CARPENTRY & JOINERY

ONE YEAR COURSE

LEADING TO THE

INSTITUTE OF CARPENTERS

ADVANCED CRAFT EXAMINATION

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July 2004

INTRODUCTION TO THE COURSE

This course is designed and constructed for students who wish to continue their studies of the craft Carpentry and Joinery at a higher level.

The course is for a period of one year after which it is envisaged that the student will attain the Institute of Carpenters Advanced Craft Qualification.

The examination itself consists of:-

a **Paper One: Craft skills competence.**

A practical test piece to be:-

1 Completed in a continuous period not exceeding **seven hours duration.**

2 Comparable in standard to that at present in use.

3 To be set by the Institute.

Marking of the completed test is to be:-

1 Undertaken by the Examination Centre.

2 Conform to a marking schedule devised by the examination board.

3 Fall within the following broad bending (subject to confirmation) :-

0	**-**	**59%**	**Fail**
60	**-**	**74%**	**Pass**
75	**-**	**87%**	**Credit**
88	**-**	**100%**	**Distinction**

(Subject to confirmation of Examination Board)

b Paper two: <u>Associated Vocational Technology</u>

A General and Specialist Technology element which comprises a Single Associated Vocational Technology (AVT) Paper set and marked by the Institute and comprising two parts to be attempted in a total continuous time period not to exceed **three hours.**

Part A: A compulsory section to include **18 questions** to be attempted in a recommended time of **one hour**. All answers shall carry equal marks, to be submitted on the question paper provided and to be short in nature, i.e. sketched, written, calculated etc. This section shall attract upto **40%** of the marks allocated to the AVT component of this examination.

Part B: Comprises of **8 Questions**, only **4** of which are to be attempted in a recommended time of **two hours.** All questions shall carry equal marks and be submitted singly on **IOC** headed stationery provided which will require in-depth answers, i.e. scale drawings, sketches, calculations etc. This section shall attract up to **60%** of the marks allocated to the AVT component of this examination.

Following publication of the results, a certificate of achievement will be issued to candidates listing only those components in which they were successful. All candidates will be notified of their achievement towards the required standard in the components for which they are registered and may be offered membership of the Institute.

Any candidate registered for the Advanced Craft examination and whose marks in the **AVT** (theory paper) component falls short of that required to achieve a pass grade, may, if achieving the required standard in the **Practical** component, be offered **Licentiate** membership of the Institute.

Finally, as stated before, it is of great importance that Lecturers follow the scheme of work and not miss out subject areas they feel they have limited experience of. **Any** problems with the course content should be conferred with the course director.

After each theory lesson the subject covered is to be entered in the **"Record of Work"** book to enable any Lecturer substituting for an absent colleague to know what they are to teach, and to enable any updating of the scheme in the future.
The theory lesson is to be divided into two parts with a possible short break in between. Some students may have come straight from work and in need of refreshment. As the theory lessons are three hours in total it is for this reason each lesson has been designed to be **One and a half hours long.**

Again maximum use of all the current regulations should be made use of together with manufacturers samples and catalogues as appropriate.
From time to time the students should be set ***homework*** to encourage self-study and improve on minor difficulties they may have in a particular area.

Remember, the students you are teaching will be the future Carpenters and Joiners, Site Agents, Trades Foremans, Architects, Contract Managers etc, or even **Lecturers.....**

IOC 3 THEORY 1.5 HOURS

year & syllabus reference

The course content will cover:-

3.7	**Hand tools**
3.8	**Timber Jointing**
3.11	**Portable Powered Tools**
3.12	**Woodworking Machinery**
3.13	**Doors**
3.14	**Door Frames and Linings**
3.15	**Casement Windows**
3.16	**Fitments**
3.17	**Staircases**
3.18	**Floors**
3.19	**Wall Panelling**
3.20	**Finishes**
3.21	**Partitions And Screens**
3.22	**Roofing**
3.23	**Formwork**
3.24	**Scaffolding**
3.25	**Shoring**
3.26	**Centering**
3.28.	**Repair and Maintenance**

