Apply technical and managerial knowledge and skills to the solution of practical problems in Mechanical Services.
PO4	**Skill - Selectivity**	Select procedural knowledge and skills in response to the installation of system components or process to meet a specified need. To assess the technical performance of a Mechanical Services system.
PO5	**Competence - Context**	Conduct investigations to facilitate the solution of predictable and diagnostic Mechanical Services faults.
PO6	**Competence - Role**	Work effectively as an individual in teams and as a part of a multi-disciplinary team and communicate with all others involved in well-defined work settings.
PO7	**Competence - Learning to Learn**	Identify and address learning needs at the personal and professional levels within a structured learning environment and an awareness of continued professional development.
PO8	**Competence - Insight**	Demonstrate an understanding of the wider social, political, business and economic contexts of Mechanical Services, including an appreciation of the ethical issues involved.

Appendix 2 – Proposed Semester Schedules

Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
CMOD6001	Creativity,Innovation&Teamwork (Approved)	STEPHEN CASSIDY	Fundamental	5.0	3.00	0.00	100.0%	0%
No Code Yet	Mechanical Services Workshop (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	100.0%	0%
MECH6001	BS Mech 1 (Approved)	DAITHI FALLON	Fundamental	5.0	4.00	0.00	30.0%	70%
No Code Yet	Fluids and Gases (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	100.0%	0%
MECH6008	Introductory CAD (Approved)	DAITHI FALLON	Fundamental	5.0	6.00	0.00	100.0%	0%
MATH6023	Maths for Technology (Approved)	AINE NI SHE	Fundamental	5.0	3.00	0.00	40.0%	60%

Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
MANU6002	BS CAD Mech 1 (Approved)	DAITHI FALLON	Fundamental	5.0	5.00	0.00	100.0%	0%
No Code Yet	Industrial Services (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	40.0%	60%
CIVL6031	Health and Safety - Built Env (Approved)	DES WALSH	Fundamental	5.0	4.00	2.50	100.0%	0%
No Code Yet	Pipe Jointing (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	100.0%	0%
No Code Yet	Refrigeration (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	100.0%	0%

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0%	50%
COMP6014	ICT for Eng Techs (Approved)	JIM O DWYER	Fundamental	5.0	3.00	0.00	100.0%	0%
ACCT6007	Financial Accounting 1 (Approved)	DON CROWLEY	Fundamental	5.0	3.50	0.00	30.0%	70%

Semester 3

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
MANU6008	BS Mechanical 2 (Approved)	DAITHI FALLON	Fundamental	5.0	5.00	0.00	30.0%	70%
No Code Yet	Mechanical Controls (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	40.0%	60%
MECH6019	Welding Technology (Approved)	MATTHEW COTTERELL	Fundamental	5.0	6.00	0.00	100.0%	0%
MANU6006	Building Services CAD Mech 2 (Approved)	DAITHI FALLON	Fundamental	5.0	4.00	0.00	100.0%	0%
No Code Yet	Gas Technology (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	60.0%	40%
MGMT7023	Project Management 1 (Pending Approval)	CAROLINE O REILLY	Intermediate	5.0	3.00	0.00	50.0%	50%

Semester 4

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
No Code Yet	Heating, Hot & Cold Systems (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	100.0%	0%
MANU6009	BS Mechanical 3 (Approved)	DAITHI FALLON	Fundamental	5.0	4.00	0.00	30.0%	70%
No Code Yet	Gas Fired Equipment (Draft)	JOHN TWOHIG	Fundamental	5.0	4.00	0.00	100.0%	0%
No Code Yet	Energy Management Systems (Draft)	JOHN TWOHIG	Intermediate	5.0	3.00	0.00	50.0%	50%
No Code Yet	Documentation Management (Draft)	JOHN TWOHIG	Intermediate	5.0	3.00	0.00	100.0%	0%

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0%	50%
MECH6039	TAGS welding to EN 287 std (Approved)	JOHN TWOHIG	Fundamental	5.0	4.27	0.00	100.0%	0%
BULD6024	CS2Construction Law 2B (Approved)	DANIEL CAHILL	Fundamental	5.0	4.00	2.00	40.0%	60%

Semester 5

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
No Code Yet	Sanitary Drainage & Water (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	40.0%	60%
No Code Yet	Renewable Heating Technology (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	55.0%	45%
No Code Yet	Workshop Pipe Fabrication (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	100.0%	0%
No Code Yet	Estimating for Mechanical Serv (Draft)	DANIEL CAHILL	Fundamental	5.0	3.00	3.00	100.0%	0%
No Code Yet	Oil Fired Equipment (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	45.0%	55%

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0%	50%
BULD7027	CS3 Construction Contract 3B (Approved)	DANIEL CAHILL	Intermediate	5.0	4.00	2.00	40.0%	60%
MGMT7021	Human Resource Management (Approved)	BRIAN MC GRATH	Intermediate	5.0	3.00	0.00	30.0%	70%

Semester 6

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
No Code Yet	Mechanical Services Project (Draft)	JOHN TWOHIG	Intermediate	10.0	3.00	0.00	100.0%	0%
No Code Yet	Gas Controls Systems (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	100.0%	0%
No Code Yet	Industrial Oil Fired Equipment (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	55.0%	45%
No Code Yet	Industrial Renewable Tech (Draft)	JOHN TWOHIG	Intermediate	5.0	4.00	0.00	60.0%	40%
MGMT6031	Management 2 (Approved)	BRIAN MC GRATH	Fundamental	5.0	3.00	2.00	30.0%	70%

