

# WORLD PACKAGING ORGANIZATION

## Educational Committee

### “WHO IS DOING WHAT IN EDUCATION ON PACKAGING ON THE WORLD?”

Prepared by Doğan Erberk,  
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and  
member of WPO Educational Committee  
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# **California Polytechnic State University - Industrial Technology Department**

<http://www.cob.calpoly.edu/programs/IT/>

## Packaging Minor

The purpose of this interdisciplinary minor is to complement the student's degree major with a planned curriculum in packaging. The program is designed to capitalize on theories and skills learned in other disciplines, thereby uniquely preparing students for success as packaging professionals in positions ranging from highly technical research and development through purchasing, production, sales, and management.

## **PACKAGING EDUCATION**

### **Smooth changeover at Cal Poly**

*Renowned for its engineering curriculum, California Polytechnic State University changes packaging directors, yet maintains the momentum of its program.*

[Rick Lingle](#), Technical Editor

Singh replaced longtime program director Larry Gay, who retired in spring '02. Gay, one of the founders of the packaging program, continues to teach at Cal Poly. Filling the legendary Gay's shoes is daunting, yet Singh inherits a solid program that he believes offers distinct advantages.

Cal Poly is already nationally renowned for the excellence of its engineering program; the most recent U.S. News and World Report assessment of engineering colleges ranked it No.1. However, the packaging program may be better known for its egg drop competition, which has been held annually for 30 years and maintains a strong packaging flavor. Teams creatively devise methods using a limited amount of packaging to allow their raw egg to survive the highest drop to a landing. Nearly 200 students and industry members competed in 2003.

The Cal Poly program offers a packaging minor; additionally, all IT majors are required to take packaging courses.

The university's dynamics packaging laboratory is an open, spacious area that houses major pieces of equipment including a Ranpak PadPak® machine that creates perforated cushioning from rolls of kraft paper, and a Lansmont vibration tester that simulates the rigors of distribution. For more details, the Cal Poly Web site includes a special page on equipment holdings with equipment thumbnails and explanatory text: [www.calpoly.edu/~cppaclub/test equip.html](http://www.calpoly.edu/~cppaclub/test equip.html). Examples of donors to the packaging program include UPS, Packaging Machinery Manufacturers Institute, Bert W. Martin Foundation (which donated a Hewlett-Packard Model 5000 42"-wide color ink-jet printer), and Carnation, Inc.

The equipment has been used in various university research projects in recent years. Companies that have participated include Sonoco, AirBox, and General Mills (for project examples, see [www.packworld.com/go/w109](http://www.packworld.com/go/w109)).

"By far the biggest difference I've seen in Cal Poly's program is that the students are much more involved, not just with the classes, but with other activities such as Poly Pack," Singh says. Poly Pack is the annual packaging conference that's organized completely by Cal Poly students (see [www.poly pack.us/index.html](http://www.poly pack.us/index.html)).

"Also, the class sizes are smaller and the curriculum is very practical," continues Singh. "It's a very healthy combination of industrial technology, business, graphic design, and agricultural science. The students are allowed greater independence to explore, probe, try, fail, and succeed at learning. The continued industrial and educational support has allowed this program to continue to grow. We draw a

lot of guest lecturers from the industry who speak firsthand about 'real life' packaging challenges and opportunities."

### **Cal Poly classes**

The most popular class in Cal Poly's program is Fundamentals of Industrial Packaging; the latest class offered is Corrugated Protective Packaging. Structural and graphics design has been added to the packaging curriculum recently; AutoCad training is included in the packaging graphics course work.

Yearly, students in small groups are assigned a product development project that includes packaging. One such project resulted in a waterfall ornament packed safely inside a decorated corrugated container. After determining the appropriate structural requirements, the student group printed, laminated, and then die cut the corrugated.

Also in the works at Cal Poly is the addition of wireless Internet capability. According to Jim Sena, IT chair, the entire campus is scheduled to be wireless by June 2004.

"The benefit of wireless accessibility is true portability," explains Sena. "You can hook into Cal Poly's network and ultimately to the Web/Internet without having to connect through a cable."

There's also a teaching benefit. "Technically, a faculty member can use the wireless network to make presentations in the classroom," Sena says, adding that several technical hurdles remain. With the engineering minds Cal Poly has around, it's assured the university will make that a reality.

### **Packaging Management**

Industrial Packaging Personnel are involved in the planning and supervision of packaging designs, graphics, specifications of materials and machinery, evaluation of packaging and the impact of packaging on industry, consumers and the environment. Duties, responsibilities, and goals include:

- \*Protective packaging*
- \*Design of packaging lines*
- \*Food processing & management*
- \*Material handling & storage*
- \*Packaging machinery*

- \*Graphics*
- \*Environmental design of packaging*
- \*Solid waste management*
- \*Labeling regulations*
- \*Recycling*

- \*Corrugated Design*
- \*Testing packaging materials & packaging*

# **Sinclair Community College – Engineering & Industrial Technologies**

<http://www.sinclair.edu/academics/egr/departments/qet/programs/degree/qetp/index.cfm>

## **Associate In Applied Science in Quality Engineering Technology, Packaging Option**

The **Associate of Applied Science, Pachaging Option** program focuses on the technical, economic, environmental, and human factors of the basic functions of packaging including containment, dispensing, protection, informing, transport, and marketing.

The program begins with use packaging, but is geared to industrial packaging. Hands-on testing includes impact, tear resistance, shock and vibration using the latest state-of-the-art equipment.

The Packaging option of the Quality Engineering Technology program is the only TAC/ABET accredited QET associate degree of its kind in the United States.

**Curriculum Curriculum Total: 100 credits**

### **First Quarter**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
<a href="#"><u>COM 211</u></a>	Effective Speaking I	<b>3</b>
<a href="#"><u>ENG 111</u></a>	English Composition I	<b>3</b>
<a href="#"><u>MAT 131</u></a>	Technical Mathematics I	<b>5</b>
<a href="#"><u>MET 198</u></a>	Personal Computer Applications in Engineering Technology	<b>2</b>
<a href="#"><u>QET 101</u></a>	Survay of Total Quality	<b>3</b>
<a href="#"><u>QET M30</u></a>	Introduction to Materials and Manufacturing Processes	<b>1</b>
<b>Total:</b>		<b>17</b>

### **Second Quarter**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
<a href="#"><u>CHE 131</u></a>	Technical Chemistry I	<b>4</b>
<a href="#"><u>MAT 132</u></a>	Technical Mathematics II	<b>5</b>
<a href="#"><u>MET 104</u></a>	Introduction to Design Realization Process	<b>3</b>
<a href="#"><u>QET 111</u></a>		
<a href="#"><u>QET 112</u></a>		
<b>Total:</b>		<b>12</b>

**Third Quarter**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
<a href="#"><u>DRT 106</u></a>	Essentials of Machine Drawing	3
<a href="#"><u>DRT 198</u></a>	Introduction to Computer Aided Drafting concepts	2
<a href="#"><u>MAT 133</u></a>	Technical Mathematics III	5
<a href="#"><u>QET 113</u></a>	Coordinate Measurement	3
<a href="#"><u>QET 133</u></a>	Non-Metallic Materials	3
<a href="#"><u>QET 201</u></a>	Statistical Process Control	3
<b>Total:</b>		<b>19</b>

**Fourth Quarter**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
<a href="#"><u>QET 105</u></a>	Packaging Concepts and Materials	3
<a href="#"><u>QET 120</u></a>	Process Metrology	3
<a href="#"><u>PHY 131</u></a>	Technical Physics I	4
<a href="#"><u>QET 134</u></a>		
<a href="#"><u>QET 211</u></a>	Design and Process Failure Modes and Effects Analyses	2
<a href="#"><u>QET 202</u></a>	Advanced Statistical Quality Control	4
<b>Total:</b>		<b>16</b>

**Fifth Quarter**

<b>Course Number</b>	<b>Course Title</b>	<b>Credit Hours</b>
<a href="#"><u>QET 221</u></a>	Quality Assurance	4
<a href="#"><u>ENG 121</u></a>	Technical Composition I	3
<a href="#"><u>PHY 133</u></a>	Technical Physics III	4
<a href="#"><u>QET 212</u></a>	Reliability Testing and Analysis	2
<a href="#"><u>QET 250</u></a>	Packaging Systems	3
<a href="#"><u>QET 252</u></a>	Packaging Development	3
<b>Total:</b>		<b>19</b>

Sixth Quarter

Course Number	Course Title	Credit Hours
	EGR/HUM 132 Technology in Our Lives or HUM - Humanities Elective**	3
<a href="#">PSY 229</a>	Work Group Dynamics	3
<a href="#">IET 198</a>	Computer Programming Applications in Engineering Technology	2
<a href="#">QET 295</a>	Quality Control Seminar	3
<a href="#">ENG 122</a>	Technical Composition II	3
	EGR 115 Human Factors Engineering or EGR 206 Engineering Technical Economics or other Technical Elective	3
<b>Total:</b>		<b>17</b>

<b>QET 250</b> <b>Packaging Systems</b>	<b>3 Cr. Hrs.</b>
Prerequisite: Take PHY-131 QET-134 QET-212	
Application of the total systems analysis concept to packaging. Identification of all elements in the decision process for package design, including product fragility, severity of the distribution system, material handling and transportation, production costs, product liability, and environmental impact.	
<b>QET 252</b> <b>Packaging Development</b>	<b>3 Cr. Hrs.</b>
Prerequisite: Take QET-105 QET-134 QET-212	
Principles of container design. Engineering design concepts including human factors and consumer psychology; quality control, economics and specification development for glass, metal, paper, plastic, and composite packaging. Two lecture, two lab hours per week.	
<b>QET 254</b> <b>Packaging Shock &amp; Vibration</b>	<b>3 Cr. Hrs.</b>
Prerequisite: Take QET-212 QET-250	
Physics of shock, vibration, and compression as they relate to product damage in handling and shipment. Mechanical properties of cushioning and dampening materials, lowest-cost protective shipping container design. Standardized performance testing for product fragility and protective package effectiveness. Two lecture, two lab hours per week.	

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# **San Jose State University - College Of Engineering**

<http://www.engr.sjsu.edu/ise/pkg/>

## **Scholarships**

The Packaging Program at SJSU is offering scholarships to students who identify Packaging as a curriculum objective (major, minor or masters), or intend to transfer to the Packaging Program. The scholarship is also available to students enrolled in at least one packaging class (such as ISE 107 and ISE 156), or intend to do so while attending SJSU. Applications are submitted online now. Both the online application & supporting materials are due March 20th of every year by 5 PM in the Packaging Program Coordinator's office (Engineering Building Room 485B).

Scholarship eligibility is based on grades, financial need, participation and career objectives.

The following scholarships are offered:

### **Marjorie H. Bright Packaging Scholarship**

### **Endowed Packaging Scholarships**

### **Packaging Education Forum Scholarships**

### **Western Packaging Association and California Packaging Club Scholarships**

### **Packaging Industry Scholarships**

- **Marjorie H. Bright Packaging Scholarship**

(up to \$2,500 for one student per academic year, for tuition, fees, books and supplies required for courses)

- **Endowed Packaging Scholarships**

(up to \$1000 in cash for each recipient) - number of awards and amounts vary.

- **Packaging Education Forum Scholarships**

(up to \$1500 in cash for each recipient) - number of awards and amounts vary.

- **Western Packaging Association and California Packaging Club Scholarships**

(up to \$1000 in cash for each recipient) - number of awards and amounts vary.

- **Packaging Industry Scholarships** - number of awards and amounts vary.

You may apply to one or more of the scholarships listed above, but usually only one scholarship is awarded per student, per academic year. Specific requirements are as follows:

- **Marjorie H. Bright Packaging Scholarships** : major in packaging, undergraduate, full-time enrollment in academic year following semester of application; minimum 3.0 GPA

- **Endowed Packaging Scholarships** : undergraduate or graduate, full-time enrollment in semester of application.

- **Packaging Education Forum, WPA/CPC Scholarships** : undergraduate or graduate, full-time enrollment in semester of application.

**NOTE** : The Tax Reform Act of 1986 amended the Internal Revenue Code regarding scholarships and grants received by students. Sec. 117 provides that the only scholarships that can be excluded from gross income are those used specifically for:

- Tuition and fees required for enrollment at and educational organization, and
- Books, supplies and equipment required for courses of instruction

Since SJSU is not required to withhold income taxes from scholarships for amounts used for other expenses such as room and board, or to file form 1099 with the IRS, all scholarship recipients are responsible for keeping their own records and for reporting any awards each year that are considered part of adjusted gross income. We recommend that you check with the local IRS advisor or a qualified tax advisor to determine what portion, if any, of your scholarship should be reported as income on your tax return

## Packaging Engineering Course Information

**NOTE:** These courses are a subset of ISE courses, which focus on packaging engineering.

**Introduction to packaging engineering**  
**Packaging Materials I**  
**Packaging Materials II**  
**Packaging for food, drug and cosmetics**  
**Packaging machinery and systems**  
**Protective packaging engineering design**

### ISE 107 Introduction to packaging engineering

Packaging functions, materials and development. Product protection in distribution. Overview of packaging design and testing. Packaging engineering career, tours and guest speakers; **Pre-requisites:** none; **Units:** 3.

### ISE 141A Packaging Materials I

Chemical and physical properties of paper, metal, wood, glass, plastics and composites. Applications and materials testing; **Pre-requisites:** Math 30 (or equivalent), Phys 70 (or equivalent), Chem 1A (or equivalent); **Misc/Lab:** Lecture 2 hours/Activity 2 hours.

**Notes:** Lab fee required; **Units:** 3.

### ISE 141B Packaging Materials II

Packaging design and performance testing using: paper, plastics, glass, metal, wood and composites. Product/package/environment interactions; **Pre-requisites:** ISE 141A, Math 30, 31, 32, Phys 70, Chem 1A, 30B, MatE 25; **Misc/Lab:** Lecture 2 hours/Activity 2 hours.

**Notes:** Lab fee required; **Units:** 3.

### ISE 146 Packaging for food, drug and cosmetics

Chemical and physical properties of food, drug and cosmetics products and their interactions with packages; mass transfer, torque. Legislation issues. User requirements: children and elderly. Materials selection and integrity testing; **Pre-requisites:** Math 30 (or equivalent), Phys 70 (or equivalent), Chem 1A (or equivalent); **Misc/Lab:** Lecture 2 hours/Activity 2 hours; **Notes:** Lab fee required; **Units:** 3.

### ISE 156 Packaging machinery and systems

Evaluation of packaging machinery as a subset of a packaging production system. Components selection, design and implementation of packaging lines in a production facility. ESD materials and control; **Pre-requisites:** Math 30 (or equivalent), Phys 70, 71 (or equivalent), Chem 1A (or equivalent); **Misc/Lab:** Lecture 2 hours/Activity 2 hours. **Notes:** Lab fee required; **Units:** 3

### ISE 158 Protective packaging engineering design

Shock, vibration, compression, temperature, humidity, friction and pressure as distribution hazards. Design of packages to protect products against these hazards. Damage boundary, product fragility. Shock, vibration, insulation properties of cushioning materials; **Pre-requisites:** Math 30, 31, 32, Phys 70, 71; **Misc/Lab:** Lecture 2 hours/Activity 2 hours; **Notes:** Lab fee required; **Units:** 3

## Four Year Sample Program for Packaging Engineering

FRESHMAN YEAR: 36 units			
Fall	Units	Spring	Units
Math 30 <a href="#">Calculus I</a>	3	Math 31 <a href="#">Calculus II</a>	4
Chem 1A <a href="#">General Chemistry</a>	5	Phys 70 <a href="#">Physics - Mechanics</a>	4
Engr 10* <a href="#">Introduction to Engineering</a>	3	Human Performance <a href="#">Any Physical Education</a>	1
Engl 1A <a href="#">English Composition (1)</a>	3	Engl 1B <a href="#">English Composition (2)</a>	3
Comm 20 <a href="#">Public Speaking</a>	3	Rec 010 <a href="#">Creating a Meaningful Life</a>	3
Hum. Performance <a href="#">Any Physical Education</a>	1	ISE 107 <a href="#">Intro Packaging Engineering</a>	3
<b>Total</b>	<b>18</b>		<b>18</b>

SOPHOMORE YEAR: 35 units			
Fall	Units	Spring	Units
American Studies 1A/GE <a href="#">American Civilization (1)</a>	6	American Studies 1B/GE <a href="#">American Civilization (2)</a>	6
ME 20** <a href="#">Design &amp; Graphics</a>	2	CE 99 <a href="#">Statics</a>	2
Math 32 <a href="#">Calculus III</a>	3	MatE 25 <a href="#">Introduction to Materials</a>	3
Phys 71 <a href="#">Physics - Electricity &amp; Magnetism</a>	4	ISE 141A <a href="#">Pkg Materials I</a>	3
CmpE 46 <a href="#">Computer Engineering I</a>	3	Math 133A <a href="#">Ordinary Differential Equations</a>	3
<b>Total</b>	<b>18</b>		<b>17</b>