1.7 Hand Tools

Week No

1	**3.7.1**	Introduction to the course. The examination structure etc.
	3.7.2	Types of special tools available**.**
	3.7.3	Use of compass plane, setting up etc.
	3.7.4	Use of draw knife.
	3.7.5	Describe the use of the side rebate plane.
	3.7.6	Describe the use of the plough plane and moulding cutters.
	3.7.7	Explain the use of gouges.
	3.7.8	Describe the use of spokeshaves.
	3.7.9	Explain the use of traditional tools, i.e. wooden moulding planes etc.
	3.7.10	Understand methods of maintenance to the above tools.

3.8 Timber Jointing

2	**3.8.1**	Describe types of joints used for framing, carcassing, widening and lengthening.
	3.8.2	Explain the use of counter cramps and state where used.
	3.8.3	Describe the use of "Biscuit" jointing and where used.
	3.8.4	Types of joints used to disguise shrinkage.
	3.8.5	Describe other types of proprietary fixings.

3.11 Portable power tools

Week No

3	**3.11.1**	Recap on safe use of power tools.
	3.11.2	Power supply; including low voltage transformers & compressed air equipment.
	3.11.3	Safe use of pneumatic power tools.
	3.11.4	Importance of regular maintenance.
	3.11.5	Safe use of chop saw.
	3.11.6	Safe use of Ballistic fixing tools.
	3.11.7	Describe situations where these tools would be used.

3.13 Doors

4	**3.13.1**	Describe purpose & use of fire doors.
	3.13.2	Understand the construction of one hour & half hour doors.
	3.13.3	Construction of viewing panels, types of glass, intumescent strips, putty etc.

5	**3.13.4**	Describe the construction of doors with top rails that are flat and in single curvature.
	3.13.5	Understand the construction of doors to include panels and bolection mouldings.
	3.13.6	Explain the use of curved mouldings.

Week No		
6	**3.13.7**	Recap on sliding doors.
	3.13.8	Describe the construction of domestic & industrial sliding doors on a curved track.
	3.13.9	Describe the construction & fitting of sliding & folding doors.
	3.13.10	Understand the fitting of the top & bottom tracks.
	3.13.11	List the types of ironmongery used.
7	**3.13.12**	Understand the construction of up & over doors.
	3.13.13	Describe the fitting of up & over doors.
	3.13.14	List the types of ironmongery used.
8	**3.13.15**	State the use of double margin doors.
	3.13.16	Understand the construction of double margin doors.
	3.13.17	Describe the fitting and hanging of double margin doors.
	3.13.18	List the types of ironmongery used.
9	**3.13.19**	Understand the use of single & double action doors.
	3.13.20	Describe methods of fitting.
	3.13.21	List ironmongery used.

3.14 Door frames and Linings

Week No

10 **3.14.1** Recap on types of frames and linings.

3.14.2 Describe the construction of moulded and rebated frames and linings to include transoms.

3.14.3 Describe the construction of moulded and rebated frames that have heads which are flat and in a single curvature to include transoms and fanlights.

3.14.4 Explain fitting and fixing.

3.14.5 Describe the construction and fitting of framed linings.

3.12 Woodworking Machinery

11 **3.12.1** Recap on woodmachining regulations. PUWER.

3.12.2 Describe the safe use of the vertical spindle machine.

3.12.3 Identify the appropriate parts and tooling used.

3.12.4 Describe procedures for maintenance, setting up and safe operation.

3.12.5 Describe the use of holding jigs.

3.12.6 Explain how circular work is carried out on the machine.

Week No

12	**3.12.7**	Describe the safe use of the single ended tenoning machine.
	3.12.8	Identify the appropriate part and tooling required.
	3.12.9	Describe procedures for maintenance, setting up and safe operation.
	3.12.10	State the factors affecting the surface finish of timber on both these machines.

13	**3.12.11**	Describe the safe use of the belt sander.
	3.12.12	Explain the holding and clamping during machine processes.
	3.12.13	Describe the safe use of the chain morticer.
	3.12.14	Describe operation use including maintenance, setting up and safe operation.