Appendix 3 Approved Semester Schedules

Semester 1

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
CMOD6001	Creativity,Innovation&Teamwork (Approved)	STEPHEN CASSIDY	Fundamental	5.0	3.00	0.00	100.0%	0%
CRAF6015	Mechanical Services Workshop (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	100.0%	0%
MECH6001	BS Mech 1 (Approved)	DAITHI FALLON	Fundamental	5.0	4.00	0.00	30.0%	70%
CRAF6016	Fluids and Gases (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	100.0%	0%
MECH6008	Introductory CAD (Approved)	MICHAEL J O MAHONY	Fundamental	5.0	5.00	0.00	100.0%	0%
MATH6023	Maths for Technology (Approved)	AINE NI SHE	Fundamental	5.0	4.00	3.00	40.0%	60%

Semester 2

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
MANU6002	BS CAD Mech 1 (Approved)	MICHAEL J O MAHONY	Fundamental	5.0	4.00	0.00	100.0%	0%
CRAF6017	Industrial Services (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	40.0%	60%
CIVL6031	Health and Safety - Built Env (Approved)	DES WALSH	Fundamental	5.0	4.00	2.50	100.0%	0%
CRAF6018	Pipe Jointing (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	100.0%	0%
CRAF6019	Refrigeration Tech (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	70.0%	30%

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
ACCT6002	Cost & Management Accounting 1 (Approved)	CAROLINE O REILLY	Fundamental	5.0	3.50	0.00	30.0%	70%
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0%	50%
COMP6014	ICT for Eng Techs (Approved)	JIM O DWYER	Fundamental	5.0	3.00	0.00	100.0%	0%

Semester 3

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
MANU6008	BS Mechanical 2 (Approved)	MICHAEL J O MAHONY	Fundamental	5.0	4.00	0.00	30.0%	70%
CRAF6020	Mechanical Controls (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	40.0%	60%
MECH6019	Welding Technology (Approved)	MATTHEW COTTERELL	Fundamental	5.0	6.00	0.00	100.0%	0%
MANU6006	Building Services CAD Mech 2 (Approved)	DAITHI FALLON	Fundamental	5.0	4.00	0.00	100.0%	0%
CRAF6021	Gas Technology (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	60.0%	40%
MGMT6031	Management 2 (Approved)	BRIAN MC GRATH	Fundamental	5.0	3.00	2.00	30.0%	70%

Semester 4

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
CRAF6022	Heating, Hot & Cold Systems (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	100.0%	0%
MANU6009	BS Mechanical 3 (Approved)	MICHAEL J O MAHONY	Fundamental	5.0	4.00	0.00	30.0%	70%
CRAF6023	Gas Fired Equipment (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.00	100.0%	0%
CRAF7004	Energy Management Systems (Approved)	JOHN TWOHIG	Intermediate	5.0	3.00	3.00	50.0%	50%
CRAF7005	Documentation Management (Approved)	JOHN TWOHIG	Intermediate	5.0	3.00	3.00	100.0%	0%

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0%	50%
MECH6039	TAGS welding to EN 287 std (Approved)	JOHN TWOHIG	Fundamental	5.0	4.00	4.27	100.0%	0%
BULD6024	CS2Construction Law 2B (Approved)	DANIEL CAHILL	Fundamental	5.0	4.00	2.00	40.0%	60%

Semester 5

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
CRAF7006	Sanitary Drainage & Water (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	40.0%	60%
CRAF7007	Renewable Heating Technology (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	55.0%	45%
CRAF7008	Workshop Pipe Fabrication (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	100.0%	0%
CRAF7009	Estimating for Mech Services (Approved)	DANIEL CAHILL	Intermediate	5.0	3.00	3.00	100.0%	0%
CRAF7010	Oil Fired Equipment (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	45.0%	55%

Elective								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
FREE6001	Free Choice Module (Approved)	PAUL GALLAGHER	N/A	5.0	4.00	0.00	50.0%	50%
BULD7027	CS3 Construction Contract 3B (Approved)	DANIEL CAHILL	Intermediate	5.0	4.00	2.00	40.0%	60%
MGMT7021	Human Resource Management (Approved)	BRIAN MC GRATH	Intermediate	5.0	3.00	0.00	30.0%	70%

Semester 6

Mandatory								
Mod Code	**Module Title**	**Co-ordinator**	**Level**	**Credits**	**FT Hours Contact Hours**	**PT Hours Contact Hours**	**Course Work**	**Final Exam**
CRAF7011	Mechanical Services Project (Approved)	JOHN TWOHIG	Intermediate	10.0	0.40	0.40	100.0%	0%
CRAF7012	Gas Controls Systems (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	100.0%	0%
CRAF7013	Industrial Oil Fired Equipment (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	55.0%	45%
CRAF7014	Industrial Renewable Tech (Approved)	JOHN TWOHIG	Intermediate	5.0	4.00	4.00	60.0%	40%
MGMT7023	Project Management 1 (Approved)	CAROLINE O REILLY	Intermediate	5.0	3.00	0.00	30.0%	70%