<b>JUNIOR YEAR: 33 units</b>			
Fall	Units	Spring	Units
Engr 100W (ZR) <a href="#">Engineering Re-ports</a>	3	Advanced GE (S) <a href="#">Any Upper level gen-eral education</a>	3
ISE 102 <a href="#">Engineering Eco-nomic Systems</a>	3	ISE 120 <a href="#">Work Methods Design &amp; Measurement</a>	3
ISE 130 <a href="#">Engr. Probability &amp; Statistics</a>	3	ISE 131 <a href="#">Statistical Process Control &amp; Improve-ment</a>	3
ISE 140 <a href="#">Operations Plan-ning &amp; Control</a>	3	Approved Technical Elective <a href="#">See list</a>	3
ISE 141B <a href="#">Pkg Materials II</a>	3	ISE 170 <a href="#">Operations Research</a>	3
Math 129A <a href="#">Linear Algebra I</a>	3		
<b>Total</b>	<b>18</b>		<b>15</b>

All ISE senior courses require the completion of Engr 100W and [Major Form](#) on file

<b>SENIOR YEAR: 27units</b>			
Fall	Units	Spring	Units
ISE 135 <a href="#">Design of Experi-ments</a>	3	Advanced GE (V) <a href="#">Any Upper level general education</a>	3
ISE 167 <a href="#">System Simulation</a>	3	ISE 155 <a href="#">Supply Chain Engi-neering</a>	3
ISE 156 <a href="#">Packaging machine &amp; systems</a>	3	ISE 190 <a href="#">Ind. Engineering Design</a>	3
ISE 158 <a href="#">Protective packaging</a>	3	Approved Technical Elective <a href="#">See list</a>	3

ISE 146 <a href="#">Pkg for food/drug/cosmetic</a>	3	ISE 195B <a href="#">Senior Industrial Engr. Design II</a>	3
ISE 195A <a href="#">Senior Industrial Design I</a>	1		
<b>Total</b>	<b>16</b>		<b>15</b>

**Total units: 131**

**Requirements for a Minor in Packaging  
(Total Minimum 13 Semester Units)  
Courses Required**

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**Core Requirements (these four courses are required): 10 units**

ISE 50 - Introduction to Packaging Engineering - 3 units

ISE 141A - Packaging Materials I - 3 units

ISE 152 - Environmental issues and global distribution of goods - 3 units

ISE 171 - Packaging Development and Management - 1 unit

**Additional Requirements (at least one of these courses are required): 3 units**

ISE 130 - Engineering Statistics - 3 units

ISE 140 - Operations Planning and Control - 3 units

ISE 146 - Packaging for food, drug, and cosmetics - 3 units

ISE 156 - Packaging Machinery and Systems - 3 units

ISE 158 - Packaging Dynamics - 3 units

ENVS 148 - Integrated Solid Waste Management - 3 units

NUFS 103 - Food Processing and Packaging I - 3 units

NUFS 133 - Food Processing and Packaging II - 3 units

NUFS 155 - Food Process Engineering - 3 units

**Total Units Required for the minor (minimum): 13 units**

**Western Michigan University - Department of Paper Engineering,  
Chemical Engineering and Imaging [www.wmich.edu/ppse/](http://www.wmich.edu/ppse/)**

**Minor in Paper Engineering**

**Benefits:**

- Eligibility for scholarship
- Summer jobs
- Expanded job opportunities with higher starting salaries

**Requirements:**

- Meet GPA requirements
- 75% of Paper Engineering Award (\$750-\$1500 per semester based on status, GPA and in the semester in which paper course is taken)
- Availability of funds

First Year:	PAPR 100: Introduction to Pulp and Paper PAPR 103: Printing Processes
Second Year	PAPR 203: Pulping and Bleaching PAPR 204: Stock Preparation and Papermaking
Third Year:	PAPR 352: Recycling and Deinking CHEG 306: Material and Energy Balances

**Minor consists of 20 credits. Courses are:**

**IME 459 MOLD DESIGN AND CONSTRUCTION**

Fall Semester 2002

**Catalog Data (2001/2003) :**

Mold and die design, processing and part requirements, molded holes and undercuts, threads, tool-making processes, tooling materials, special fixtures. Mold and die construction using a wide range of cavity production methods. Computer analysis of temperature, pressure, and filling characteristics of a mold. Lecture/Lab: (2 - 3), Credit: 3 hrs, **Prerequisites:** IME 250, 254

**Textbooks :**

1. Engelmann, P. V., Mold Design and Construction (lecture/lab supplement), 1999
2. Austin, C., Moldflow Design Principles. Kilsyth, Australia: Moldflow, 1992.
3. Engelmann, P. & Dealey, R. (2000). Injection mold design guidelines: Maximizing performance using copper alloys - Reprint of a nine part series. Modern Mold and Tooling. New York: Copper Development Association.

**Course Coordinator :** [Dr. Paul Engelmann](#), Professor, IME Office 2092 Kohrman Hall, Phone (616) 387-6527

**Prerequisites by topic :**

1. An understanding of the product attribute and process design differences among the major plastics processes. (IME 250 - Plastics Properties and Processes)
2. A basic understanding of the different types of tooling used to form plastics. (IME 250)
3. An understanding of the various machining processes. (IME 150 - Introduction to Manufacturing Processes)
4. Familiarity with the mechanical and physical differences of various ferrous and nonferrous metals that could be used for tooling. (CMD 254 & 255 - Properties of Materials)

□ **Objectives1** : Based on the above stated course description, at the conclusion of the semester the student should be able to,

1. Correctly apply design parameters to molds, dies, and tooling for plastics processing. (d & C)
2. Identify and explain the function of component parts of molds, dies, and tooling for plastics. (a & K)
3. Correctly specify mold and die construction materials based on the demands of the given application. (f & E)
4. Understand the strengths and weaknesses of different methods of cavity generation. (a & K)
5. Predict, simulate, and understand a plastics' flow characteristics within a mold. (b, c, A, & B)
6. Calculate basic requirements of mold and die components. (f & E)

**Topics :**

1. Course Introduction (1 hour)
2. Flow Characteristics of Polymers (2 hours)
3. Tooling Materials (2 hours)
  - Surface Finishes
  - Surface Treatment
4. Cavity Generation (2 hours)
  - Methods
  - Venting
5. Moldbase Components (2 hours)
  - Plates
  - Pins, bushings, etc
6. Runner Systems (2 hours)
  - Cold Runners
  - Gating
  - Hot Runners
7. Mold Cooling (2 hours)
  - Circuits
  - Cooling cores and cavities
8. Ejection Systems (2 hours)
  - Pins, sleeves and blades
  - Slides, lifters, hydraulic cores, etc.
9. Extrusion Die Design (2 hours)
  - Types of dies
  - Profile design
10. Blow Mold Design (2 hours)
  - Types
  - Components
  - Parting lines

□ **Evaluation :**

- |                       |      |
|-----------------------|------|
| 1. Moldflow analyses  | 16 % |
| 2. Mold design        | 24 % |
| 3. Homework & Quizzes | 8 %  |
| 4. Midterm            | 25 % |
| 5. Final              | 25 % |
| 6. Participation      | 2 %  |

**Grading :**

Projected Score	Grade
93-100%	A
89 - 92%	BA
83 - 88%	B
79 - 82%	CB
73 - 78%	C
69 - 72%	DC
62 - 68%	D
BELOW 62%	E

**Performance Criteria2** : The student should demonstrate proficiency to,

Objective 1:

- a) Correctly apply design parameters to mold and component drawings produced for this course. [2, 5]

Objective 2:

- a) Correctly identify and explain the function of various mold components and elements either from a drawing, or when presented with such an item. [5]

Objective 3:

- a) Be able to identify the factors most likely to affect material selection, and identify those factors for a given tooling component or element. [4]
- b) Specify several logical tooling materials, given the factors for a specific component or element. [4]

Objective 4:

- a) List the strengths and weaknesses of a given method of cavity/core generation. [4]
- b) Use known strengths and weaknesses of cavity/core generation techniques to identify the techniques most appropriate for the production of a given component. [4]

Objective 5:

- a) Use flow analysis software to simulate the behavior of molten plastics within a mold. [1,4]
- b) Correctly interpret the results of a flow analysis. [1,4]

Objective 6:

- a) Calculate the maximum distance between support pillars to achieve acceptable mold deflection. [2, 3]
- b) Calculate profile extrusion die dimensions required to compensate for draw down and die swell. [3, 5]

Prepared by : [Dr. Paul Engelmann](#)

Date : February 2001

1. Letter in parenthesis refers to the ABET-TAC criteria.
2. Number in parenthesis refers to the evaluation method.

## Plastics

In this program you will learn the processes of plastics manufacturing in a state-of-the-industry, hands-on atmosphere, created to simulate an actual production environment. You'll use a wide variety of molding, casting, and forming techniques, such as **Injection molding, Extrusion, Mold design, Thermoforming, Polymer testing, and Analysis.**

In this option you will use a variety of processing equipment and software to practice several ways of manufacturing and testing the quality of plastic products. These techniques might prepare you to contribute to the manufacturing industry in fields such as

- Mold engineering and specification
- Plastics process improvement
- Plastics quality systems design
- Molding production supervision
- Plastics material specialist
- Plastics product designer



Elective Requirements

To earn this option, four (4) courses in this area of concentration must be completed. The selection of the courses should be as per the curriculum selected.

Engineering Graphics and Design Technology and  
Manufacturing Engineering Technology

<b>Course</b>	<b>Credits</b>
<a href="#"><u>IME 350 Production Thermoplastic Processing</u></a>	3
<a href="#"><u>IME 456 Process Testing and Measurement</u></a>	3
<a href="#"><u>IME 459 Mold Design and Construction</u></a>	3
<a href="#"><u>IME 550 Advanced Plastics Processing</u></a>	3
<a href="#"><u>IME 300 CO-OP Internship (Plastics Industry)</u></a>	3

Engineering Management Technology

<b>Course</b>	<b>Credits</b>
<a href="#"><u>IME 250 Plastics Properties and Processing</u></a>	3
<a href="#"><u>IME 350 Production Thermoplastic Processing</u></a>	3
<a href="#"><u>IME 456 Process Testing and Measurement</u></a>	3
<a href="#"><u>IME 459 Mold Design &amp; Construction</u></a>	3

# **Western Michigan University – Industrial and Manufacturing Engineering**

[http://www.wmich.edu/ime/course\\_pages/ime5500.htm](http://www.wmich.edu/ime/course_pages/ime5500.htm)

## **IME 5500 ADVANCED PLASTICS PROCESSING**

**Course Syllabus - Fall 2004**

### **Course Coordinator:**

**Dr. Paul Engelmann**, Professor,  
Industrial and Manufacturing Engineering.

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Email: [paul.engelmann@wmich.edu](mailto:paul.engelmann@wmich.edu)

### **2004-2006 Catalog Data:**

Review of optimum machine components and systems. Identification of key process variables within injection molding and extrusion systems. Discussion of the causes of process instability. Determination of the process capability within injection molding and extrusion systems.

### **Texts:**

Engelmann, P. & Dealey, R. (2000). Injection mold design guidelines: Maximizing performance using copper alloys – Reprint of a nine part series. Modern Mold and Tooling. New York: Copper Development Association.

### **Reference:**

1. Rosato, D. V. and Rosato D. V. (1995). Injection molding handbook (4th Ed.). Norwell, MA: Kluwer Academic.

2. Colby, P. N. (2001). Screw and barrel technology. Youngstown, OH: Spirex.

### **Evaluation:**

1. Research Topic Proposal	5%
2. Research Paper	35%
3. Midterm	30%
4. Final	30%
<b>Total</b>	<b>100%</b>

The grading scale for this course is as follows:

93-100	A
89-92	BA
83-88	B
79-82	BC
73-78	C
69-72	DC
63-68	D
Below 62	E

### **Prerequisites by topic:**

1. Knowledge of the elements of plastication
2. Basic understanding of injection molding equipment, tooling and process
3. Understanding of the relationship between resins, additives and the injection molding process

Ability to correctly differentiate independent and dependent variables

*Note: It is the responsibility of each student to correct any deficiencies that they may have in prerequisite information. This may be done by taking the pretest and completing the corresponding reading assignments attached to questions missed on the test. In addition, other readings may be necessary. It is also recommended that students spend time in the plant to observe elements of the injection molding process and tooling that are not well understood.*

### **Performance Criteria:**

The student should be able to:

#### **Objective 1:**

- a. Identify the most critical systems within injection molding, and describe their function. [3, 4]

#### **Objective 2:**

- a. Identify the system components most likely to be the contributing factor for a given type of process instability. [3, 4]
- b. Describe changes to a process system that would enhance product stability. [3, 4]

#### **Objective 3:**

- a. Correctly categorize specific process variables as independent, dependent process, intermediate dependent process, or dependent product. [2, 3]

#### **Objective 4:**

- a. Define the four critical intermediate dependent process variables for molding and extrusion systems, and be able to discuss the intermediate nature of each one. [3]
- b. Explain the probable relationship between the role of input variables (independent and intermediate dependent) and the resulting output variables (dependent product) for a given process scenario. [2, 3, 4]

#### **Objective 5:**

- a. List a group of variables that are both logical and independently testable for a specific process problem. [1, 2, 4]
- b. Determine to what extent a set of potential variables is testable, and what controls would need to be instituted to assure collection of sound data. [1, 2, 4]

#### **Objective 6:**

- a. For a given process parameter describe logical methods of measuring the variable. [4]
- Numbers in brackets refer to the method of evaluation as listed in the previous section.

### **Computer Usage:**

Use of the computer, as a word processing tool is required for all reports and assignments. Use of spreadsheet software is required to handle all research data. Reporting of this information shall include the use of appropriate tables. Graphing may also be helpful when explaining the relationships between the variables.

### **Laboratory Projects:**

This class does not have a formal lab. However, in-plant experimentation may be required to complete the research project. Observation of production operations may also help students to gain a better understanding of how various processes work.

### **Oral and Written Communications:**

Each student will function as a member of a research team for the duration of the semester. Group problem solving will play a critical role in the depth of understanding each student gains from this experience. The class requires an in-depth research report pertaining to some aspect of plastics processing. Precise, succinct, and thorough writing is required for this report.

### **Calculus Usage:**

Integrals and derivatives serve as the basis of the PID controls used in molding operations. This aids in the correct setting and interpretation of both hydraulic and heating controls. Appropriate manipulation of these settings serves as the "machine side" of process control.

### **Library Usage:**

Use of the library is required to complete the literature review portion of the research activity. Use of the Engineering Index, and other indices will be necessary to provide the depth and breadth of research materials required for this report. Other sources such as master's theses and doctoral dissertations may be reviewed as part of this work.

### **Expectations for Participation:**

#### **Excused Absences**

Each student is allowed to miss one class period without being penalized. This excused absence is provided as a buffer against bad weather, illness, family problems, job and class conflicts.

This excused absence in no way relieves the student of any class responsibilities. The student

is responsible for all missed materials such as handouts and should review other class members' notes for lectures and demonstrations missed. Any assignment due on the day of an excused absence is considered due at the beginning of the next class period attended. If sickness or other unforeseen circumstances arise to prevent class attendance, the student should contact their instructor via phone or email.

#### Unexcused Absences

If more than one week of class is missed, a written doctor's excuse or other similar document is required or the absence is considered unexcused.

#### Late Assignments

Assignment due dates will be posted and assignments must be handed in on those dates. These dates may be changed for the entire class, but dates will not be changed to meet the needs of an individual student. Late assignments will be docked a substantial amount of points (at least 10%), if they are accepted at all.

#### Academic Honesty

You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate Catalog (pp. 274-276) Graduate Catalog (pp. 26-28) that pertain to Academic Integrity. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Judicial Affairs. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with your instructor if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.

#### Objectives:

At the end of the semester the student should be able to:

1. Understand the function of the major systems within molding. [a & K]
2. Identify process system design characteristics most likely to enhance product stability. [d&C]
3. Differentiate among, independent process variables, dependent process variables, intermediate dependent process variables, and dependent product variables. [c & B]
4. Define the causal relationship between independent, intermediate, and dependent variables for injection molding. [c & B]
5. Identify a logical set of testable variables for a given process problem. [f & E]
6. Understand basic and advanced measurement techniques for a current plastics process.[b&A]

Lower case letters in the parentheses at the end of each objective refer to the TAC of ABET 2001 criteria, upper case letters are EAC of ABET 2000.

#### Lecture Topics:

1. Introduction - 2 hours
  - a. Objectives and scope
  - b. Pretest and assessment
  - c. Schedule
  - d. Class references
2. Research projects - 3 hours over the semester
3. Classification of variables - 1 hour
  - a. Independent
  - b. Intermediate (process)
  - c. Dependent (process and process)
4. Critical intermediate "Plastic Variables" - 3 hours
  - a. Polymer viscosity
  - b. Temperature of the polymer
  - c. Pressure of the polymer
  - d. Cooling rate of the polymer
5. Machine and mold variables - 15 hours
  - a. Sources of shear
    - i. Screw & barrel design
    - ii. Mold design
  - b. Sources of heat
    - i. Friction

- ii. Heating elements
- c. Sources of pressure
  - i. Screw forces and check valves
  - ii. Hydraulic pumps & valves
- d. Sources of cooling
  - i. Cooling capacity vs. circuitry
  - ii. Turbulence vs. heat transfer
- iii. Thermal conductivity vs. tool temperature
- e. Sources of wear
- 6. Selection of variables in plastics processing - 6 hours
  - a. Strategies to setup the process for a given mold
  - b. Selection of variables
    - c. Plastics process measurement

### **Research:**

1. This research is designed to allow the student to participate in a comprehensive information gathering exercise. A group of 2-4 people shall work on each project (including the written portion). The area of study must constitute a part of molding technology and must be approved by the instructor.
2. The paper is to be a maximum of five (5) pages, including illustrations, in accordance with SPE format.
3. Four (4) to six (6) illustrations are to comprise the last one (1) to two (2) pages of the paper.
4. A minimum of six (6) references must be cited in the paper.
5. A comprehensive appendix containing all relevant supporting data or information to support the work shall be submitted in a 3-ring binder along with the paper.
6. A written log of project activities for each member of the research team will be graded.
  1. The research proposal must be submitted Thursday, September 23 at 7:30 p.m.
  2. The research paper with forms is due no later than Thursday, November 18 at 7:30 p.m.