3.15 Casement Windows

14	**3.15.1**	Describe the construction of casement windows that are flat and in a single curvature to include transoms and mullions.
	3.15.2	Describe the construction of such windows to include sashes that are side, top or bottom hung.
	3.15.3	Explain the construction of casement windows that have vertical and horizontal pivots.

Week No

15	**3.15.4**	Understand the construction of casement windows with tilt and turn sashes.
	3.15.5	Describe the construction and fitting of box frame windows to include methods for sliding sashes.

16	**3.15.6**	Explain the construction and fitting of bay and bow fronted windows with horizontal heads.
	3.15.7	Describe the construction and fitting of shop fronts and entrances. (straight and splayed).

3.16 Fitments

17	**3.16.1**	Describe the construction of free standing and in-situ purpose made and proprietary floor units for use in domestic, shops, offices and public buildings.
	3.16.2	Describe the construction of in-situ purpose made and proprietary wall units for domestic, shops, offices and public building use.
	3.16.3	Explain the construction of wall and floor units, free standing, in-situ purpose made and proprietary for ecclesiastic buildings.

3.17 Staircases

Week No

18	**3.17.1**	Recap on stair regulations.
	3.17.2	Describe the construction and use of a dog leg staircase including terms used.
	3.17.3	Explain methods of forming landing and fixing staircase.
	3.17.4	Describe finishing to stairwell and fitting and fixing of handrails and balustrades.
	3.17.5	Describe the construction and use of an open newel staircase including terms used.
	3.17.6	Understand methods of forming landing and fixing staircase.
	3.17.7	Explain the finishing to stairwell and fitting and fixing of handrails and balustrades.

19	**3.17.8**	Describe the construction of geometrical stairs with open and closed strings.
	3.17.9	Explain the terms tapered and shaped treads.
	3.17.10	Describe finishes to well opening.
	3.17.11	Understand methods of fixing.
	3.17.12	Describe methods of forming and fixing handrails and balustrades.
	3.17.13	Explain methods to protect the staircase prior to handing over.

3.18 Floors (single span)

Week No

20	**3.18.1**	Describe the construction of an upper double floor to include timber or metal binders.
	3.18.2	Methods of trimming floors to hearths, openings and stairwells.
	3.18.3	Recap on positioning of notches and holes for services.
	3.18.4	Recap on fitting and fixing strutting.

21	**3.18.5**	Explain methods of constructing and securing access traps.
	3.18.6	Describe methods of fitting timber sections to steel and concrete.
	3.18.7	Explain methods of enclosing steel and concrete beams.
	3.18.8	Describe the methods of laying and fixing of all types of timber flooring and sheet materials on joists, battens and fillets including a solid concrete base.

3.19 Wall panelling (dado, three quarter and full height)

Week No

22 **3.19.1** Recap on the purpose and use of wall panelling.

3.19.2 Recap on the use of dado panelling.

3.19.3 Explain the methods used for forming the grounds for three quarter panelling.

3.19.4 Describe the construction of panelling to include timber, decorative and plastic facings.

3.19.5 Describe methods of fixing panelling.

3.19.6 Explain methods for forming internal and external corners.

3.19.7 Describe methods of panelling door and window openings.

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23 **3.19.8** Describe the construction of full height panelling.

3.19.9 Explain types of coverings used.

3.19.10 Describe methods of fixing.

3.19.11 Describe the construction at internal and external corners as well as door and window openings.

3.19.12 Describe the construction, fitting, fixing and finishing to pilasters and cornices.

3.20 Finishes

Week No

24	**3.20.1**	Recap on types of finishes.
	3.20.2	Describe the fitting and fixing of mouldings at an inclined angle.
	3.20.3	Explain the purpose and fixing of plinth blocks.
	3.20.4	Describe the construction of splayed linings to door and window openings.
	3.20.5	Explain methods of encasing services with access traps.

