

## ON-LINE **FUNDAMENTALS OF PACKAGING** TECHNOLOGY **BITE-SIZED MODULES**

### **EXCLUSIVELY AVAILABLE THROUGH THE AIP IN AUSTRALASIA**



### **NEEDING TO FILL KNOWLEDGE GAPS? NEED A BROAD INTRODUCTION TO PACKAGING?**

**IOPP'S INTERNATIONALLY RECOGNISED ON-LINE & RESIDENTIAL TRAINING CURRICULUM EXCLUSIVELY AVAILABLE IN AUSTRALASIA THROUGH THE AIP. **SPECIAL PRICING FOR AIP MEMBERS.****

**In today's challenging packaging environment, you can't afford to make mistakes or overlook the critical details that cost precious time and money. You need the knowledge—from materials properties and selection to transport packaging issues—that can help you make better decisions regarding your company's packaging dollars—now.**

The Fundamentals of Packaging Technology on-line modules are set-up for the convenience of busy working professionals, and the training platform is functionally intuitive. Complete your training when your time allows, and at your own pace. Wherever you are, the course goes with you!

The Fundamentals of Packaging Technology course content is developed by IoPP in consultation with packaging subject matter experts at leading global consumer packaged goods companies who face packaging challenges just like yours.

Take the complete course and learn about all the major segments of packaging—and beyond. Or customise your training by selecting from 12 lesson bundles organised by topic, or from single lessons as short as 30 minutes. Fundamentals on-line spans 42 modules and 27 hours of content that is recognised for its quality by the World Packaging Organisation.

The Fundamentals of Packaging Technology course is ideal training to prepare for the Certified Packaging Professional (CPP) exam offered through the AIP and the IoPP. The AIP are also offering the FPT course as a 4x Semester, 2-day per Semester residential program over 12 months.

**FILL YOUR KNOWLEDGE GAPS TODAY. ASK THE AIP HOW.**

## ON-LINE **FUNDAMENTALS OF PACKAGING TECHNOLOGY INDIVIDUAL LESSONS**

*You can choose to enrol in Lessons, Lesson Bundles or the full course. The option is yours.*

### **FPT00-01: S PERSPECTIVE ON PACKAGING**

In this free module you will learn about the history and importance of packaging, the role of packaging and the different facets of the packaging industry. This module demonstrates the functionality of the course site and the approach to a typical lesson.

### **FPT01-01: S PACKAGE DEVELOPMENT PROCESS (45 MINS)**

In this lesson we will discuss the package development process and how it is typically managed within an organisation. Packaging is a complex endeavour that must be viewed as a part of a larger system, within which every activity has some impact or demand on the package. Departments such as marketing, sales, distribution, legal, quality, warehousing, manufacturing and purchasing have their own particular demands on the package and its design.

### **FPT01-02: S MARKET RESEARCH (45 MINS)**

In this lesson you will learn how market research is an important tool and can be critical to the success of a new product. We will look at some market study tools that can be used to generate the information that will help bring a product to market successfully.

### **FPT01-03: S GRAPHIC DESIGN (1 HR 15 MINS)**

In this lesson we will cover the structural and graphic components of a package design, demographics, psychographics, motivational messaging, branding and trademarks. We will also discuss brand equity and basic design elements available to a packager, including colour, materials, shape, graphics and typography.

### **FPT02-01: S COLOUR PERCEPTION (30 MINS)**

In this lesson we will discuss the electromagnetic spectrum and visible light. We will talk about how colour is perceived. You will see how addition synthesis and subtraction synthesis work to make other colours. We will discuss the terms used to describe colours, and how viewing colour is subjective and varies depending on the light source, the object being viewed and the observer. We will discuss colour measurement and look at reproducing colours.

### **FPT02-02: S INTRODUCTION TO PRINTING (45 MINS)**

In this lesson we will discuss the prepress process and the basics of the different printing processes. We will look at film, computer and the direct-to-press prepress processes. Halftone and process art development will be discussed.

### **FPT02-03: S PRINTING METHODS (45 MINS)**

In this lesson you will learn about the most common printing processes: Flexography, Lithography and Gravure. We will also discuss several package decorating methods: Screen Printing, Hot Stamping, Heat Transfer and Pad Printing.