### **Course Outline:**

#### **Lecture Topics**

Introduction  
 Research projects  
 Classification of variables  
 Research projects  
 Polymer structure vs. processing (molding and drying)  
 Resin additives, colorants, etc  
 Fillers & reinforcements  
 Critical intermediate "Plastic Variables" - (Bozzelli - "How to track a perfect part")  
 Polymer viscosity  
 Temperature of the polymer  
 Pressure of the polymer  
 Cooling rate of the polymer  
 Research proposal due at 7:30 p.m.  
 Research projects - (SPE "Write now")  
 Sources of heat  
 Friction & Heating elements  
 Sources of pressure  
 Mold design  
 Sources of pressure (Colby "Plasticating Components Technology")  
 Screw forces and check valves  
 Sources of shear  
 Screw & barrel design  
 No class – work on library research  
 Sources of pressure  
 Hydraulic pumps & valves  
 Hydraulic fluid  
 Midterm review  
 Midterm exam  
 Sources of cooling (Engelmann & Dealey "Mold Design Guidelines")

Cooling capacity vs. circuitry  
Turbulence vs. heat transfer

Thermal conductivity vs. tool temperature  
Mold wear vs. mold materials and coatings (Wear articles)  
Selection of variables in plastics processing  
Strategies to setup the process for a given mold  
Mold design integration to the molding process  
Research paper at 7:30 p.m.  
Plastics process measurement  
Thanksgiving  
Summary & Final exam review  
Final Exam 7:00-9:00 p.m.

## **University of Massachusetts Lowell – Graduate School Department**

<http://plastics.caeds.eng.uml.edu/3>

### **The Plastics Recycling and Compounding Laboratory**

As materials go, thermoplastics are in fact very recyclable. However, recycling rates for some plastics remain relatively low for a variety of reasons. One of the more important reasons is that historically, plastics recycling education has been very limited. The Plastics Recycling and Compounding Laboratory at UMass Lowell is a new facility dedicated to education and research related to plastics recycling. Over the years, students and faculty of the Department of Plastics Engineering have developed a number of products that are made from waste plastic or rubber. In fact, more than fifty Plastics Engineering graduate students have done their thesis research in the area of Plastics Recycling. This unique laboratory will ensure that both undergraduate and graduate Plastics Engineering students have all the facilities they need to work in this area. This lab has been supported by a number of companies and organizations including; American Leistritz, The American Plastics Council, and Gerber Foods. Lab capabilities include:

Granulation  
Metal Separation  
Washing  
Seive Analysis  
Leistritz 27 mm Twin Screw Compounder  
Werner Pfliederer 30 mm Twin Screw Extruder  
Seive Analysis  
Test Specimen Molding  
Flow and Mechanical Property Testing

### **Rocheleau Blow Molding Molding Lab**

Blow molding is a process that is used to manufacture hollow plastic products, such as plastic bottles or automobile fuel tanks. Rocheleau Tool and Die of Fitchburg, Massachusetts helps support UMass Lowell's Blow Molding Laboratory located in Ball 106. The lab contains several blow molding technologies.

#### ***Rocheleau CS-1***

Extrusion Blow Molding Machine  
with Parison Programming

#### ***Rocheleau R-4***

Reciprocating Screw  
Blow Molding Machine

#### ***Magna-Mike Thickness Gage***

#### ***Cumberland Granulator***

#### ***Dry-Air Material Handling System***

### **The Freudenberg □NOK Elastomeric Materials Lab**

UMass Lowell has a long history as a leader in the area of Plastics Engineering Education. In recent years, the department has expanded its instruction and research into the area of "elastomers".

### **The Putnam Plastics S.J. Chen Extrusion Lab**

Extrusion is a process that is used to produce continuous or cut lengths of plastic sheet, film, fiber or profiles. Items such as window profiles, catheters, tubing, pipe, and the like are all produced using the extrusion process. This extrusion laboratory, located in Ball 110, has received support from the Spirex Corporation of Youngstown, OH, the Gillette Corporation, Boston, MA, and is now sponsored by the Putnam Plastics Corporation of Dayville, CT, which specializes in micro-extrusion. The lab is named for the late Professor S.J. Chen. Professor

Chen was a respected faculty member and researcher in the area of extrusion processing prior to his death in 1993. The extrusion equipment in this lab includes:

38 mm 24:1 L/D Welex Single Screw Extruder  
Sheet Extrusion Line  
Drying Ovens  
Strand, Sheet and Pipe Dies  
Cooling Troughs  
Caterpillar Belt Pullers  
Vacuum Sizing Unit  
On-line Laser Gage

### **The Battenfeld Gloucester Film Extrusion Lab**

Thin plastic films are produced by processes such as blown film extrusion. The Film Extrusion Laboratory at UMass Lowell is sponsored by Battenfeld Gloucester of Gloucester Massachusetts. This self contained lab, located in Ball108, contains equipment for producing and testing plastic films. The laboratory equipment includes:



38 mm Blown Film Extrusion Line  
w 100 mm diameter die opening  
20 mm Blown Film Extrusion Line  
w 38 mm diameter die opening  
Q-test Tensile Testing Machine  
Drop Impact Film Tester  
Elmendorf Tear Tester

### **The Cincinnati Milacron Injection Molding Lab**

Injection molding is the most widely used process for plastic part manufacturing. The Milacron Ferromatik Injection Molding Laboratory, Located in Ball 112, contains three, state of the art thermoplastic injection molding machines, along with a variety of auxiliary equipment

88 Ton Edge Injection Molding Machine  
30 Ton Magna V30R Vertical Molding Machine  
Branson 900M Ultrasonic Welder  
Milacron TF68 Granulator  
Franklin Hot Foil Stamper  
Conair Desiccant Drier

### **Optical Media Injection Molding Laboratory**

Optical media, including CD's or DVD's, are produced using a precision injection molding process. The *Optical Media Injection Molding Laboratory*, located in Ball 114, is sponsored by Thermal Wave Molding. This "clean room" laboratory is dedicated to research in the areas of optical media processing and materials

Sumitomo SD30 Optical Media

Molding Machine  
Yushin Robot  
Compact Disc Stacker

### **The Nypro Precision Injection Molding Laboratory**

Injection molding is the most widely used process for the manufacturing of plastic parts. The *Precision Injection Molding Laboratory* at UMass Lowell is sponsored by the Nypro Corporation of Clinton, MA, one of the world's largest plastics manufacturing companies. The lab is located in Ball 114. As time goes on, plastic parts are becoming more complex. As a result, there is a growing need for precision molding and process optimization equipment. This state of the art lab contains a number of precision injection molding processes, including several all electric micro molding machines. Nypro, Nissei, Sumitomo, Moldflow and Thermal Wave Molding help support for this laboratory.

3 Ton - 3 gram Nissei All Electric Micro Molder  
20 Ton - 6 gram All Electric Sumitomo Micro Molder  
50 Ton - 20 gram Roboshot All Electric Micro Molder  
80 Ton HPM Tiebar Free Molding Machine  
100 Ton Milacron Molding Machine  
Moldflow Shotscope Process Optimization Cell  
Thermal Wave Molding Optical Media Cell  
Optical Inspection Equipment Testing Equipment

The Moldflow Corporation, Wayland Massachusetts, is the world's leading supplier of plastics process simulation software and process optimization software/hardware. The Moldflow Process Simulation Laboratory is a 16 seat computer aided design laboratory located in Ball 215. The laboratory is used for both Computer Aided Design (CAD) and Computer Aided Engineering (CAE) instruction or research. Software includes

### **The Moldflow Process Simulation Lab**



Moldflow MPI Process Analysis Software  
Moldflow MPA Process Analysis Software  
Moldflow MPX Process Optimization Software  
SolidWorks CAD Software  
ProEngineer CAD Software  
Flow 2000 Die Design Software  
Network to other UML Engineering Software

### **Sabb Advanced Polymers Properties Testing Laboratory**

Advanced Polymers of Salem, NH. The lab, located in Ball 201, contains a variety of property testing equipment that is used to determine the mechanical, electrical, optical and thermal properties of plastic materials. The test equipment for this lab for includes

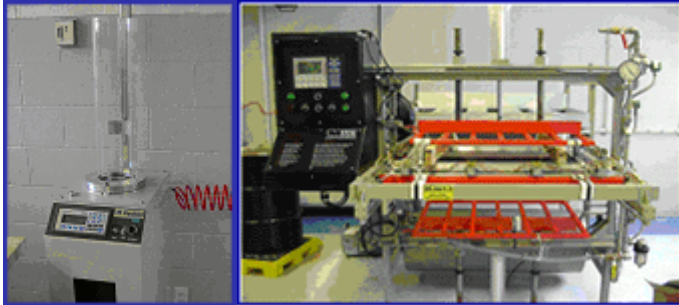
Dynatup Instrumented Drop Impact Tester  
Instron Universal testing Machines  
Izod Impact Tester  
Charpy Impact Tester  
Flexural Stiffness Tester  
Rockwell and Shore Hardness Testers  
Creep Testing Equipment  
Volume and Surface Resistivity

Coefficient of Friction Testing  
Density Measurement Equipment

### **The Thermoforming Laboratory**

The Plastics Engineering Department has two sheet forming machines, namely a Lyle Pressure Former and a Maac Machinery Thermoformer. The lab is located in Ball 110. The lab also contains several pieces of end product test equipment including a Dynisco Drop Impact Tester. The department acknowledges the support of the Society of Plastics Engineers Thermoforming Division and the Maac Machinery Company of Coral Stream, IL for their support of this laboratory. The thermoforming equipment includes:

30"x36" Maac Thermoformer  
16"x20" Lyle Pressure Former  
Dynisco Drop Impact Tester  
Infra Red Pyrometer



## **Medical Plastics Design and Manufacturing Certificate**

### **Highly Effective Technical Instruction in Plastics Manufacturing, Design and Quality Control**

The Plastics Seminars and Workshops at the University of Massachusetts Lowell are highly respected throughout the plastics industry as a proven method of gaining both theoretical and practical information. Offered by the Division of Continuing Studies and the Department of Plastics Engineering for over twenty five years, these seminars and workshops provide effective technical instruction applicable to plastics materials, processes, design and quality control.

#### **Who Should Attend**

These seminars are targeted to technical and non-technical audiences, including manufacturers, suppliers and end-users. Professionals in the areas of production, engineering, design, packaging, management, purchasing and marketing can benefit from the programs in this series. More specifically, the appropriate audience for each seminar can be determined from the program descriptions.

#### **About the University**

UMass Lowell offers degree programs at all levels through the doctorate, and is New England's largest public educator in the areas of engineering and science. The University has a well-established tradition of providing highly trained, innovative professionals for the region's high-technology industries. As a comprehensive, research-driven center for professional education, UMass Lowell maintains a faculty that is sensitive to the practical needs of industry and contributes substantially to the region's economic development.

Established in 1954, UMass Lowell's Department of Plastics Engineering houses the U.S.'s first accredited undergraduate program in Plastics Engineering. In addition to the bachelor's degree, the department offers master's and doctoral degrees in Plastics Engineering. Staffed by internationally respected experts and authors of definitive plastics engineering texts, the department is a unique forum for discussing contemporary issues in the plastics

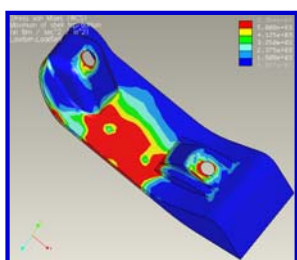
industry, while addressing the individual concerns of seminar participants. The Department currently has 17 full-time faculty, 125 undergraduate students, 250 graduate students, including 25 Doctor of Engineering candidates.

UMass Lowell's Division of Continuing Studies and Corporate Education, which includes the evening and summer schools of the University, provides credit courses leading to undergraduate and graduate degrees. In addition, Continuing Studies offers noncredit seminars and training modules designed to maintain and upgrade professional skills.

### Location

Located in historic Lowell, half an hour from Boston, UMass Lowell holds its Plastics Seminars and Workshops on the UMass Lowell North in the Herbert Ball Engineering Building. All major processes are represented in our well-equipped plastics processing

## DEPARTMENT OF PLASTICS ENGINEERING COLLEGE OF ENGINEERING



The Department of Plastics Engineering at UMass Lowell has a long history as a leader in the area of Plastics Engineering Education. Today, plastics materials are being used extensively in the design and manufacture of new products. As a result, there is a need for graduate education in this specialized area of study. The Department of Plastics Engineering now offers a stand alone, four course **Graduate Certificate in "Plastics Design"**.

This certificate program is designed for students who have attained a Bachelor's degree and want more plastics design background, but are not ready to commit to completion of a Master's degree. Admission to the program is open to candidates with a B.S. in Engineering or a related field. There is no application fee and the graduate record exam (GRE) is not required for admission. Courses previously used for another Plastics Certificate may not be used for a second Plastics Certificate. However, certificate courses may be applied to appropriate graduate degrees if students want to continue their education. The Plastics Engineering Department makes every attempt to offer many of these courses during the evening so that students having full time jobs can complete the certificate program. Graduates who have already completed these course requirements can receive a retroactive certificate. For more information, go to <http://plastics.uml.edu>. Go to [www.uml.edu/grad](http://www.uml.edu/grad) to apply for this certificate program.

### Required Courses:

**26.503 Mechanical Behavior of Polymers** (3 credits) Mechanical properties of bulk polymers. Linear viscoelasticity, creep, relaxation, dynamic and stress/strain response phenomena. Principles of time/temperature superposition. Rubber elasticity. Failure behavior of polymeric materials.

**26.518 Plastics Product Design** (3 credits) Theoretical principles and sound engineering practice involved in the design of new end products made from polymers, applying the total systems approach to the balance between product design, choice of materials, and process technique, as they affect competitive choice for commercial success.

### Elective Courses (choose two of the following):

**26.506 Polymer Structure, Properties, and Applications** (3 credits) Relationships between polymer structure (chemical composition, molecular weight and flexibility, inter-molecular order and bonding, supermolecular structure) and practical properties (mechanical, acoustic, thermal, electrical, optical and chemical) and applications.

**26.523 Plastics Process Analysis** (3 credits) Analysis of batch and continuous processes. Dimensional analysis. Thermodynamic properties of thermoplastics, enthalpy, heat capacity,

sensible heat, heat of fusion, and heat of reaction. Scale-up and modeling of processes. PVT analysis of injection molding. Heat transfer with phase change. Applications in plasticating screw design for extrusion and injection molding.

**26.541 Computer Applications in Plastics** (3 credits) Problem solving in plastics engineering has been dramatically influenced by the computer and innovative software packages. This graduate course will focus on the application and development of software packages for engineering analyses of plastics processes.

**26.549 Design with Elastomers** (3 credits) This course covers the basics of thermoset and thermoplastic elastomer product design. Topics include mechanical behavior, large deformation structural analysis, design for manufacturability, performance limitations, and end use applications for elastomers and assembly considerations.

**26.551 Computer Aided Extrusion Die Design** (3 credits) This is a project oriented course that uses basic principles of fluid flow and CAE programs to design extruder dies. A review of the extrusion process, die technology and flow behavior of plastics is studied. Prerequisite: Students should be proficient with a computer aided design program. SolidWorks will be utilized.

**26.552 Design of Polymer Processing Machinery** (3 credits) Hydraulics, machine logic, drives, pumps, motors, heating barrel and screw combinations, mechanical design. Hydraulic and electrical control circuits development. A semester project is required.

**26.576 Advanced Mold Design** (3 credits) A continuation of 26.376. Selected topics include new materials of mold construction, machining operations, developments in rapid tooling, methods of mold repair, new developments in hot runners, and special tooling. An advanced treatment will be presented on mold filling, heat transfer, and freeing mechanisms. **26.585 Computer Aided Engineering and Design I.**

**26.585 Computer Aided Engineering and Design I** (3 credits) Finite element programs to perform linear and nonlinear stress analysis. CAE programs for detailed simulation of various plastics engineering processes.

**26.586 Computer Aided Engineering and Design II** Continuation of 26.585.

**TOTAL: 12 Credits**

### **Doctor of Philosophy Degree Program**

A doctoral program in Chemistry with an option in Polymer Science/Plastics Engineering is offered jointly with the Polymer Science group in the Department of Chemistry. This program is designed to provide the student with a background in advanced course work and laboratory techniques which will prepare him or her to carry out, under the guidance of experienced scientists, an original, independent investigation leading to an acceptable contribution to the body of contemporary knowledge. Further details of the program are described in the Chemistry section of the Graduate School Catalog

# Centre for Design

[http://envent.rmit.edu.au/programs/sustainable\\_products/sustainable\\_packaging\\_courses\\_in\\_2005](http://envent.rmit.edu.au/programs/sustainable_products/sustainable_packaging_courses_in_2005)

## Sustainable products & product systems

Sustainable Packaging courses in 2005

Melbourne (24th and 25th May); Melbourne (27th and 28th Sep)

Description

### Sustainable Packaging Brochure

A two-day course incorporating an overview of packaging sustainability including strategies, case studies and decision-support tools. RMIT's Centre for Design has developed Sustainable Packaging 2005 in conjunction with its partners in the Sustainable Packaging Alliance from Victoria University and Birubi Innovation.