3.21 Partitions and Screens

25	**3.21.1**	Recap on types of partitions.
	3.21.2	Describe the construction and fitting of sliding and folding doors that are top hung with bottom rollers.
	3.21.3	Describe the construction of bar-top roller shutters.
	3.21.4	Explain methods of forming and finishing openings.
	3.21.5	Understand the provisions for fittings and services.

3.22 Roofing (12m span)

26	**3.22.1**	Describe the construction of a hipped ended roof over right angled and irregular shaped plans to include sprocketed eaves etc.
	3.22.2	Describe the construction of traditional, framed and mansard roofs.

Week No

27	**3.22.3**	Describe the construction of trussed rafter roofs.
	3.22.4	Explain the construction of roofs with roof trusses including safe storage.
	3.22.5	Describe the construction of roof turrets, spires and domes that are square, polygonal and circular on plan.
	3.22.6	Describe methods of forming access traps.
	3.22.7	Explain methods of weathering.

28	**3.22.8**	Describe the use of laminated beams, columns and portal frames.
	3.22.9	Explain the construction of dormer windows with flat, pitched and single curvature.
	3.22.10	Describe methods of ventilation to roof space.
	3.22.11	Understand the provision for services.

3.23 Formwork (including steel & GRP)

29	**3.23.1**	Describe where used.
	3.23.2	Understand fluid pressures, methods of erection, support, easing and striking for single and multi-use formwork.
	3.23.3	Recap on release agents.
	3.23.4	Describe formwork for lintels, cills, posts, columns and beams, including design and construction for concrete which is to be cast in-situ and pre-cast.
	3.23.5	Explain formwork for suspended floor slab.

Week No		
30	**3.23.6**	Describe formwork for walls and retaining walls up to 3 lifts.
	3.23.7	Explain formwork for dog leg staircase to include landings.
	3.23.8	Explain proprietary tie fixing and cast-in fixing.

3.24 Scaffolding

31	**3.24.1**	Describe the use and situations for putlog scaffolding.
	3.24.2	Understand the need for safety and regular checks prior to use.
	3.24.3	Describe the procedure for the safe erection and dismantling.
	3.24.4	Describe the storage, safe usage and inspection procedures relating to all types of temporary scaffolding.

3.25 Shoring (dead, raking and flying in timber & steel up to four storeys)

32	**3.25.1**	Recap on safe use of shoring, including dead.
	3.25.2	Describe situations where raking shores would be used.
	3.25.3	Explain methods of measurement, design, erection and sizes of materials.
	3.25.4	Explain situations where a flying shore is used.
	3.25.5	Explain methods of measurement, design, erection and size of materials, plus dismantling procedures.

3.26 Centering (up to 3m span & 450 mm thick)

Week No

33	**3.26.1**	Recap on use of centering.
	3.26.2	Describe centres constructed of timber & sheet materials.
	3.26.3	Explain construction for segmental, pseudo and semi elliptical centres.
	3.26.4	Identify elements and components.
	3.26.5	Describe procedures for propping, easing and striking.
	3.26.6	Explain methods for levelling and lining in.
	3.26.7	Describe types and functions of laggings.

3.28 Repair and Maintenance

34	**3.28.1**	Recap on general maintenance.
	3.28.2	State situations where needed.
	3.28.3	Describe methods of replacing architraves and skirtings.
	3.28.4	Describe methods of repairing frames and linings & Doors
	3.28.5	Describe methods of repairing locks and adjustment.
	3.28.6	Describe methods of replacing defective joists and rafters.
	3.28.8	Show and describe methods of splicing in to match colour and grain of defective components.
35 -36		To cover any loose ends & revision for the **Advanced Craft Examinations.**

IOC 3 ASSOCIATED SUBJECTS

year & syllabus reference

The course content will cover:-

3.1 Materials

3.2 Craft related drawing

3.3 Timber related science

3.4 Wood trades calculations

3.5 Safety

3.6 Protection, storage and safe handing

3.9 Fixings

3.10 Hardware and ironmongery

3.27 Setting out and levelling

3.29 Laminated and built-up structural members

3.30 Timber framed buildings

3.31 Planning and organisation

3.32 Record and Maintain Information

3.33 Communication

3.1 Materials

Week No

1	**3.1.1**	Describe the production and use of extruded aluminium sections.
	3.1.2	Explain the production and use of drawn metal sections.
	3.1.3	Show examples of the above.
	3.1.4	Describe the manufacture of frames using the above components.