### **FPT02-04: S ELECTRONIC PRODUCT CODING (45 MINS)**

In this lesson we will discuss the advantages of electronic product coding and introduce you to the different styles of barcoding, including UPC and EAN codes and explore data matrix coding and Radio Frequency Identification (RFID), showing you what each one looks like and how it is used.

### **FPT02-05: S LABELS AND LABELLING (30 MINS)**

In this lesson we will discuss labels and labelling. This discussion will cover the different materials that are used to make labels, different types of labels used on packaging, the basics of the equipment used in to apply them.

### **FPT03-01: S PAPER AND PAPERBOARD (45 MINS)**

In this lesson you will learn about cellulose fibre sources and the significance and difference in paper fibre lengths. We will discuss the manufacturing of paper and paperboard. You will also learn about sizing, bleaching, calendaring and clay coating of paper.

### **FPT03-02: S FOLDING CARTONS (45 MINS)**

In this lesson we will explore different paperboard constructions and the carton production process. You will learn about carton forming, gluing and closure methods. We will also review different carton style designs and how cartons are erected and printed.

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### **FPT03-03: S CORRUGATED FIBREBOARD (30 MINS)**

In this lesson we will explore a brief history of corrugated fibreboard and some basic terminology regarding corrugated measurements including caliper, basis weight and corrugated flute sizes. You will also learn about industry standard testing methods, carrier rules and class stamps. The manufacturing process for corrugated fibreboard also will be reviewed.

### **FPT03-04: S CORRUGATED BOXES (45 MINS)**

In this lesson we will discuss corrugated boxes, Regular Slotted Containers (RSC), die-cut boxes and bliss-style boxes. The manufacturing of corrugated boxes and, briefly, their decorating and printing also will be reviewed.

### **FPT03-05: S BOX COMPRESSION STRENGTH WORKSHOP (30 MINS)**

In this lesson, we will discuss box compression strength and the stacking strength of packaging, as well as how humidity, time and pallet patterns affect box compression.

### **FPT04-01: S DISTRIBUTION ENVIRONMENT (1 HR 15 MINS)**

In this lesson we will explore what it takes to protect a product through its distribution environment so that it arrives undamaged at its final destination and in the hands of the consumer. We will examine how it is important to not only consider the package design, but also the design of the product itself.

### **FPT04-02: S PROTECTIVE PACKAGING (30 MINS)**

In this lesson we will cover the science involved in creating packaging that will survive the distribution environment. You will learn the physics involved in a falling, or more importantly, involved in the 'sudden stop' or 'change in direction' of a package that can cause damage. We will also discuss how to calculate the cushioning required preventing damage, as well as some of the most popular materials used.

### **FPT04-03: S PRE-SHIPMENT TESTING (30 MINS)**

In this lesson we will discuss pre-shipment testing procedures and the different methods of distribution testing. We will also study the rules and regulations of package testing.

### **FPT04-04: S INDUSTRIAL PACKAGING (45 MINS)**

In this lesson you will learn about different industrial packaging and how it is used. We will explore the different types of industrial packaging, including boxes, bags, drums and intermediate bulk containers (IBC). We will also cover unit loads and common methods of keeping packages together for ease of handling, transport and storage. You will also learn about returnable and reusable containers and how they are utilised.

### **FPT04-05: S WOOD PACKAGING (30 MINS)**

In this lesson we will discuss wood packaging, its different forms and how they are utilised in the packaging industry.

### **FPT05-01: S INTRODUCTION TO POLYMERS (30 MINS)**

In this lesson you will be introduced to the basics of polymers. We will cover the basic terminology and definitions used to describe polymers, the raw materials used in the manufacturing of polymers and the makeup of some common polymers.

### **FPT05-02: S POLYMER CHEMISTRY (30 MINS)**

In this lesson you will learn about polymers, the process of polymerisation and the different properties that affect how a polymer will react in processing. We will review the effects that a polymer's molecular structure, polarity and size have on the permeation and barrier properties of the polymer. In this lesson we will discuss the most common polymers used in packaging, their general properties and their common applications.

### **FPT05-03: S PACKAGING POLYMERS (30 MINS)**

In this lesson we will discuss the most common polymers used in packaging, their general properties and their common applications.

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### **FPT05-04: S POLYMER PROPERTY COMPARISONS (30 MINS)**

In this lesson we will compare the properties of different polymers. You will learn about their physical properties, such as elasticity, viscosity and viscos-elasticity. We will look at Melt Index and melt flow rate and outline how polymers are selected for use, based on the expected temperature ranges involved. You will see how chemical additives can modify or improve the properties to polymers.