Companies involved in the packaging supply chains are expected to join the National Packaging Covenant or face regulatory penalties. This course will help companies to meet regulatory requirements in Australia and overseas, and add value to your business through environmental innovation. It will also provide other stakeholders including policy makers, waste managers and educators with a good understanding of industry trends and challenges involved in packaging sustainability.

### **Participants will gain a clearer understanding of:**

The environmental issues and business responsibilities associated with packaging

How to meet the requirements of the revised National Packaging Covenant

International regulations and implications for exporters

Environmental impacts of different packaging materials

Recycling and other recovery systems for packaging

Degradable polymers and how they should be used

Life Cycle Assessment and other decision-support tools

How to engage with suppliers, customers and other stakeholders

The role and opportunities for innovation to provide environmental and business benefits

### **Who should attend**

The course will be useful for individuals and organisations with an interest in the environmental impacts and sustainability of packaging, including all participants in packaging supply chains from packaging converters and brand owners through to raw material suppliers, retailers, and waste or recycling companies. It will be particularly relevant for:

Packaging technologists

Packaging managers

Marketers

Brand managers

Environment managers

Retailers

Product designers

Waste educators

Policy makers

Risk managers

Financial investment advisors

New technology investors

## **Course content**

### **Day 1**

#### **Session 1: Welcome and Introduction and Packaging sustainability**

An introduction to sustainable packaging, including regulatory and market drivers in Australia and overseas.

Does the community care about sustainable packaging? Understanding the disconnect between attitudes and behaviour.

The National Packaging Covenant - KPI's and targets to monitor progress towards sustainability.

#### **Morning tea**

#### **Session 2: Design for environment tools**

Packing materials and the environment: Introducing the SPA materials Selector.

Selecting appropriate strategies.

Design for Environment checklists.

#### **Lunch**

#### **Session 3: Strategies for waste reduction and recycling**

The waste hierarchy: is recycling the only answer?

Alternative strategies to reduce waste across the product lifecycle.

Design for recycling: which packaging materials are 'recyclable' and how can designers help?

Design for biodegradability: the case for biodegradable polymers in packaging.

#### **Afternoon tea**

#### **Session 4: Waste reduction and recycling case studies**

Each Presenter will speak on innovative aspects of the product, environmental benefits, challenges faced in bringing them to market and how these were resolved.

Products:

Innovation in packaging - Degradable PLA and recycled PET

Pallet stabilisation with 95% less waste - 3M stretch tape

Reusable industrial packaging

### **Day 2**

#### **Session 5: Environmental assessment tools**

Evaluating environmental impacts.

An introduction to Life Cycle Assessment (LCA) and other tools.

An LCA of the milk supply chain.

Eco-efficiency analysis of packaging.

#### **Morning tea**

#### **Session 6: Managing for sustainability**

Supply chain dynamics.

Understanding your product chain and other stakeholders - working together to achieve change.

Reusable bulk agricultural containers.

Recovery of used oil containers.

#### **Lunch**

#### **Session 7: Managing sustainability (continued)**

Environmental communication and marketing.

Steel recycling campaign.

Polymer Identification Code.

strong>4pm Finish

#### **Course outcome**

This course will help you to meet regulatory requirements in Australia and overseas markets, and to add value to your business through environmental innovation.

Manufacturers can no longer afford to ignore the environmental issues associated with packaging. Companies involved in the packaging supply chain, including raw material suppliers, manufacturers, fillers and retailers, are expected to join the National Packaging Covenant or face regulatory penalties. Companies exporting to other countries need to meet local requirements such as the European Directive for Packaging and Packaging Waste and specific regulations in member countries.

The market for packaging is becoming 'greener' with many companies choosing to only work with suppliers that meet minimum environmental standards. Environmental initiatives also help companies to look at their products and their business processes with fresh eyes, and to identify opportunities for greater efficiencies, stronger relationships with suppliers and customers, or product differentiation through environmental design.

### **Course leader**

Presenters will include Helen Lewis and Dr. Karli James from the Centre for Design at RMIT University and Dr Leanne Fitzpatrick from Birubi Innovation. They will be joined by Industry experts.

Enrolment info

[Download attached brochure](#)

Cost

Early bird \$770(\*)

Standard \$880

Full time student \$440

All prices include GST

In order to receive the early bird registration please register by the following dates:

Melbourne May Course (10 May)

Melbourne Sep Course (14 Sep)

Venue

#### **Melbourne**

*24 - 25 May*

Seminar Rooms

RMIT City Campus, Storey Hall

344 Swanston Street, Melbourne

#### **Melbourne**

*27 - 28 Sep*

Seminar Rooms

RMIT City Campus, Storey Hall

344 Swanston Street, Melbourne

Certificate

A certificate of attendance will be provided.

Participants will also receive a course workbook including presentation and case studies, the SPA Packaging Materials Selector© and a CD with reference materials

### **Industrial packaging supply chain program**

23rd December 2003

#### **Abstract**

EcoRecycle Victoria has developed this program in conjunction with the Centre for Design at RMIT University. EcoRecycle Victoria's draft strategy, Towards Zero Waste identifies industrial packaging as a priority item for a product stewardship focus. The project involves working with companies and their customers, suppliers and/or recyclers to reduce industrial packaging waste.

The aim of the program is to rethink industrial packaging systems. The program will provide small grants as well as technical advice and research support to help companies to reduce waste, save money and improve efficiencies in the supply chain.

## **Overview of the Industrial Packaging Supply Chain Project**

This will be achieved by working with companies to assess their current packaging systems and to identify potential alternatives. Alternative systems should aim to reduce environmental impacts over the total product life cycle; maintain or improve efficiencies in packaging, transportation and waste management; and reduce total life cycle costs.

Redesign of packaging systems requires a cooperative approach between designers, packaging manufacturers, product manufacturers, transport and logistics companies, retailers, waste management companies and recyclers.

The aim of the project is to work with groups of companies to address barriers and find solutions to industrial packaging waste across supply chains. The project will seek to identify synergies in objectives and requirements across supply chains. For example, a product manufacturer might develop a project in conjunction with their packaging suppliers and a recycling company.

## **Project Partners**

This program is being run in partnership with EcoRecycle Victoria ([www.ecorecycle.vic.gov.au](http://www.ecorecycle.vic.gov.au)) and the Sustainable Packaging Alliance ([www.sustainablepack.org](http://www.sustainablepack.org)).

## **Case Study One**

The first project began in December 2003 and involved working with Charlwood Design ([www.charlwood.com.au](http://www.charlwood.com.au)) and Hafele Australia (<http://www.hafele.com/english/home/default.htm>) on packaging issues related to a new product release into commercial buildings. Further information: [Karli.James@rmit.edu.au](mailto:Karli.James@rmit.edu.au)

## **Case Study Two**

The second project began in May 2004 and involves working with Village Park Consortium and Australand and Australbricks in mapping packaging for building materials and products entering the Melbourne 2006 Commonwealth Games Athletes Village. Further information: [robert@sustainablepack.org](mailto:robert@sustainablepack.org)

## **Case Study Three**

The third project has involved working with National Foods Limited, Safetech, 3M, P&O Cold Logistics and Woolworths investigating the use of 3M's stretch tape on palletised product. Further information: [Karli.James@rmit.edu.au](mailto:Karli.James@rmit.edu.au)

## **Additional case studies**

The Centre for Design and the Sustainable Packaging Alliance will be documenting another 6 case studies to illustrate the different approaches and achievements that can be made in reducing and re-designing industrial packaging. Further information: [Karli.James@rmit.edu.au](mailto:Karli.James@rmit.edu.au)

## **Methodology**

This program is designed to be flexible enough to meet a variety of different needs. Assistance could involve some or all of the following:

- Facilitation of meetings and creative ideas workshops;
- Research on life cycle environmental impacts;
- Research into alternative packaging materials, products and systems;
- Assistance with development of project teams;
- Assistance with writing design briefs and project reports;
- Advice on waste minimization and recycling strategies; and
- Small grants for trials, testing or equipment.

Levels and types of assistance will be determined on a case-by-case basis. Wherever possible assistance packages will draw on existing EcoRecycle resources (e.g. Industry Advisors) and programs run by the Department of Industry, Innovation and Regional development (DIIRD) as well as the resources of the Centre for Design at RMIT.

## **Nestle Environmental Packaging Checklist and Guidelines**

23rd December 2003

## **Abstract**

The Centre for Design is working with Dr Brett Carroll, Environment Manager Oceania, to develop environmental packaging guidelines and checklist for use by marketers and packaging technologists across the different Nestle marketing divisions.

Nestle recently submitted their second Action Plan under the National Packaging Covenant. The Action Plan includes a range of commitments to packaging design, such as:

- To review all SKUs to characterise and evaluate packaging;
- To identify opportunities for improvement; and
- To incorporate 'design for reuse' in the design of packaging.

The project will facilitate implementation of these commitments by providing eco-design guidelines and training on packaging evaluation and redesign to reduce environmental impacts.

#### **Project Partners**

Nestle Environmental Manager Oceania, marketers and packaging technologies from the different Nestle marketing divisions.

#### **Methodology**

- Development of environmental packaging guidelines
- Development of an interactive Excel based checklist
- Training workshops with marketers and packaging technologies

### **Sustainable Packaging Alliance**

9th May 2003

[Towards Sustainable Packaging5.doc](#) 258.00 kB

#### **Abstract**

The Sustainable Packaging Alliance (SPA) [www.sustainablepack.org](http://www.sustainablepack.org) is an initiative of Victoria University, through its Centre for Packaging, Transportation and Storage, RMIT University, through its Centre for Design, and Birubi Innovation Pty Ltd. The Alliance was formed to provide a focal point for strategic research, technology transfer, education and consulting services to underpin and facilitate the development and commercialisation of sustainable packaging systems.

The Sustainable Packaging Alliance will play a leadership role in defining and demonstrating sustainable packaging concepts and creating commercial solutions. It will be a focal point for knowledge on the challenges faced by all stakeholders to realise the ambitious goal of triple bottom line sustainability and it will position Australia as an international leader in packaging sustainability.

#### **Current Projects**

Current SPA projects include:

1. Defining Sustainable Packaging - stakeholder and consumer research
2. Sustainable Packaging training courses in Australia and New Zealand
3. Packaging material selector
4. Packaging impact quick evaluation tool (PIQET)

#### **Project Partners**

SPA is an initiative of:

- The Centre for Design at RMIT University
- The Centre for Packaging, Transportation and Storage at Victoria University
- Birubi Innovation

#### **Methodology Focus and role**

The Alliance recognises the need to develop a nationally integrated research effort to deliver step changes in the understanding and approach to sustainability issues throughout the packaging value chain.

Through sound research methodologies the Alliance aims to provide independent knowledge for industry, policy makers and the general public. It will develop tools and protocols to develop a language for engagement and decision making and through well structured technology transfer programs, it will facilitate knowledge exchange between diverse stakeholder groups to enable change at all points along the packaging chain.

Specifically it will build a collaborative research and technology transfer capability in:

- Credible environmental impact assessment of packaging systems.
- Understanding the social impact and acceptance of (consumer) packaging and its post consumer waste management.
- Design of sustainable packaging systems.
- Packaging supply chain integration.
- Sustainable manufacture, reprocessing and re-use of packaging materials.

The Alliance will take into account the diverse interests of stakeholders involved in all stages of the packaging supply chain, from raw material manufacturer, via converter, end user and retailer through to collector, re-processor and re-user, to understand the environmental impact of packaging and create integrated, commercially viable solutions for improvement.

### **Alliance Objectives**

The Alliance aims to be recognised as the National Centre of Excellence in Sustainable Packaging and to be recognised internationally for its leadership and demonstrated industry outcomes. Specifically its strategic research, technology transfer, education and influence programs will:

1. Create a vision that defines benchmarks and measures for assessing the sustainability of packaging systems.
2. Build industry understanding and capability to develop and commercialise sustainable packaging solutions.
3. Develop tools and methodologies to facilitate design and assessment of packaging systems sustainability.
4. Identify barriers to the development of sustainable packaging and facilitate implementation of strategies to address them.

# Mohawk College of Applied Arts and Technology

<http://www.mohawkc.on.ca/calendar/gdpPackaging.html>

## Graphic Design Production – Packaging (Program #467)

Co-operative Education Program  
Two-year Ontario College Diploma  
Brantford Campus  
Start date: September

### Program Objectives

This program is designed to graduate packaging specialists capable of applying technical materials knowledge to:

the design, manufacture and use of packaging, containing, protecting, preserving and transporting products in a cost-effective and environmentally responsible manner.

### Studies emphasize the:

graphic, technical and structural considerations in the design of packaging systems, physical properties of material (including paper, glass, metal and plastic and their applications in the design and manufacture of packages).

### Career Opportunities

Packaging is an integral part of our everyday life and provides unique career opportunities for the future. With expectations from the public and government for convenient, low cost packaging which minimally impacts our environment, employment prospects for trained specialists continue to be promising. Graduates may commence employment with companies that make packages or use packages to sell and protect products. Entry-level positions may include: product development, package design, packaging buyers and production co-ordinators.

### Admission Requirements

OSSD or equivalent (GED, College & Career Preparation) including Grade 12 English, general, advanced, C, U or equivalent. Mature applicants will be considered on an individual basis.

### Selection Procedure

All qualified applicants who applied by February 1 will be offered admission as of March 31. Any vacancies left will be filled on a first-come, first-served basis with applicants who applied after February 1.

### Co-operative Education

The two-year Packaging Design program consists of four academic semesters and two paid work semesters. Each semester is of four months duration. The work semester job opportunities are related to the program of studies. The Centre for Co-operative Education Graduate and Student Employment facilitates the development of program related job opportunities. The proposed Co-operative Education Plan is:

- YEAR 1** ACADEMIC SEMESTER 1
- ACADEMIC SEMESTER 2
- WORK SEMESTER 1
  
- YEAR 2** ACADEMIC SEMESTER 3
- WORK SEMESTER 2
- ACADEMIC SEMESTER 4

Degree Transfer  
Athabasca University  
Rochester Institute of Technology (in process)

Program of Studies

**Semester 1**

COMM	LL041	Communications(langs)	3.00
CRED	10005	Career Education (G&P)	
GRAP	10003	Princ of Design (G&S)	4.00
GRAP	10004	Intro to Design Applications	4.00
GRAP	10005	Intro to Vector Graphics	3.00
PCKG	10001	Intro to Packaging Design	3.00

**Semester 2**

CADM	10002	ArtiosCAD Computer Cncpts	4.00
CHEM	PE106	Preparatory Chemistry (Gas)	4.00
PCKG	10002	Pckg Specs & Applic	4.00
PCKG	10003	Paperboard Pckg Design	3.00
PCKG	10004	Corrugated Pckg Design	3.00

**Semester 3**

COMM	LL122	Researching & Reporting-Lgs	3.00
PCKG	10005	Protective Pckg Design	3.00
PCKG	10006	Intro to Plastic Packaging	3.00
PCKG	10007	Flexible Pckg Design	3.00
PCKG	10008	Pckg Machinery Applic	3.00
OPEL	XXXXX	General Educ 1 Option Table	2.00

**Semester 4**

CADM	10003	ArtiosCAD Creative Design	4.00
PCKG	10009	Rigid Pckg Design	4.00
PCKG	10010	Packaging Costing	2.00
PCKG	PN401	Packaging Development	3.00
PCKG	PN440	Food Preservation Packaging	3.00
PCKG	PN560	Packaging Regulations & Issues	2.00

**CO-OPERATIVE EDUCATION**

WORK	PN991	Work Experience 1	
WORK	PN992	Work Experience 2	

# University of Glamorgan

<http://www.glam.ac.uk/courses/detail2.php?id=2020&sfrom=easy&dosommat=school>

## BA Packaging Design (subject to validation)

### IN BRIEF

#### Course Length:

Full-time - Three Years

Part-time - Five Years

#### UCAS Code:

W200

#### Entry Requirements:

UCAS tariff: 160 points with at least 140 points from 6/12 unit GCE/VCE A level (including Art and Design related subjects). Equivalent qualifications are also acceptable.

#### Can be studied as:

Single

Major

Minor

Joint

#### Further information:

Email: [enquiries@glam.ac.uk](mailto:enquiries@glam.ac.uk)

Call us free on 0800 716925

#### About the course

This degree integrates the three dimensional, graphical and technological aspects of contemporary packaging. Central to this course are the core modules that deal with the generation of packaging solutions for different environments.

#### Course content

##### Level One

- History of Design
- Drawing Skills
- Packaging
- Simple Model Making
- The Process of Design

##### Level Two

- Website and Interactive Design
- Presentation Techniques
- Computer Modelling of Products and Interiors
- Graphics for Packaging
- Design Professional Practice dealing with the aspects of Project Management
- Environmental Design

##### Level Three

During the final year of the course you will:

- Undertake a piece of critical research associated with design
- Enter two national design competitions
- Design professional practice
- A final major piece of packaging design

#### How will you study

You will typically spend 20 hours a week in lectures, tutorials or practical sessions. Formal lectures are followed by 'hands on' workshops in materials, processing and technology of contemporary packaging.