3.2 Craft related drawing

2	**3.2.1**	Recap on building drawing practice using BS.
	3.2.2	Identify types of construction drawings to include location, component and assembly.
	3.2.3	Using a suitable scale set out a simple floor plan from given information.

3.3 Timber related science

3	**3.3.1**	Describe the types, function and use of materials designed to increase thermal and sound insulation to include sheet, quilt and granular.
	3.3.2	Show examples of the above and state situations where used.

3.4 Wood trades calculations

Week No

4	**3.4.1**	Recap on roofing calculations including pythagoras's theorem.
	3.4.2	Calculations involving tangents.

3.5 Safety

5	**3.5.1**	Knowledge of R.I.D.D.O.R. 1996, Construction (Design and Management) Regulations 1994, Management of Health and Safety at work Regulations 1992, Workplace (Health, Safety, and Welfare) Regulations 1992, Health and Safety (Display Screen Equipment) Regulations 1992, Manual Handling Operations Regulations 1992, Personal Protection Equipment 1992, PUWER
	3.5.2	Provision and Use of Work Equipment 1992, Health and Safety at Work Act (H.S.A.W.A.) 1974, C.O.S.H.H., Noise at Work Act 1989, Factories Act 1961, Control of Pollution Act 1971, Fire Precautions Act 1971, Office Shops and Railway Premises Act 1963, Codes of Practice.

3.2 Craft related drawing

6	**3.2.4**	Produce a setting out rod (broken line) for a pair of bank entrance doors.
	3.2.5	From the rod produce a cutting list.

3.3 Timber related science

Week No

7	**3.3.3**	Describe the meaning of compression, tension and shear.
	3.3.4	Explain safe working stress and factor of safety as applied to timber.

3.4 Wood trades calculations

8	**3.4.3**	Explain the use of the roofing square.
	3.4.4	Calculate length of roofing components from given sizes.

3.2 Craft related drawing

9	**3.2.6**	Geometrically develop the outer surface and rib shapes to roof turrets to include domes, pyramids etc.

3.3 Timber related science

10	**3.3.5**	Describe the application of fire retardants.
	3.3.6	State the three methods of heat transference.
	3.3.7	Define the terms "k" and "u" values.

3.6 Protection, storage and safe handling

Week No

11	**3.6.1**	State the factors affecting the handling & storage of materials & components on-site and in the workshop.
	3.6.2	Describe safe methods of handling materials and components during manufacture and on completion on-site, in the workshop and during transport.
	3.6.3	Appreciate the need for a suitable system to administer every delivery, storage etc.

3.9. Fixings

12	**3.9.1**	Describe the use of handrail bolts.
	3.9.2	Understand the use of wood pellets, proprietary and hand made.
	3.9.3	Describe types of fixings used in roofing and flooring, i.e. ties etc.

3.2 Craft related drawing

13	**3.2.7**	Determine the geometrical developments to handrails, rake to level.

14	**3.2.8**	Determine the geometrical development to a hand rail rake to rake.

3.10 Hardware and ironmongery

Week No

15	**3.10.1**	Describe how certain types of locks are altered to suit different openings.
	3.10.2	Explain the use and fitting of door closers including "perko" and "dictator" etc.
	3.10.3	Describe the fitting of finger and kick plates.
	3.10.4	Explain the use and fitting of ironmongery to sliding doors, bank doors etc.
	3.10.5	Describe the fitting of skirting and floor stops.

3.4 Wood trades calculation

16	**3.4.5**	Calculate surface areas and volumes to frustrums including pyramids and cones.
	3.4.6	Calculate costs of materials from given prices.

3.27 Setting out and levelling

17	**3.27.1**	Recap on principals of setting out.
	3.27.2	Describe the use of the "Cowley" level.
	3.27.3	Explain the use of the optical site square.
	3.27.4	Describe the use of boning rods and profiles.