### **FPT06-01: S EXTRUDED FILMS (30 MINS)**

In this lesson you will learn about the most common method used to form plastic sheet and simple- profile plastic components. You will see the operation of a plasticising extruder, which is the beginning of any plastic moulding process. We will review the processes for manufacturing extrusion profiles, cast film and blown extrusion film.

### **FPT06-02: S FLEXIBLE PACKAGING–PART I (60 MINS)**

In this lesson you will learn the about the different types of materials used in flexible packaging, including their characteristics, applications and production. We will talk about the roles aluminum foil, paper and plastic films play in modern product packaging and how the choice of the packaging material should be based on the product being packaged.

### **FPT06-03: S FLEXIBLE PACKAGING–PART II (60 MINS)**

In this lesson we will discuss plastic laminates, including their structural and physical properties. We will also talk about how to effectively specify laminates. We will show you several examples of laminates and how they are used for packaging of both food and non-food products. You will see the converting process and see how certain packaging materials are manufactured.

### **FPT06-04: S THERMOFORMING (30 MINS)**

In this lesson you will learn the fundamentals of the thermoforming process and its application within the packaging industry. We will review the different types of moulds used in this process and discuss the guidelines that need to be employed to design a component that will be produced using this process.

### **FPT06-05: S INJECTION MOULDING (30 MINS)**

In this lesson we will examine the different types of moulds used for injection moulding and how they operate. You will learn the definition and purpose of sprees, runners and gates. You will discover the challenges posed by moulding objects with undercuts or threaded closures. We will look at thermal expansion of the polymers and why sink marks are formed. We will discuss the special design requirements of an injection moulded cup.

### **FPT06-06: S BLOW MOULDING (30 MINS)**

Processes used to make bottles, including extrusion blow moulding, injection blow moulding and injection-stretch blow moulding. We will review the advantages and disadvantages of each technique. Finally, we will show you a bit about in-mould labelling.

### **FPT07-01: S BOTTLE DESIGN CRITERIA (30 MINS)**

In this lesson you will learn the basic design criteria that go into producing a bottle that can be efficiently produced and cost-effectively filled on a production line to provide the consumer with a package that adds value.

### **FPT07-02: S METAL CONTAINERS (30 MINS)**

In this lesson we will discuss the creation and the use of metal containers. We will also study the different processes for making metal containers.

### **FPT07-03: S AEROSOLS (30 MINS)**

In this lesson we will discuss the evolution of aerosol containers, their applications, how they are made and the advantages and disadvantages they provide.

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### **FPT07-04: S GLASS PACKAGING (30 MINS)**

In this lesson we will discuss glass packaging from early days to modern day. This lesson will cover the history of glass packaging, its applications, manufacturing process and the advantages and disadvantages that are associated with glass.

### **FPT07-05: S CLOSURES–PART I (30 MINS)**

In this lesson you will learn the basic terminology used to describe a closure, the different types of closures available and how to select a bottle/closure combination that will protect the product through the life of the product.

### **FPT07-06: S CLOSURES–PART II (45 MINS)**

In this lesson you will learn the different common plastic closure designs and the purpose that liners serve in the selection of a closure. We will take a look at the different styles of closures that are available other than plastic and discuss the emergence and importance of child-resistant and tamper-evident closures.

### **FPT07-07: S SPECIAL DESIGNS (30 MINS)**

In this lesson you will learn about several special package designs used today. Topics include blister and skin cards packaging; chubs; spiral wound and convolute wound fiber canisters; metal, plastic and laminated tube applications; bags and aluminum bottles. In this lesson we will discuss packaging machinery and how it has evolved over time. We will discuss line efficiencies and how to calculate output capacity.

### **FPT08-01: S PACKAGING MACHINERY (45 MINS)**

In this lesson we will discuss packaging machinery and how it has evolved over time. We will discuss line efficiencies and how to calculate output capacity.

### **FPT08-02: S FILLING SYSTEMS (30 MINS)**

In this lesson, we will discuss the basics of filling systems. We will cover the different types of fillers available, their capabilities and the advantages and disadvantages of each filling system.