#### What are the career prospects

This course provides a firm foundation in packaging design. The course equips its graduates with effective problem-solving, technological and communication skills that are highly sought after by employers in today's job market.

# University of Teesside

[http://www.tees.ac.uk/prospectus/ft2005/ft2005\\_course.cfm?course=30&fos=185](http://www.tees.ac.uk/prospectus/ft2005/ft2005_course.cfm?course=30&fos=185)

## BA (Hons) Packaging Design

3 years full-time

W241 BA/PD Route A  
E241 BA/PDB Route B

**Institution Name and Code: TEES T20**

Packaging and 'Point of Purchase' materials are often crucial to the success of a product. Packaging designers need to understand marketing issues if they are to develop design solutions that will communicate effectively with their target audience and motivate them to want the product.

This specialist degree enables students to develop practical skills in packaging and 'Point of Purchase' design. The defining feature of this course is the way in which it integrates marketing theory with design practice. This cross-disciplinary approach gives graduates a diverse portfolio of skills, which enhances their career choices within design, management and marketing management. Practical design modules develop technical and creative skills and students will become competent in the use of CAD for 2D graphics and 3D modelling and visualisation. Our network of company contacts provides students with live industry-linked projects.

BA (Hons) Packaging Design builds on the established Design for Brand and Marketing degree and the University has a successful track record in design competitions, including the Student Starpack Awards and the Point of Purchase Advertising International (POPAI) Awards.

### Entry Requirements

See the standard [University entry requirements](#). The normal entry requirements for Art & Design courses are:

two passes at Advanced GCE level, one of which must be in an Art or Design discipline, or BTEC National Diploma - Pass in an Art or Design discipline, or two passes in 6-unit Advanced Vocational Certificates in Education, one of which must be in an Art or Design discipline, or pass in one 12-unit Advanced Vocational Certificate in Education in an Art or Design discipline

A portfolio of work must usually be presented in conjunction with the above qualifications. This is normally done at interview but may be done electronically or by slide in certain circumstances.

# Hochschule für Technik, Wirtschaft und Kultur Leipzig

Studiengang Druck- und Verpackungstechnik  
(Printing and Packaging Education)

<http://www.htwk-leipzig.de/>

## Studienrichtung Drucktechnik (DTT)

Studiengangsleiter: [Prof. Dr.-Ing. habil. Dieter Liebau](#)

Studienabschluß: Dipl.-Ing. (FH), Regelstudienzeit: 8 Semester

In diesem Studiengang wird ein breitgefächertes Grund- und Spezialwissen entsprechend den Erfordernissen der sich sprunghaft entwickelnden Printmedien vermittelt. In den Lehrgebieten Satztechnik, Reproduktionstechnik, Druckformenherstellung, Druckprozesse, Bedruckstoffverarbeitung, Verpackung und Werkstoffe erfolgt eine solide Fachausbildung, in der vor allem auf die modernen Übertragungsprozesse Bezug genommen wird. Dabei finden auch die Entwicklung der digitalen Verfahren und die Schnittstellen zwischen Printmedien und elektronischen Medien ihre Berücksichtigung.

Ein praxisorientiertes Studium bereitet den Studierenden auf die Übernahme einer Tätigkeit als Führungskraft eines Unternehmens des Druckgewerbes, der Materialzulieferindustrie oder des einschlägigen Maschinen- und Gerätebaus vor.

## Studienrichtung Verpackungstechnik (DVT)

Studiengangsleiter: [Prof. Dr.-Ing. Eugen Herzau](#)

Studienabschluß: Dipl.-Ing. (FH), Regelstudienzeit: 8 Semester

Die Ausbildung in diesem Studiengang befähigt die Absolventen für eine Tätigkeit in den technischen Bereichen der verpackungsherstellenden und verpackungsanwendenden Unternehmen. Ihr Einsatz in der Produktionsvorbereitung und Produktionslenkung, in der Prozeßkontrolle, in der Qualitätssicherung und in der Entwicklung, Gestaltung und Konstruktion neuer entsorgungsgerechter Verpackungssysteme erfordert ein umfangreiches Grundlagenwissen sowie anwendungsbereite Kenntnisse über ein breites Spektrum technologischer Prozesse.

Auf diese Anforderungen nimmt bereits das Grundlagenstudium Bezug, in dem es vor allem in den technisch-technologischen Grundlagenfächern die besonderen Belange der Verpackungstechnik berücksichtigt. Das Hauptstudium trägt einerseits der Verknüpfung Druck- und Verpackungstechnik Rechnung, andererseits werden auch Fächer einbezogen, die auf eine spätere Leitungstätigkeit in den Verpackungsunternehmen vorbereiten.

# University of Huddersfield - Creative Imaging (Packaging) BA (Hons)

[http://www.hud.ac.uk/courses/undergrad/ipp\\_pages00000442.htm](http://www.hud.ac.uk/courses/undergrad/ipp_pages00000442.htm)

## Undergraduate prospectus - 2005 / 2006 Creative Imaging (Packaging) BA (Hons)

<b>School</b>	<a href="#">Design Technology</a>
<b>UCAS Code</b>	Route A: W215 BA/CIPkg Route B: E215 BA/CIPkg
<b>Course Length</b>	4 years sandwich or 3 years full-time
<b>Number of Places</b>	75 places across the five Creative Imaging Pathways (Advertising, Graphic Design, Illustration, Media and Animation, and Packaging)
<b>Contact</b>	Michael Glynn Oliver Telephone: 01484 472651 Fax: 01484 472940 E-mail: <a href="mailto:m.g.oliver">m.g.oliver</a>
<b>Entry Requirements</b>	Additional requirements for this course are normally one of the following: i. A minimum of 160 points gained in a Vocational A level or Advanced GCE awards of no less than six units in size ii. Completion of a Foundation course in Art and Design iii. A BTEC National Diploma in a relevant subject, with merits <b>PLUS</b> Satisfactory completion of an interview, supported by a portfolio of work. Other suitable experience or qualifications, for example for mature applicants, will be considered.
<b>Entry Requirements</b>	Additional requirements for this course are normally one of the following: i. A minimum of 160 points gained in a Vocational A level or Advanced GCE awards of no less than six units in size ii. Completion of a Foundation course in Art and Design iii. A BTEC National Diploma in a relevant subject, with merits <b>PLUS</b> Satisfactory completion of an interview, supported by a portfolio of work. Other suitable experience or qualifications, for example for mature applicants, will be considered.
<b>Introduction</b>	This course offers a unique opportunity to develop both traditional and new media responses to 3D packaging problems. It emphasises creativity, individuality and professionalism and encourages thought, judgement and originality. The programme benefits from facilities and resources on two sites where Year 1 is based at Batley and Year 2 and Final Year at Huddersfield. New technology in the form of 3D computer design and animation plays a significant role in the production of work. The design based activity is supported by materials, manufacture, business and marketing modules, key ingredients in the production of highly relevant design solutions. Students are encouraged to become increasingly independent in their professional development. Excellent studio spaces and professional expertise Extensive CAD facilities and software International and UK study trips Diverse curriculum addresses the needs of industry Strong focus on professionalism/realism One year industrial placement opportunities

<p><b>Course Structure</b></p>	<p><b>Year 1</b>  Conceptual Design  Packaging Technology Development  Introduction to Digital Technology  Creative Thinking  Researching the User  Business/Marketing Issues  Contextual Studies</p> <p><b>Year 2</b>  Design Projects  Technology for Packaging Design  Design Management  Promotional Strategies</p> <p><b>Year 3 Sandwich</b>  Optional one year work placement</p> <p><b>Year 3 Full-time/Year 4 Sandwich</b>  Major Design Projects  Technical Report  Project Management</p>
<p><b>Teaching and Assessment</b></p>	<p>Studio-based design projects, workshop demonstrations and practical sessions form major components of the teaching strategy. The pathway uses continual assessment techniques for all aspects of study.</p>
<p><b>Career Opportunities</b></p>	<p>The nature of the course results in the majority of students finding employment within a wide range of consultancies and advertising agencies, both at home and abroad. Career opportunities are diverse, including: studio designer, design manager, stylist, colourist, product development co-ordinator, freelance designer, and as first degree for entry into PGCE for teaching.</p>
<p><b>Fieldwork</b></p>	<p>During Year 2 of the programme a supervised fieldwork visit to a major international centre for design takes place.</p>
<p><b>Other Information</b></p>	<p><b>Professional Accreditation</b></p> <p>This specialist course meets the full educational requirements for student membership of the Chartered Society of Designers (CSD).</p>

## Clemson University

### **Clemson University** - Extension Packaging Program

Clemson University's Extension Packaging Program was established in 1999 and exists to provide packaging assistance to both food and non-food industries. The Extension Packaging Program utilizes a variety of education methods to assist all types and sizes of companies with packaging issues:

- Contract package testing
- Distribution testing
- Shelf life evaluation
- Material testing
- Material identification, characterization, and comparison
- Private research projects
- Package development
- Packaging machinery simulation
- Certified food processing lab for food packaging
- Problem solving sessions
- Phone consultations
- Private meetings with selected packaging science faculty
- Educational programs
- Short Courses
- Workshops
- Conferences
- On-site industry training

For more information on how the Extension program might help your company, please contact Dr. W. Scott

Whiteside by phone at 864/656-6246 or by e-mail at [wwhtsd@clemson.edu](mailto:wwhtsd@clemson.edu).

The Extension program offers Short Courses to members of industry.

\*\* A schedule of future courses is being developed. Check back with us soon!

### Senior Projects

As part of the requirements for Packaging Science 420 seniors must do a major project in conjunction with an industry partner. The "clients" range from major corporations such as BMW, Blue Ridge Paper and Sonoco to small, local bakeries. Students use the projects to get practical, real-world experience in problems solving, communication and packaging applications.

Presentations and recommendations are made at the semester's end in front of the clients, suppliers, faculty, staff and guests.

#### **Equipment in the Sonoco Laboratory**

- Vertical Load (Compression)
- Burst Testing
- Cushion Tester
- Drop Test Impact
- Inclined Plane Impact
- Manual Sample Cutter
- Moisture Transmission
- Shock
- Squeezer Compression
- Tensile Testing
- Vibration

#### **Equipment in the DuPont Laboratory**

- Coater Laminator
- Thermoformer
- Cast Film Line
- Blown Film Line
- Injection Blow Molder
- Shrink Wrapper
- Heat Sealers

## **The CEFPACK Mission Statement**

Clemson University and the University's Department of Packaging Science are pleased to announce the opening of a new center for research, development, evaluation and application of advanced flexible materials and packages

## **CEFPACK the Clemson University Center for Flexible Packaging .**

New laboratories in this center will provide a broad range of capabilities, from filmmaking, lamination and pouch making to filling, thermal processing and sensory analysis. Combined with the department's ISTA-certified Package Testing and Materials Evaluation Laboratory, the Department of Packaging Science can now offer industry the entire range of services from materials evaluation through testing of filled packages, training and equipment demonstrations, all in one place. Clemson has the nation's only academic facility to offer this broad range of capabilities.

## **State-Of-The-Art Equipment**

The new laboratories added through CEFPACK contain the following core-process equipment:

- Lab scale cast/blown film line (8-inch cast, ~8-inch lay-flat)
- Lab scale multilayer blown film line (currently three layers, ~14-inch lay-flat)
- Newly renovated 14-inch web width coater/laminator (solvent/water, direct/offset gravure, extrusion coating and laminating planned)
- 14-inch web solventless laminator
- Onpack vertical form-fill-seal packaging system
- State-of-the-art, multiprocess retort (rotary and static)
- An approved food processing pilot plant (thermal process authority on staff)

Support capabilities include analytical laboratories in the department and the University, plus center-specific equipment such as oxygen and water vapor permeation under controlled humidity (both films and packages); thermal analysis (DSC, TMA, TGA); heat-seal testing; pouch integrity testing; and extensive electronic imaging facilities. Shelf-life and sensory evaluation are available. The center supplements and extend the activities of other programs and centers on campus, especially the Center for Advance Engineering Fibers and Films.

## **Expertise and Experience**

CEFPACK has an impressive core of faculty and staff who will conduct the programs and research activities.

Dr. Robert M. Kimmel is the director of CEFPACK. He is trained in polymer physics and materials engineering. He joined the Clemson faculty five years ago after 30+ years in technical, marketing and business development in the film and PET bottle resin businesses of Hoechst Celanese.

Dr. W. Scott Whiteside is the associate director of CEFPACK. His expertise is in food packaging and processing. He works extensively with many major food companies and packaging converters on various packaging development issues and problems. Dr. Whiteside teaches undergraduate and industry short courses on a variety of subjects such as; Packaging Distribution, Packaging Machinery, Packaging Fundamentals, Managing Packaging Development, Food Packaging and others. He is also a Thermal Process Authority. Dr. Whiteside is a member of IFT, IOPP and the Institute for Thermal Processing Specialists.

Research associates Alison Tuso and Jerry Stoner bring more than 50 years of combined experience in converting and flexible packaging to CEFPACK operations.

### **CEFPACK Memberships**

CEFPACK is offering memberships to any company or organization associated with the converting or packaging industries. Companies can choose to become Supporting Members with a minimum fee of \$30,000 for a three-year membership. This fee can be paid in yearly installments and is renewable at the end of the second year. Supporting Member privileges include the following:

- Credit for the center's services up to the amount of the membership fee (includes use of process equipment, analytical services, phone consultation, and training and short courses at Clemson)
- Additional services at the same fee structure (higher fees for nonmembers)
- Scheduling priority over nonmembers
- University policies and practices that ensure confidentiality of proprietary information and protection of intellectual property rights
- Symposiums twice a year for members to meet students and discuss non-proprietary programs and research
- An opportunity to sponsor directed research as a Sustaining Member at additional cost

### **Academic Excellence**

Clemson University is the only university in the Southeast and one of only four academic institutions in the United States to offer a four-year program leading to a B.S. degree in packaging science. The degree program stresses the scientific and technological aspects of packaging. An M.S. degree in packaging science and a Ph.D. degree in food technology are also available.

As part of a land-grant university, the Department of Packaging Science has goals of teaching, research and public service. The teaching program prepares graduates for a successful career in the packaging industry by helping them develop the attitudes, analytical/decision-making skills and interpersonal and communications skills needed. By promoting innovative thinking and problem solving through laboratory courses, special projects and research, the degree programs provide graduates with a combination of skills to pursue careers in designing, manufacturing and utilization of packages.

The department conducts basic and applied research in advanced packaging materials, distribution and transportation methods, and food and medical packaging. Public service activities contribute to economic development in South Carolina and support the packaging industry worldwide through consulting, workshops and short courses, testing and development services, and incorporating industry problems and issues into the classrooms and laboratories

### **FOOD SAFETY: FROM THE SURFACE UP**

A National Food Safety Conference

Hosted by Clemson University

February 23-25, 2005

Springmaid Beach Resort Hotel and Conference Center

Myrtle Beach, SC

# **Indiana State University - B.S. in Packaging Technology**

[http://www.indstate.edu/imt/IMT/bs\\_pt.htm](http://www.indstate.edu/imt/IMT/bs_pt.htm)

## **B.S. in Packaging Technology**

The Bachelor of Science degree in Packaging Technology at Indiana State University prepares you to become a professional in the challenging and demanding industrial environment of packaging engineering and management. Developed as a cooperative effort between ISU's College of Technology, the Institute of Packaging Professionals, and representatives of Indiana's packaging industries, this four-year program enjoys nationwide respect and recognition. Our placement rate is virtually 100%. Most students receive several job offers.

Program instruction is designed to involve you in a combination of classroom learning situations and hands-on laboratory experiences. These activities allow you to explore the use and application of machines and test equipment, learn design techniques, and gain an understanding of the management function. ISU's packaging technology program is only one of a limited number of packaging technology programs available throughout the United States. The program utilizes new and well-equipped laboratories. The program allows a number of options for specialization e.g. manufacturing, machine design, graphic/design, and marketing.

Every product manufactured is, in some way, involved with a package. It is the responsibility of packaging engineers to supervise the tasks necessary to develop a package that protects the welfare of the product from production to consumption. Packaging, as the third largest industry and largest employer in the United States, offers excellent opportunities for graduates in careers such as the following.  
1988 graduate, current job title: Manufacturing Operations Manager; current salary: \$81,000/yr; 1995 graduate, Package Engineer, \$52,000/yr; 1998 graduate, Packaging Engineer, \$52,000/yr; 2000 graduate, Packaging Engineer, \$40,000/yr.

## **Professional Organizations**

A number of activities are available through ISU's packaging technology program which allow you to interact with other students and professionals in the packaging industry. The campus chapter of the [Institute of Packaging Professionals](#) (IoPP) offer you opportunities to participate in local chapter's monthly meetings and be a part of campus-wide activities, attend regional and national conventions, and qualify for scholarships and other financial grants.

## **Curriculum**

### **[B.S. in Packaging Technology Courses](#)**

#### **2005 IoPP Annual Meeting primed for involvement, networking**

One of the best ways to get involved with IoPP is to attend the organization's upcoming [2005 Annual Meeting](#).

The Annual Meeting allows leaders, members and staff to network – to communicate with each other about what the association is doing that works and in what ways IoPP can improve its programs, efficiencies and communications.