3.3 Timber related science

Week No

18 **3.3.8** Explain the reasons for and methods of stress grading timber.

3.2 Craft related drawing

19 **3.2.9** Geometrically develop surfaces and intersections for hoppers and splayed linings, including the required bevels.

3.27 Setting out and levelling

20 **3.27.5** State the use of laser levelling equipment.

3.27.6 Explain the reasons for and methods of transferring and recording levels.

3.27.7 Describe the setting out of rectangular buildings, and formwork to strip, raft and pad foundations, and ground beams.

3.29 Laminated and built-up structures

Week No

21	**3.29.1**	Describe reasons for the use of laminated work.
	3.29.2	Understand the calculation to determine thickness of laminate.
	3.29.3	Explain the selection of timbers.
	3.29.4	State the type of adhesive used.
	3.29.5	Describe the construction of curved and straight work for beams, portal frames, and stressed skin panels.
	3.29.6	Explain methods of cramping and curing of adhesive including RFH.
	3.29.7	Describe and illustrate procedures for fitting, fixing and finishing.

3.3 Craft related science

22	**3.3.9**	Understand the use of beam reactions for a simply supported beam and state where and why used.
	3.3.10	Describe shear force and bending moments.

3.4 Wood trades calculations

23	**3.4.7**	Calculate material costs from cutting list to include % for waste, discount, delivery etc.

3.2 Craft related drawing

Week No

24	**3.2.10**	Produce scale drawings to show sections through door and window frames including brickwork, plaster, grounds etc.

3.30 Timber framed buildings Platform Only (two storey)

25	**3.30.1**	Identify elements and components.
	3.30.2	Describe methods of construction for platform timber framed building.
	3.30.3	Explain the methods of fixing internal and external cladding to include strip and sheet materials in timber, metal and plastic.
	3.30.4	Appreciate the application of fire precautions to comply with current legislation.

3.31 Planning and organisation

26	**3.31.1**	Understand the legal responsibilities of employer and employee.
	3.31.2	State the factors affecting job planning and costing.
	3.31.3	Describe the content, function and purpose of contract documents.
	3.31.4	Understand the legal requirements for record keeping.
	3.31.5	State the methods and procedures for monitoring operational activities.
	3.31.6	Explain the need to formulate and evaluate work programmes.

Week No		
27	**3.31.7**	State the methods of assessing and measuring individual and team performance.
	3.31.8	Describe the procedures for assessing and maintaining quality.
	3.31.9	State methods of analysing, recording and storing information.
	3.31.10	Understand the need for good site layout.
	3.31.11	Appreciate the need for good security.
	3.31.12	State the use of door and window schedules.

3.2 Craft related drawing

28	**3.2.11**	Produce a drawing to illustrate the production of a triangular louvered ventilator.

3.31 Planning and organisation

29	**3.31.13**	Describe the use of variation orders.
	3.31.14	Understand the use and preparations of day worksheets, job sheets and time sheets.
	3.31.15	Acceptance of deliveries.
	3.31.16	Explain the purpose and need of snagging.
	3.31.17	State the purpose of the liability period.

3.32 Record and maintain information

Week No

30	**3.32.1**	Understand purpose of visiting site to record measurements.
	3.32.2	Describe methods of recording measurements.
	3.32.3	Explain methods for recording measurements for doors, door frames and linings.
	3.32.4	Explain methods of recording measurements for windows, window frames, wall and floor units.
	3.32.5	Describe methods of recording site measurements for stairs.
	3.32.6	Explain methods of recording condition of components.
	3.32.7	Identify potential health hazards.

3.33 Communication

31	**3.33.1**	Explain the factors influencing working relationships.
	3.33.2	Define methods of transferring information.
	3.33.3	Define the principle of report writing.

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32 - 36 To cover any loose ends and revision for **Advanced Craft Examination.**

NOTES

Past papers and information on all the exams can be obtained by visiting the Institute of Carpenters examinations web page on www.iocexams.co.uk. Or alternatively contact :-

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Chief Examiner

July 2004