### **FPT09-01: S ENVIRONMENTAL ISSUES (30 MINS)**

In this lesson, we will discuss different environmental issues that affect packaging. We will also study the different forms of solid waste that are generated and look at how recovering these materials post-use has impacted landfill utilisation in the U.S. You will learn the ways that packaging professionals can have a positive impact on the environment by employing the four 'R's' hierarchy.

### **FPT09-02: S SUSTAINABLE PACKAGING (30 MINS)**

In this lesson, we will discuss different sustainability models as they relate to packaging. We will also study the different ways that companies are having a positive impact by implementing process control and some metrics and scorecards that are being used to measure progress.

### **FPT09-03: S ADHESIVES–PART I (45 MINS)**

In this lesson we will cover the basics of adhesion technology to provide and understanding of how to discuss adhesives, how an adhesive form bonds and what adhesives are available to the packaging professional.

### **FPT09-04: S ADHESIVES–PART II (30 MINS)**

In this lesson we will cover adhesive application. We will discuss the properties that are important when specifying an adhesive to insure a proper bond and how to evaluate failures when they happen.

## ON-LINE **FUNDAMENTALS OF PACKAGING** TECHNOLOGY **LESSON BUNDLES**

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### **FPT01: PACKAGE DEVELOPMENT & DESIGN (2 HRS 45 MINS)**

FPT01-01: Package Development Process

FPT01-02: Market Research

FPT01-03: Graphic Design

### **FPT02: PACKAGE PRINTING & DECORATING (3 HRS, 15 MINS)**

FPT02-01: Colour Perception

FPT02-02: Introduction to Printing

FPT02-03: Printing Methods

FPT02-04: Electronic Product Coding

FPT02-05: Labels & Labelling

### **FPT03: PAPERBOARD & CORRUGATED (3 HRS, 15 MINS)**

FPT03-01: Paper & Paperboard

FPT03-02: Folding Cartons

FPT03-03: Corrugated Fibreboard

FPT03-04: Corrugated Boxes

FPT03-05: Box Compression Strength Workshop

### **FPT04: DISTRIBUTION & TRANSPORTATION PACKAGING (3 HRS, 30 MINS)**

FPT04-01: Distribution Environment

FPT04-02: Protective Packaging

FPT04-03: Pre-Shipment Testing

FPT04-04: Industrial Packaging

FPT04-05: Wood Packaging

### **FPT05: PACKAGING PLASTICS (2 HRS)**

FPT05-01: Introduction to Polymers

FPT05-02: Polymer Chemistry

FPT05-03: Packaging Polymers

FPT05-04: Polymer Property Comparisons

### **FPT06: PLASTIC PROCESSING (4 HRS)**

FPT06-01: Extruded Films

FPT06-02: Flexible Packaging–Part I

FPT06-03: Flexible Packaging–Part II

FPT06-04: Thermoforming FPT06-05: Injection Moulding

FPT06-06: Blow Moulding

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### **FPT07: CONTAINERS & CLOSURES (3 HRS 45 MINS)**

- FPT07-01: Bottle Design Criteria
- FPT07-02: Metal Containers
- FPT07-03: Aerosols
- FPT07-04: Glass Packaging
- FPT07-05: Closures–Part I
- FPT07-06: Closures–Part II
- FPT07-07: Special Designs

### **FPT08: PACKAGING MACHINERY (1 HR 15 MINS)**

- FPT08-01: Packaging Machinery
- FPT08-02: Filling Systems

### **FPT09: SUSTAINABILITY & ENVIRONMENT (1 HR)**

- FPT09-01: Environmental Issues
- FPT09-02: Sustainable Packaging

### **FPT10: ADHESIVES (1 HR 15 MINS)**

- FPT10-01: Adhesives–Part I
- FPT10-02: Adhesives–Part II

### **FPT11: FLEXIBLE PACKAGING (2 HRS 30 MINS)**

- FPT11-01: Extruded Films
- FPT11-02: Flexible Packaging–Part I
- FPT11-03: Flexible Packaging–Part II

### **FPT12: CLOSURES (1 HR 15 MINS)**

- FPT12-01: Closures–Part I
- FPT12-02: Closures–Part II

\* **Single lessons = 1.5 CPE pts per lesson**

\* **Lesson bundles = 6 CPE pts per lesson bundle**

\* **Complete course = 50 CPE pts**

\* **Fundamentals on-line-the complete course: (All 42 modules and 27 hours of content)**



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