This year's meeting – scheduled for May 4-7, 2005, at the Ocean Creek Resort located in Myrtle Beach, South Carolina – will empower its leaders to better serve, while addressing educational goals, programs, and leadership objectives. But the meeting will also focus on packaging technology innovations and how they impact the IoPP member.

The 2005 meeting will also allow members to:  
Share technical packaging information among packaging professionals

Equip the leaders of IoPP's chartered units so they are able to best serve member needs

Exchange ideas among those in the packaging business

Identify future national leaders from among the ranks of current chartered unit leadership

Encourage the development of new leaders for IoPP service

But the Annual Meeting isn't only about business – there are plenty of activities on the docket to keep things lively.

One dinner event will be taking place at the “Dixie Stampede,” touted as Myrtle Beach’s “Most Fun Place to Eat.” IoPP’s Honors & Awards Banquet presents awards for IoPP’s College of Fellows, Honorary Life Members, Member of the Year, Chapter of the Year and Technical Committee of the Year. And, not to be missed - IoPP Virginia/Carolinas Chapter is hosting a BBQ Dinner. There will also be a golfing event and a chartered fishing expedition.

Don't miss the opportunity to network with your fellow IoPP leaders, members and chapters.

Join us for this year’s Annual Meeting. You won’t be disappointed!

For more information about the Annual Meeting,

Or contact Suzanne Fisher at 616-654-6012 or e-mail [suzanne\\_fisher@hermanmiller.com](mailto:suzanne_fisher@hermanmiller.com).

## **Michigan State University - School of Packaging**

<http://packaging.msu.edu/international.php>

### **About the MSU School of Packaging**

#### **INTERNATIONAL ACTIVITIES**

As the leading university based Packaging education and research program in the world, the programs of the MSU School of Packaging extend beyond the boundaries of Michigan and even beyond the United States. A primary international activity is the education of graduate students from other countries. The following are a few examples of other activities.

#### **Visiting Scholars**

The School of Packaging frequently provides custom educational and training programs for international visiting scholars. Recent scholars have come from France, the United Kingdom, Ireland, China, Korea, Israel, Japan, Brazil, Argentina, and other countries. Visiting scholars are usually sponsored by a company, a government organization, a university or other educational institution, or some other organization. Scholars range from neophytes to experts in the field of packaging.

The School of Packaging recognizes that a visiting scholar dedicates a significant amount of time and resources to come to the University to study and that the scholar expects to have a beneficial and productive experience. As a consequence, visiting scholars are not accepted until a specific faculty member has agreed to work closely with the individual.

#### **Educational Programs**

The School also organizes and delivers customized education programs for multinational companies and institutes. Programs can be held in East Lansing or at a remote site arranged by the company or institution. Recent programs have been held in Kuwait, Indonesia, Malaysia, Argentina, and other countries.

#### **Overseas Study**

Study broad programs for college students are available to students in Packaging and related programs at other MSU and other universities in the United States. Students taking these programs enroll for regular Michigan State University courses and earn MSU credit-hours for their efforts. Currently, summer courses are offered in England, Sweden, Japan and Spain. Programs may be instituted in other countries.

Students may also enroll for a semester or year of study abroad at cooperating universities in other countries. MSU maintains agreements with several universities in Europe, Australia, and other countries for this purpose.

#### **Faculty Participation in International Activities**

School of Packaging faculty members regularly participate in a variety of international activities. Examples of such activities include speaking at conferences and research symposia, teaching adult education courses, guest lecturing in undergraduate or graduate courses, evaluating programs or student research, and consulting on technical, policy, and educational matters.

For further information on any of these topics, contact any faculty member or the Director of the School of Packaging. Phone numbers and other contact information has been provided in the Faculty Biographies section of this web page.

#### **Online Learning**

ONLINE MASTER OF SCIENCE DEGREE

The first university in the world to offer degrees in packaging now offers online courses! Earn your degree from Michigan State University anywhere you are. Students may complete the requirements for the non-thesis degree in as little as three years.

The Master of Science in Packaging provides a broad education in packaging with an emphasis on strengthening participants' skills in analyzing social, scientific, environmental and business problems associated with packaging. The program includes classes in advanced dynamics, permeability and shelf life, polymeric packaging materials and its application to packaging problems and recyclables. The School of Packaging at Michigan State University is recognized worldwide for producing leaders in every major packaging industry.

Applications are now being accepted for the online program. In the meantime, you can earn credits towards your degree by taking classes through [Lifelong Education](#).

Earn your degree from MSU -- anywhere! Students may complete requirements for the non-thesis degree within three years/

### **Master's Core Curriculum**

#### **PKG 805: Advanced Packaging Dynamics (3 cr)**

Shock and vibration. Distribution hazards and product fragility. Cushion performance and package design. Environment measurement and simulation. For more information, [click here](#).

#### **PKG 815: Permeability and Shelf Life (3 cr)**

Relationship between the storage life of packaged food and pharmaceutical products and the gas, moisture, and organic vapor permeability of packages in various environments.

**PKG 827 Polymeric Packaging Materials (3 cr.)** Physical and chemical properties of polymeric materials and structures used in packaging. Relationship of properties to performance. Not open to students with credit in

**PKG 828 Processing and Applications of Packaging Plastics (3 cr.)** Processing of packaging plastics: extrusion, coating, film, containers. Effects of processing variables on morphology and performance.

#### **PKG 875: Stability & Recyclability of Packaging Materials (3 cr)**

Interactions between packaging materials and environments: corrosion, degradation, stabilization and recycling. Impacts of packaging disposal.

#### **PKG 891 Special Topics: Value Relationships in Packaging (3 cr.)**

Understanding of the packaging value chain from raw material supplier through the consumer and retailer. Value and importance of packaging will be demonstrated through each sector of the value chain. Importance of top and bottom line sales and profit contributions. Organizational models and new concepts in packaging.

### **Elective Courses**

#### **PKG 888 Master's Project (2 cr.)**

Master's degree Plan B project. Completion of a project related to packaging issues.

#### **PKG 491 Special Topics: Hazardous Materials Packaging (3 cr.)**

Review of current regulations, US, international, governmental and trade associations. Using

regulations to determine protective packaging options. Laboratory testing and principles for design.

#### **Other Potential Elective Areas**

International food law  
Manufacturing operations  
CAD/CAM  
Biochemistry  
Chemical Engineering  
Statistics  
Marketing & Logistics  
Agricultural Engineering, post harvest  
Horticulture, post harvest  
Supply Chain Management  
Food Science

#### **Collateral Courses**

##### **PKG 801 Packaging Materials (4 cr.)**

Physical and chemical properties of packaging materials; design, manufacture, performance and evaluation of packages.

##### **PKG 802 Packaging Machinery, Distribution and Dynamics (4 cr.)**

Packaging machinery and line operations, statistical process control. Transportation environment. Distribution packaging design and testing.

#### **Course Availability**

<b>Class</b>	<b>Semester Offered</b>
<b>PKG 801</b>	<b>Fall</b>
<b>PKG 802</b>	<b>Spring</b>
<b>PKG 805</b>	<b>Spring</b>
<b>PKG 815</b>	<b>Spring</b>
<b>PKG 827</b>	<b>Fall</b>
<b>PKG 828</b>	<b>Spring</b>
<b>PKG 891</b>	<b>Spring</b>
<b>PKG 888</b>	<b>Any</b>
<b>PKG 491</b>	<b>Spring</b>

The time commitment for the online courses is averaging 10 - 15 hours per week. Your time commitment will vary depending on your circumstances.

You are required to have basic computer skills when taking courses online. Please see the Virtual University Orientation page at <http://vu.msu.edu/preview/ubw101/>

#### **Graduate Degree Admission Requirements**

Bachelor's degree in Packaging or related field  
3.0(B) grade point average in the last two years of the undergraduate program  
One year of college physics & chemistry, including organic chemistry  
One semester of calculus  
Three years professional work experience or satisfactory Graduate Record Exam (GRE)  
Three letters of recommendation

## **Curriculum**

### **Core**

Four 800 level PKG courses from core curriculum at MSU, (12 - 13 cr.)

### **Electives**

PKG 888 - Research Project, (2 cr.)

Five or six 400 level or higher courses in packaging or related fields, (15 - 18 cr.)

Minimum of 6 credits earned at MSU

Maximum 9 credits transferred from other universities per committee approval

**For more information on the Graduate School, please see the following**

[www.packaging.msu.edu/Graduate Studies](http://www.packaging.msu.edu/Graduate%20Studies)

[www.msu.edu/user/gradschl/](http://www.msu.edu/user/gradschl/)

### **Tuition**

\$475.00 per credit hour for students accepted into the Masters program.

\$304.00 per credit for courses taken as a Lifelong Education student, plus \$100.00 per credit Virtual University Access Fee. This rate is subject to change.

### **For more information**

Mr. Ronald A. Iwaszkiewicz

Coordinator - Distance Education Programs

School of Packaging

Michigan State University

130 Packaging Bldg.

East Lansing, MI 48824-1223

Phone: 517-432-5179

Fax: 517-353-8999

e-mail: [iwaszkie@msu.edu](mailto:iwaszkie@msu.edu)

### **Previously Offered Course Titles Have Included**

Packaging for the Food Industry

Logistical Packaging Innovation Symposium

Barcoding and Package Identification

Electronic Imaging and Graphic Design

Principles of Packaging

Selection of Flexible Packaging Materials

Current Packaging Issues in the Vehicle Industry

Design of Experiments for Packaging

Statistical Process Control and the Taguchi Method for Packaging

Package Permeability and Shelf Life Evaluation

Forensics in Packaging

Advances in Packaging for Management

Tamper-evident/Child-resistant Packaging

Midwest Pallet Conference

Industrial Packaging Basics

Hazardous Material Packaging

Current Concerns and Advances in Packaging for Food Management

Global Aspects of Packaging for the World Market

Electronic Packaging and Advanced Dynamics

Palletization-Unitization

Packaging and Material Movement

The Role of the Expert Witness in Civil Litigation Involving Packaging

Human Factors in Packaging--Regulations Affecting Consumers

Product-package Interaction and Compatibility

The Fast Track to Successful New Products

Plastics for Packaging

Packaging Design Software and Programs

Environmental Measurement--Advanced Shock and Vibration

Shock and Vibration Basics

Packaging Graphics Overview  
Principles of Packaging for Pharmaceutical Personnel  
E-commerce  
Packaging of Fresh Produce

Research & Testing Contract Research & Testing  
Consortium for Distribution Packaging  
Food & Pharmaceutical

This page outlines some of the routine tests that we perform for industry and related costs. The costs provided are a reference. Please obtain a complete quote before scheduling any tests. The faculty contacts listed can be contacted about specific tests. In addition to the routine tests described here, the school conducts specific studies that involve Testing and research to address a variety of packaging problems. Please contact the director's office at (517) 355-9580 for more information.

### **SERVICES OFFERED**

Test 1. Drop Testing  
Test 2. Compression Testing  
Test 3. Shock Testing  
Test 4. Vibration Testing (Sine and Random)  
Test 5. Cushion Testing  
Test 6. Friction Testing  
Test 7. Tensile Testing  
Test 8. Conditioning  
Test 9. Water Vapor Permeability  
Test 10. Carbon Dioxide Permeability  
Test 11. Oxygen Permeability  
Test 12. Organic Vapor Permeability  
Test 13. Closure Testing  
Test 14. Izod Impact Testing (Notched)  
Test 15. Testing of Insulated Shipping Containers  
Test 16. Pallet & Container Testing

### **Testing services and contract research are available in the following areas of package analysis and evaluation**

Distribution environment measurement and simulation.  
Dynamic Testing to predict performance.  
Shock and vibration Testing of products and packages.  
Fragility Testing.  
Testing of pallets, reusable racks, and containers.  
Oxygen, carbon dioxide and water vapor Permeability of packaging materials and packages.  
Organic vapor Permeability of packaging materials and packages.  
Package integrity.  
Mechanical property evaluation.  
Light transmission of polymeric packaging materials.  
Ultraviolet degradation of plastics.  
Product shelf life.  
Product package compatibility  
Package ergonomics.  
Thermal properties of insulating containers.  
Package or material storage under controlled temperature and humidity  
Closure Testing.  
Legibility of labeling.  
Package burst Testing.

## **RESEARCH INSTRUMENTATION**

### **Analytical**

HP 5890 gas chromatographs  
HP 5830 gas chromatograph  
Perkin Elmer Lambda 3B UV-visible spectrophotometer  
Hunter color spectrometer  
Hewlett Packard Model 5960 gas chromatograph  
Perkin Elmer Spectrum 1000 FTIR  
Brinkman Karl Fischer Titrator  
VanKel Dissolution Station  
HP 6890 Gas Chromatograph  
Omega Bench Top Data Logger  
Waters 150-C ALC/GPC  
Waters Tunable Absorbance Detector  
Mass Transfer (Migration, Permeability, Sorption)  
Cahn electrobalances (2)  
Thermatron chamber for electrobalance  
Dynatherm thermal stripper  
Dynatherm thermal desorber  
MAS 2000 organic vapor Permeability system  
Permatran W 3/31  
Aromatran IA Organic Vapor Permeability system  
Supelco Critical Fluid Extraction system  
Oxtran 100 systems  
Oxtran 200 systems  
Permatran W  
Permatran C IV  
Illinois Instrument 02 Analyzer  
ALLtech gas chromatograph

### **Electronic Nose**

Fox 3000 Electronic Nose  
Neotronics e-Nose 4000  
Human Factors  
Bridgeport Optical Comparator  
Legibility apparatus  
Vibrac automatic torque tester  
Sure Torque automatic torque tester  
Plastics Processing/Converting  
Killion cast film extrusion system  
Killion blown film extrusion system  
Carver Lab Press  
BTP Polymer Grinder  
TMI Impact System  
Hydro-trim Lab Thermoformer  
Cole-Parmer Density Gradient Apparatus  
Ray-Ran Melt Flow Indexer

### **Distribution Test Instruments**

High speed videw cameras and recorders  
Lansmont vibration system  
Test Partner data acquisition system  
Lansmont shock test system  
MTS vibration system  
MTS shock test machine systems  
Lansmont compression tester  
Lansmont pallet and compression system

Accelerometers and instrumentation  
Lansmont cushion tester  
Shock and vibration data recorders  
T.M. Electronics BT-1000 Package Burst Tester  
GA CAT Abrasion Tester  
Lansmont drop test system  
Lansmont heavy weight drop test system

### **Climate Control Chambers**

Six climate control chambers, (T,RH)  
Labconco glove box  
Q-U-V accelerated weathering tester  
Atlas ultra-violet/condensation weathering device  
Designing/Sample Making  
Artios-Kongsberg sample table and CAD software  
CNC milling machine and CAD software  
S & S corrugated sample table  
Orie Stone carton sample table  
ACME silver stitcher  
Miscellaneous  
Laboratory fume hoods  
Analytical balances  
Top loading balances  
Ovens  
Water baths  
Psychrometers and hydrometers  
Tape dispensers  
Sample cutters  
Teaching/Research  
Magna Mike thickness instrument  
Taber stiffness testers  
GR polariscope  
Sherr micro-projection system  
Beach punch tester  
Dart drop apparatus  
Perking Elmer Infrared Spectrometer  
Instron universal test system (2)  
TMI crush tester  
CSI score bend tester  
Technidyne brightmeter  
Waco seam projector  
Waco enamel rator  
Mocon Permatron W  
Mocon Permatron C  
Electronic torque testers  
TMI smoothness tester  
Nikon profile projector  
Mullen burst testers  
Inclined plane friction tester  
Micrometers  
Basis weight scale  
TMI tear testers  
Carleton test-a-pack equipment  
Sutherland ink rub testers  
Gelbo flex tester  
Olinger glue bond tester  
Porosity tester  
Packaging Machinery

Fishbein bag sewing machine  
Stone 92-G Sealer  
ELF 6-head liquid filler  
Markem inkjet printing system  
3M case sealer  
Redington cartoner  
Weldotron shrink tunnel  
Cryovac plastic sealer  
Atlas thermometer  
Heat sealers  
Microbot robot arms  
Sealed Air speedy packer system  
Bar code equipment  
Conveyers/accumulating tables  
Fowler infeed system  
Mercury packaging pouch former  
Stone skin packaging Model-99-K  
Uni-tension pallet stretch wrapper  
Fowler Products capper  
Syntron electric vibrator filler  
Decca feeder/counter  
Merrill counter/filler  
Smith vacuum packer  
Cryovac vertical, form, fill and sealer  
Dynatec dynamelt system  
Profill 1000 liquid filler  
Filmatic cap tightener

# Georgia Institute of Technology - System-on-Package (SOP) Technology

<http://www.ece.gatech.edu/research/PRC/newsletter/dec2004.htm#5>

## PRC Offers Short Course Series on System-on-Package (SOP) Technology

The Georgia Tech Packaging Research Center (PRC) offers annually a comprehensive set of short courses on System-on-Package (SOP) and next-generation microsystems packaging technologies. This year's course series consists of individual modules taught by highly respected Georgia Tech PRC faculty. The individual modules are based on the PRC's System-on-Package vision, which integrates not only digital but also analog, RF, optical and MEMS functions into one ultra-compact and low-cost mixed signal package system to serve the needs of convergent telecom, consumer and computer systems of the next decade. This year's short course series will focus on three areas:

Nano electronics packaging

Embedded component thin-film integration of RF, optical, digital and MEMS functions

Wafer-level packaging and flip-chip assembly processing

The titles and schedules of the individual modules to be offered are provided in the table below. More information about each course or instructor can be obtained from the web site:

[http://www.pe.gatech.edu/conted/servlet/edu.gatech.conted.course.ViewCourseDetails?COURSE\\_ID=493](http://www.pe.gatech.edu/conted/servlet/edu.gatech.conted.course.ViewCourseDetails?COURSE_ID=493)

Days	Course Title	Course Dates	Course Times
1/2 Day	Introduction to Nanoscale Packaging and Systems	September 26, 2005	8:00 am - 12:00 pm
1/2 Day	MEMS and NEMS Packaging	September 26, 2005	1:00 pm - 5:00 pm
Full Day	RF/Wireless Packaging: Fundamentals, Principles, and Current Challenges	September 27, 2005	8:00 am - 5:00 pm
1/2 Day	Optoelectronics Integration	September 28, 2005	8:00 am - 12:00 pm
1/2 Day	Wafer Level Packaging: Materials, Process, and Reliability	September 28, 2005	1:00 pm - 5:00 pm
Two Full Days	Low Cost Flip Chip Processing and Analysis with Hands-On Applications	September 29-30, 2005	8:00 am - 5:00 pm (both days)

# Fox Valley Technical College

## Package and Label Printing Technician

<http://www.fvtc.edu/tp2.asp?ID=Associate+Degrees&pix=025>

Package and Label Printing Technician

Program Code: 10-204-4

Associate Degree: 2 Years

Graduation Requirement: 72 Credits

### Required Program Courses

### **Career Opportunities**

The Flexographic Technical Association reports the North Central region of the United States accounts for more than one-third of all flexographic printing plants and presses. One of the largest concentrations of printers using flexography in the country is located in Wisconsin, specifically the Fox Valley area. Flexo careers are growing at an 8 percent rate annually, with personnel expansion estimated at 25 percent over the next five years. This makes flexography the fastest growing printing career, with an exceptional employment outlook.

### **Program Description**

Training for this two-year associate degree program will be provided in the state-of-the-art, nationally recognized Flexographic Training and Research Center located at FVTC. Students will be trained in all areas of the flexographic process from electronic prepress, platemaking, plate mounting and ink management to printing press operation by certified technical instructors with experience working in this field. In addition, students will be trained in team building, quality, process control and technical reporting to give them the basic skills required in the team environment which uses this advancing technology.

### **Program Outcomes**

The Package and Label Printing Technician program graduate will be able to:

Use computer technology to design and prepare artwork for flexographic printing applications.

Produce printing plates for flexographic print production.

Mount and proof printing plates for flexographic print production.

Safely and efficiently set up, run and clean wide web, narrow web and corrugated flexographic printing presses.

Demonstrate leadership and teamwork skills.

Use instruments to measure color and print consistency.

Demonstrate good interpersonal skills.

Give written and oral instructions to other team members and customers.

Work using continuous process improvement skills.

Coordinate projects using time management skills.

Troubleshoot flexographic printing problems using cause and effect skills.

Produce documentation and keep records during flexographic print production.

Produce color standards for print production.

Ensure that all established quality standards are met throughout the flexographic process.

Program Offered at This Location

Appleton—1825 N. Bluemound Drive

### **Where Employed**

Since the field of flexography is quite diversified, it covers many distinct job titles. Some of them are electronic prepress technician; wide web, narrow web or corrugated press technician; platemaking technician; estimator, job planner; mounting and proofing technician; printing ink technician; team leader; and quality assurance technician

### **Course Title**

- Customer Focus in Quality Improvement
- Process Improvement
- Packaging and Labeling, Introduction to
- Prepress, Flexographic Printing
- Flexographic Press Operations 1
- Flexographic Press Operations 2
- Color Theory
- Quality Problem Solving & Planning
- Flexographic Inks and Substrates
- SPC, Graphic Arts
- Internship, Flexographic Printing
- Project Management
- Flexographic Production Techniques

## **2004-05 FVTC Flexographic Seminars**

[REGISTER HERE: William I. Flinn Operational Certification Course PDF - William I. Flinn Operational Certification Course](#)

**International Corrugated Packaging Foundation  
Association of Independent Corrugated Converters**

**Corrugated Printing/Die Cutting Seminars  
FVTC Basic Flexography Seminars  
FTA Seminars Held at FVTC**

Achieving Consistency in Process Printing  
Narrow Web Press Operation  
Wide Web Press Operation

Short cut internet addresses for below documents, tic on the desired linet han Ctrl+

[About FVTC and Its Flexographic Facility](#)

[Meet the Package and Label Printing Business and Industry Education Team](#)

[Meet the Package and Label Printing Program Education Team](#)

[Additional Business & Industry Training/Services](#)

## Package and Label Printing Technician

Occupational Specific (37 Credits)

<b>No.</b>	<b>Course Title</b>	<b>Credits</b>
10-185-112	Customer Focus in Quality Improvement	3
10-185-113	Process Improvement	3
10-204-100	Packaging and Labeling, Introduction to	3
10-204-101*	Prepress, Flexographic Printing	4
10-204-102*	Flexographic Press Operations 1	3
10-204-103*	Flexographic Press Operations 2	3
10-204-145*	Color Theory	2
10-185-121	Quality Problem Solving & Planning	3
10-204-104*	Flexographic Inks and Substrates	2
10-204-126	SPC, Graphic Arts	2
10-204-160*	Internship, Flexographic Printing	4
10-185-118	Project Management	3
10-204-105*	Flexographic Production Techniques	2
<b>No.</b>	<b>Course Title</b>	<b>Credits</b>
10-804-106*	Introduction to College Mathematics	3
10-804-128*	Math-Technical Auto and Publishing	3
10-806-108*	Chemistry 1 - Graphic Arts	2
10-196-191	Supervision	3
10-806-163*	Physics - Graphic Arts	3
<b>No.</b>	<b>Course Title</b>	<b>Credits</b>
10-801-195*	Written Communication	3
10-801-196*	Oral/Interpersonal Communication	3
10-809-199*	Psychology of Human Relations	3
10-801-197*	Technical Reporting	3
10-809-195*	Economics	3
<b>No.</b>	<b>Course Title</b>	<b>Credits</b>
10-106-107	Keyboarding for PC Users	1
10-196-121	Safety, Principles of	2
10-204-171*	Corrugated Technologies	3
10-890-100	College Survival Skills	1
10-890-103	Employability Strategies	1

# University of Florida - Packaging Science Degree Program

## **GATER Engineering**

### **Packaging Science Degree Program**

[Packaging Science 'wraps' up a great summer!](#)

[Packaging Science Grad Student wins 25K Scholarship](#)

[Packaging World Magazine features UF PKG program](#)

[PKG student returns from "Trip to Italy Competition" Tour](#)

### **Student Resumes**

Students who are looking for an opportunity to combine science with innovation and creativity will be at home in the Packaging Science program and the job outlook is bright for graduates in this growing field.



It's more than just a question of 'paper or plastic?'. Whether it's bagged, boxed, or wrapped, virtually every modern industry relies on packaging science and technology to contain, protect, preserve or enhance the value of its goods as they hustle from factory to customer.

This bachelor's degree program through the UF College of Agricultural and Life Sciences is *one of only a handful of college programs* helping to fill the increasing demand for graduates in this field. The University of Florida's Packaging Science Program is designed to allow students to hit the ground running in this exciting, fast-paced industry that is continually seeking qualified people. Students learn to apply fundamental principles to real issues facing the packaging industry.

### ***The Packaging Science Program offers students:***

A solid foundation in the pure sciences (biology, chemistry, physics and math)

Useful tools for commerce such as accounting and economics

Flexibility through elective credits

Industry internship opportunities

### **UF PACKAGING SCIENCE PROGRAM 'WRAPS UP' GREAT SUMMER!**

The UF Packaging Science (PKG) program at the University of Florida has been 'hot' this summer! The program has generated national publicity and a number of students have garnered prestigious awards.



The program made national news in print and video this summer. Packaging World Magazine ([www.packworld.com](http://www.packworld.com)), a nationally distributed industry publication, highlighted the growth and scope of the program in the July 2004 issue, with coverage in print and on the magazine's website. Also in July, CNN visited UF to interview packaging faculty, Dr. Bruce Welt and Dr. Jean Pierre Emond, to learn about UF's state-of-the-art research in auto-identification technologies including radio

frequency identification ("RFID"), machine vision and barcode technologies.

The story was recently featured on CNN's science and technology show called Next@CNN as well as CNN Headline News. Dr. Welt stated, "People are calling from around the world as a result of this coverage on CNN."

The Summer of 2004 was also rewarding for many Packaging Science majors. An all-expense paid trip to Italy kicked off the summer for Packaging Science student Alexis Chalfant, one of the winners of an Italian Trade Commission sponsored paper competition on packaging machinery. Alexis was accompanied on the trip by Dr. Bruce Welt, Assistant Professor of Packaging Science in the UF Department of Agricultural and Biological Engineering, and two other faculty members from packaging programs at Rutgers University and Michigan State University.



"The tour of Italy was an amazing experience that allowed me to further my knowledge of packaging in a way that could never have been achieved in the classroom," said Alexis. "It was a wonderful enhancement to my education that will continue to be beneficial in the future." While in Italy, Alexis also learned that she was one of two UF students to be selected for an internship with the Pepperidge Farm Division of The Campbell's Soup Company. Alexis and packaging science classmate, Michele Wilde, will spend the Fall

semester in Connecticut working for Pepperidge Farm.

Alexis stated, "I can't believe how well they will be paying us!" Michelle Wilde added, "We're just thrilled to have this kind of real-world experience...the great paycheck won't hurt though. Dr. Welt indicated, "Packaging Science faculty are committed to helping students find such prestigious internships. In fact, we have two other students on internships that started in June and will go through the end of the year. Shelton Wright (senior, Packaging Science) is currently in Chicago with Kraft Foods and Craig Dreyer (junior, Packaging Science) is in New Smyrna Beach with GE."

The internships expose students to real-world packaging challenges and to many aspects of the packaging industry. "I have learned a great deal about how business operates at a very large company," said Shelton Wright. "I have learned that you must be an effective and efficient communicator. I'm getting a better understanding of what it's like to be a packaging engineer in the Food-Processing industry and I can see myself beginning my career in this industry." Craig Dreyer echoed his agreement, "I would highly recommend doing an internship. I have worked part time jobs for 6 years prior to this job and nothing even comes close to comparing to this internship. I feel like I now have a good indication of what the real world is like and I think if I had skipped the internship process I would have been totally overwhelmed at my first job."

A proposal to study environmental conditions in aircraft cargo compartments won a William Pelletier, UF graduate student working in Packaging Science, a \$25,000 scholarship to pursue his research and education. William was selected as the recipient of the 2004 Walter H. Johnson, Jr. Scholarship award, presented by The International Air Cargo Association. Pelletier's thesis proposal was selected from among graduate student submissions from the United States, Canada and Europe.

"This project would help improve the safety of passengers and crewmembers during flights, and from an economic point of view, the industry will save significant amounts of money by decreasing the number of false fire alarms, which cost approximately \$1 million per event," said Pelletier.



Two Packaging students were each awarded \$2,400 scholarships by the College of Agricultural & Life Sciences to pursue undergraduate research in Packaging Science. Anthony Shun (Senior, Packaging Science) and Eric Fisher (Junior, Packaging Science) worked as team leaders along with packaging faculty and staff to design and fabricate a prototype filling machine for a South Florida flower distributor.

Their prototype was successfully placed into service in July. Andrew Hamer, President of St. Rose-Miami and former gator swimmer, indicated his delight in the result, "Our guys used to fill each vase individually with a garden hose. Filling a case of 48 [vases] used to take about seven minutes. With this prototype filler, we are down to about 30 seconds per case. Clearly, we're thrilled...this thing is fantastic...It will have a real impact on our operations, particularly during our busy holidays."

The steady growth of the program, which was established in 2001, resulted in the addition of a much-needed faculty member this summer. Dr. Jean-Pierre Emond was recently appointed as an Associate Professor of Packaging Science for UF. He had been working with the program this past year as a Visiting Professor from Laval University in Canada. He is also the Co-Director for the newly established UF Research Center for Food Distribution and Retailing.

The eventful summer was a great wrap up to a year that brought other good news to the Packaging Science program. During the 2003-2004 semester Dr. Bruce Welt, Assistant Professor of Packaging Science, was recognized as an *Undergraduate Teacher of the Year* by College of Agricultural and Life Sciences. In addition, the program will continue to grow and flourish thanks to a \$100,000 endowment from the Packaging Education Forum. Annual proceeds from the endowment will be used to provide general support for the Packaging Science program including support for the Packaging Science laboratory and student scholarships.

### **UF PACKAGING SCIENCE GRAD STUDENT WINS \$25,000 SCHOLARSHIP**



(Gainesville, FL) A proposal to study environmental conditions in aircraft cargo compartments won a graduate student in Packaging Science a \$25,000 scholarship to pursue his research and education. William Pelletier was selected as the recipient of the 2004 Walter H. Johnson, Jr. Scholarship award, presented by The International Air Cargo Association (TIACA).

The award was presented to Pelletier by George F. Johnson, Treasurer for TIACA.

Pelletier was nominated by Dr. Jean-Pierre Emond, an associate professor of Packaging Science in the Department of Agricultural and Biological Engineering, within the Institute of Food and Agricultural Sciences at the University of Florida. Pelletier's winning research project focuses on analyzing variations of temperature, relative humidity and pressure inside aircraft cargo holds in order to develop more effective packaging technologies. Results of the study could also result in improving the reliability of aircraft smoke detection systems by reducing the number of false fire alarms triggered by various conditions, such as high humidity, found in aircraft cargo holds.

"This project would help improve the safety of passengers and crewmembers during flights, and from an economic point of view the industry will save significant amounts of money by decreasing the number of false fire alarms, which cost approximately \$1

million per event,” said Pelletier. “Also, the environmental conditions data will help businesses by providing more accurate information about which conditions a customer should prepare a product for, consequently lowering the number of claims due to detrimental in-flight conditions.”

Dr. Emond, who is also co-director of the Center for Food Distribution and Retailing (TIACA affiliate member) said: “Mr. Pelletier has been providing outstanding information to the air cargo industry. Aircraft manufacturers have already developed aircraft which is safer and more friendly to temperature sensitive products based on his contribution. Dr. Emond added “ The TIACA Scholarship program has been the only quality funding available for the last few years for graduate students who want to pursue research in the air cargo field. We are very thankful to TIACA for understanding the value of student contributions”.

Pelletier’s thesis proposal was selected from among graduate student submissions from the United States, Canada and Europe. The student receiving the award is expected to complete the Ph.D. requirements of the TIACA Affiliate university making the nomination. The thesis or dissertation must focus on air commerce. The award is to be used for research and other expenses related to the completion of the proposed topic.

Another graduate student working with Dr. Emond in the UF Packaging Science laboratory this summer, Emilie Laurin, was the recipient of the 2003 scholarship. Emilie is a student at Laval University in Quebec, Canada. Laurin’s research project focuses on the air transportation of fresh produce.

Information on the Walter H. Johnson Jr. Scholarship Award can be found on the TIACA website at [www.tiaca.org](http://www.tiaca.org). Students interested in the UF Packaging Science Program can find information at [www.pkg.ufl.edu](http://www.pkg.ufl.edu).

### **Packaging Science Undergraduate Course Index**

<b>Course</b>	<b>Title</b>	<b>Credit</b>
<u>PKG 2001</u>	Principles of Packaging	3
PKG 3006	Packaging Materials	3
<u>PKG 3009C</u>	Consumer Products Packaging	3
PKG 3010	Packaging, Society & Environment	3
<u>PKG 3103</u>	Food Packaging	3
<u>PKG 4007C</u>	Computer Tools for Packaging	3
<u>PKG 4008</u>	Distribution and Transport Packaging	3
<u>PKG 4011</u>	Packaging Production and Processing	3
<u>PKG 4204C</u>	Package Decoration	3
PKG 4252C	Analytical Methods in Packaging	3
PKG 4905	Senior Design in Packaging	2
PKG 4941	Work Experience in Packaging	Varies

## Minor in Packaging Science



The Packaging Science program also offers undergraduate students the opportunity to obtain a minor in Packaging Science through the Department of Agricultural and Biological Engineering. The minor is designed to compliment studies to help prepare the student for a career in or closely associated to Packaging. To obtain a minor the student must successfully complete a total of 15 credit hours from a list of preselected courses that provide a concentrated focus on Packaging related knowledge, technology and skills

The minor program is open to all students and provides a background for careers in packaging science. The minor consists of a minimum of 15 semester credits with a grade of “C” or better. A minimum of nine semester credits must be completed at UF. Students pursuing this minor must complete three PKG courses of three or more credits toward the 15 credit minimum requirement. No courses may be taken as S-U credit. Students applying for the minor must obtain written approval from their academic advisor and the undergraduate coordinator in PKG at least two semesters prior to graduation.

### Requirements

Course	Course Number	Credit	Total Required
<b>1. Principles of Packaging</b>	PKG 2001	3	<b>3</b>
<b>2. Select One of the following:</b>			<b>3</b>
Computer Aided Graphics & Design	EML 3023	3	
Analytical Methods in Packaging	PKG 4252C	3	
Computer Tools for Packaging	PKG 4007C	3	
<b>3. Business course (select one):</b>			<b>3 (4)</b>
Intro to Financial Accounting	ACG 2021C	3	
Principles of Management	MAN 3025	4	
<b>4. Packaging courses (select two):</b>		3	<b>6</b>
Package Decoration	PKG 4204C	3	
Food Packaging	PKG 3103	3	
Consumer Products Packaging	PKG 3009	3	
Packaging Production & Processing	PKG 4011	3	
Distribution & Transport Packaging	PKG 4008	3	
Packaging Materials	PKG 3006	3	
	<b>Total Hours</b>		<b>15 (16)</b>

Course	Course Number	Credit	Total Required
<b>1. Principles of Packaging</b>	PKG 2001	3	<b>3</b>
<b>2. Select One of the following:</b>			<b>3</b>
Computer Aided Graphics & Design	EML 3023	3	
Analytical Methods in Packaging	PKG 4252C	3	
Computer Tools for Packaging	PKG 4007C	3	
<b>3. Business course (select one):</b>			<b>3 (4)</b>
)Intro to Financial Accounting	ACG 2021C	3	
Principles of Management	MAN 3025	4	
<b>4. Packaging courses (select two):</b>		3	<b>6</b>
Package Decoration	PKG 4204C	3	
Food Packaging	PKG 3103	3	
Consumer Products Packaging	PKG 3009	3	
Packaging Production & Processing	PKG 4011	3	
Distribution & Transport Packaging	PKG 4008	3	
Packaging Materials	PKG 3006	3	
	<b>Total Hours</b>		<b>15 (16)</b>

### Careers in Packaging Science

#### Demand for graduates EXCEEDS Supply!

Career opportunities abound! Packaging is the nation's third largest industry and in North America alone corporations spend \$50-\$100 billion a year on packaging. The Packaging Industry needs graduates with expertise in graphic design, printing and marketing, warehousing and distribution, raw material production and distribution, conversion of raw materials into usable forms, and post-use recycling, reuse, conversion to energy and/or disposal. Modern packaging professionals are continually pushing the envelope to improve the lives of people, efficiency of industry and the relationship with our environment. Most starting salaries in this industry are over \$40,000.

#### What do Packaging Engineers Do?

Since virtually every product needs packaging, engineers must design and develop packages and packaging materials that will protect a variety of products during transportation, handling, storage, and use. Packages must be able to withstand vibration, temperature, impact, humidity, and other external forces. Packaging Science Engineers help to insure that products stay safe from contaminants, arrive on store shelves in one piece, and are tamper and theft resistant.



## Technische Fachhochschule Berlin - Packaging Technology

<http://www.tfh-berlin.de/packaging/>

### **Post- und Besucheranschrift:**

Technische Fachhochschule Berlin  
Fachbereich V  
Studiengänge Packaging Technology  
Raum 803/Haus Grashof  
Luxemburger Str. 10  
13353 Berlin  
Tel.: +49-30-4504-4128  
Tel.: +49-30-4504-2052 oder -2079  
Fax: +49-30-4504-4148

### **Packaging Technology**

#### **Achtung:**

Ab dem Wintersemester 2004/2005 werden keine Studierenden mehr in das erste Studienplansemester des auslaufenden Diplom-Studienganges "Verpackungstechnik" aufgenommen. Im Zuge der Neustrukturierung der Bildungssysteme in Europa sind zum gleichen Zeitpunkt in der Nachfolge die konsekutiven Studiengänge "Bachelor of Engineering" und "Master of Engineering" in Packaging Technology zur Fortsetzung der erfolgreichen Hochschulausbildung auf dem Gebiet des Verpackungswesens an der TFH Berlin eingerichtet worden. Für die sich im Diplom-Studiengang befindlichen Studierenden wird die Ausbildung entsprechend dem bisherigen Regelstudienplan und einer ergänzenden Nachzüglerregelung zu Ende geführt.

#### I Termine und Stundenpläne

#### I Modulpläne und Modulbeschreibungen

I Zum Diplom-Studiengang Verpackungstechnik (VT)  
(auslaufend)

#### **Studiengänge**

**Bachelor + Master of Engineering in Packaging Technology**

I Bedeutung der Verpackungstechnik

I Studienziele und Studieninhalte

I Berufsbild und Berufsaussichten

I Studienstruktur und Rechtsvorschriften

I Infos für Studienbewerber/innen

I Studentenschaft

I Lehrkräfte und Mitarbeiter/innen

I Laboratorien, Forschung und Projekte

I Aktuelles

Diese Startseite für die Studiengänge Packaging Technology ist bei Bedarf direkt aufrufbar unter:

V = Vorlesung

P = Pflichtfach

LV = Lehrveranstaltung

AW = Allgemeinwissenschaftliches  
Ergänzungsfach

Ü = Übung

WP = Wahlpflichtfach

SWS = Semesterwochenstunde

Grundstudium Verpackungstechnik									
Nr.	Studienfach	Abkürzung	LV-Art		SWS				
					1.	2.	3.		
01	Mathematik I, II, III	M I, II, III	V	P	4	4	2		
02	Physik I, II	P I, II	V	P	4	4			
03	Anorganische und organische Chemie I, II	C I, II	V	P	4	2			
04	Chemie der Lebensmittel und der Packstoffe	CLP	V Ü	P P				4 2*)	
05	Grundlagen der Ökologie	GÖ	V	P				2	
06	Grundlagen der Mikrobiologie	GM	V	P				2	
07	Maschinen- und Elektrotechnik I, II, III	ME I, II, III	V Ü	P P	2 2	4		4 2*)	
08	Qualitätsmanagement I, II	QM I, II	V	P		4		2	
09	Grundlagen der Verfahrenstechnik I, II	GVT I, II	V	P		4		4	
10	Grundlagen der Verpackungstechnik I, II	GVP I, II	V Ü	P P	2	2		2 2*)	
11	Grundlagen der Betriebswirtschaftslehre	GBW	V	P				4	
12	Grundlagen des Lebensmittel- und Verpackungsrechts	GR	V	P	2				
13	Frei wählbar **)	AW	V/Ü	WP	4				
14	Frei wählbar	AW	V/Ü	WP	4				
Summe der zu belegenden Semesterwochenstunden (SWS):					28	26	28		

### Hauptstudium Verpackungstechnik/ Main Courses

Nr.	Studienfach	Abkürzung	LV-Art		SWS**)			
					4.	5.	6.	7.
15	Auswertung von Erfahrungen am Arbeitsplatz	AEP	Ü	P		2		
16	Arbeitsrecht und Arbeitsschutz	ARS	V	P		2		
17	Personalmanagement	PUG	Ü	P		2		

	und Gesprächsführung							
18	Packstoffe und Packmittel I, II	PSM I, II	V Ü	P P	4 4*)		2 2*)	
19	Verpackungsrecht	VPR	V Ü	P P	2 2*)			
20	Verpackungs- und Packungsprüfung	VPP	Ü	P				4
21	Verpackungsgestaltung I, II	GES I, II	V Ü	P P	4		4	
22	Transport- und Lagerwesen	TUL	V	P				4
23	Verpackungsprozesse und -maschinen I, II	PRO I, II	V Ü	P P	2		4 2*)	
24	Verpackungs- und Packungsoptimierung I, II	OPT I, II	V	P	2		2	
25	Verpackung, Umwelt, Bionik	VUB	V Ü	P P	2 2*)			
26	Betriebswirtschaftslehre	BWL	V	P	4			
27	Packgut und Verpackung I, II, III	PUV	V	P P	2		2 4*)	2 4*)
28	Fachenglisch I, II	FEN I, II	V	P			4	4
29	Ausgewählte Kapitel nach entsprechendem Katalog		V/Ü	WP			4	8
30	Diplomandenseminar	DIS	S	P				2
Summe der Pflichtfächer in Semesterwochenstunden (SWS):					30	6	26	20
Summe der zu belegenden Semesterwochenstunden (SWS):					30	6	30	28
Nr.	Ausgewählte Kapitel zu:				Abkürzung	LV- Art	SWS	
29a	Packstoffe und Packmittel				APSM	V + Ü	2 + 2*)	
29b	Verpackungsgestaltung				AGES	Ü	4	
29c	Verpackungsprozesse und -maschinen				APRO	V	4	
29d	Verpackungs- und Packungsoptimierung				AOPT	Ü	4	
29e	Verpackung, Umwelt, Bionik				AVUB	V + Ü	2 + 2*)	
29f	Betriebswirtschaft				ABWL	V	4	

# Cape Technikon - Packaging and Printing Technology

<http://www.ctech.ac.za/crses/package.html>

South Africa

Packaging and Printing Technology

## **Career information**

The need for skilled technologists in the packaging and printing industries is increasing as this sector develops in size and technical expertise. Technologists in the packaging and printing fields are involved in aspects of the production processes, whether it is raw materials manufacture such as inks, glass and paper, or a materials conversion process such as carton manufacture and print, or as a user of packaging like a manufacturer of foods and pharmaceuticals.

In many instances, package manufacture and printing are integrated and the technologist may be involved in facets of materials selection like inks, varnish and package material, and process selection or optimization, for example, the print method for a carton. Graduates could be employed as production supervisors, quality control technicians and packaging or printing technologists. Other employment opportunities may include technical sales or marketing, package or print development or starting and managing your own business.

In keeping with the broad nature of the packaging and printing industry the essential elements of both packaging and printing have been combined in one diploma, which contains a large number of subjects included as options to permit specialisation in a variety of technical and business areas.

## **Admission requirements**

A Senior Certificate with five subjects or equivalent qualification. (See the Technikon's [minimum admission requirements](#).)

This course is available on a part-time basis only for employees in the printing or packaging industries.

Applicants who do not have a Senior Certificate, but who are older than 23 years and have at least three years appropriate industrial experience, will be allowed to join the course provisionally, after having passed a test in communication or language proficiency.

## **Duration of course**

At least three to four years of part-time study for the 13 subjects. Most subjects are offered after hours and are of either 6 or 12 months duration.

## **Curriculum**

### *Compulsory subjects*

Packaging I, II and III

Printing Processes I, II and III

Estimating for Printers I

Computer Skills I

Communication Skills I

Production Management I, II

Packaging and Printing Project

### *Optional subjects*

Two subjects from the following technical or management subjects (technical subjects have a six month duration, and are offered as evening classes, unless otherwise indicated):

### **TECHNICAL SUBJECTS**

Estimating I  
Estimating II  
Quality Assurance II  
Materials Science II (day)  
Plastics Technology I (day)  
Plastics Technology I: Practical (day)  
Physics and Chemistry I (day)  
Calculations and Statistics I (day)

### **MANAGEMENT SUBJECTS**

Most of these subjects are offered through the School of Management and are of one year duration unless indicated otherwise. All are available as evening classes, and some as day classes as well.

Cost and Management Accounting I  
Financial Accounting I  
Industrial Relations I  
Mercantile Law I (or Business Law I)  
Management II (6 months)  
Management III (6 months)  
Marketing I  
Production Management Techniques II (6 months)

The Personnel Function \*

\* not available at the Cape Technikon

### **Credits**

Holders of the IPSA Diploma in Packaging Technology qualify for exemption from Packaging I and II and Packaging and Printing Project.

Holders of the Certificate in Estimating qualify for exemption from Estimating for Printers (Estimating I).

Holders of the Certificate in Production Planning and Estimation qualify for exemption from Estimating III.

# **Indian Institute of Packaging**

<http://www.iip-in.com/training.htm>

## EDUCATION

- CERTIFICATE PROGRAMME IN PACKAGING
- POST GRADUATE. (P.G.) 2 YEARS DIPLOMA IN PACKAGING
- 18 MONTHS' DISTANCE EDUCATION PROGRAMME IN PACKAGING TECHNOLOGY
- INTENSIVE TRAINING COURSE ON PACKAGING (ITC)

To meet the growing demands from industrial units in both the organised and unorganised sectors for qualified technical manpower, the Institute introduced the [2 year programme](#) leading to a [post graduate diploma](#) in packaging, in 1985. The course is designed to equip candidates with all the facets of packaging activity. The Distance Education Programme, Correspondence Course since 1996, recognised by the World Packaging Organisation and accredited by the Asian Packaging Federation. The 18-month course designed primarily for working professionals, is open to industry personnel and to students in India, the Asia-Pacific region and other countries.

## **Two Years Post Graduate Program**

### **About the Institute**

The Indian institute of packaging (IIP), an autonomous body, is a national institute set up under the Ministry of Commerce & Industry, Govt.' of India, with the active support of Indian industries. Its headquarters and principle laboratories are located on a sprawling campus at Mumbai and its other centers are located at Chennai, Delhi, Kolkata and Hyderabad. Activities of IIP today are in line with those of premier packaging institute the world over. These are Training & Education, Consultancy & projects, R&D, Package testing & quality evaluation and others. IIP has close rapport with counterpart international organizations. IIP is a founder member of Asian packaging federation (APF) and world packaging organization (WPO).

### **Course Objective**

In recent times, with the globalisation of markets and trade, the role of packaging has assumed greater importance in marketing and distribution of agriculture produce, value added products, industrial products and mass produced consumer goods. As a result, there is now a demand for a technically qualified cadre of people who can undertake design, development, production, and quality control and make effective use of modern packaging technology. There are over 7,000 organised industrial units and nearly 4,50,000 small industries in India who use or produce packaging materials and who do not have at their disposal, qualified technical persons. The Indian Institute of packaging has therefore, to bridge the gap, developed a post graduate Programme of two year duration, which has become popular in industries since 1985.

### **Curriculum**

The curriculum is so designed that the successful candidates would be well-equipped in all the facets of packaging activities and will be easily employable in a package manufacturing, packaging machinery manufacturing or user industries like food, pharma, cosmetic, and others. With experience they can also aspire to be self-employed professionals/entrepreneurs in the field. In order to provide sound technical knowledge and at the same time, acquaint them with industrial practices, the theory sessions have been kept at 60 percent of curriculum and the Balance 40

reference work. The practicals include laboratory exercise, industrial visits, project work and industrial training.

### Title

The two-year programme leads to a Post Graduate Diploma in Packaging.

### Minimum Qualification

A candidate seeking admission for the Post Graduate Programme should have passed the Graduate examination in Science/(12+3 years degree) with Physics/Chemistry/Mathematics or Microbiology as the main subject or Agriculture/Food Science or Engineering/Technology degree of a recognised University with minimum second class marks. Those with equivalent overseas qualification would also be eligible for admission. Candidates appearing in final year of the qualifying examinations can also apply provisionally, but they must submit their results before commencement of the course.

### Duration

The course of study for the Post Graduate Programme consist of four semesters. Each semester will be of five-month duration. There will be one month vacation after each semester.

### Examination

A candidate for the Post Graduate Diploma Programme will be required to pass three semester examinations and successfully complete the last semester devoted to industrial training and project work. For eligibility of the Diploma, a candidate must obtain at least 40 percent marks in each paper and practical and in addition he/she must obtain at least 50 percent of the total number of marks assigned to the whole examination in the aggregate.

### Scholarship

A few candidates would be given scholarships on merit and merit-cum-need basis. The award of scholarships would be decided, based on the results of each semester examination, and good conduct.

### Admission

A candidate for the Post Graduate Programme would be selected on the basis of performance in the entrance examination comprising a written test and interview. The written test will be in Physics, Chemistry, Mathematics and Engineering. The candidate is allowed to choose any questions provided the number of question does not exceed a fixed limit. The test will be conducted at Mumbai, Kolkata, Delhi, and Chennai. Application shall be made in the prescribed form accompanied by attested copies of mark sheets and other credentials. The form can be obtained from middle of April on sending a demand draft of Rs. 500/- drawn in favour of "Indian Institute of Packaging". **Filled in application form to be sent to IIP Mumbai office only.**

[Click here to download the form.](#) Application forms downloaded from website is to be submitted to IIP, Mumbai along with the Demand Draft of Rs.500/- in favour of "Indian Institute of Packaging" and payable only at Mumbai.

### Seats

The seats for every academic year are as follows

Mumbai .... 40

Delhi .... 40

## Facilities

**Equipment :** The institute has well-equipped laboratories, with over Rs. 5 crores worth of equipments.



**Library :** The institute has a well-equipped library with over 7,500 books, in addition to reference books, journals, standards etc.



**Hostel :** The programme is non-residential. However, hostel accommodation for boys and girls (with mess facility) is available at Mumbai and is provided on first-come-first-served basis.



## Syllabus and Scheme of examinations

Details of the Syllabus and the Scheme of examination are given in a separate booklet at the Institute.

### Important Dates

Last date for submitting filled applications. . . . . 3rd June 2005  
Entrance Examination (Written) . . . . . 24th June 2005  
Personal Interview (at Mumbai only) . . . . . 20th July 2005  
Commencement of the Course . . . . . 5th August 2005

Candidates will be required to appear for the Entrance Examination and Personal Interview at their own cost.

## Dissertation / Library Reference Work

The student is expected to submit a typed report at the end of each semester as dissertation on

Institute.

### Industrial Visit

Number of Industrial visits are organised for the students during each Semester with a view to expose them to actual industrial processes and give an opportunity to acquire practical experience on packaging and non-packaging subjects.

### Additional Topics

To improve skill of the students new topics and additional lectures would be introduced.

### Practical Examination

The methodology of practical examinations will be detailed by the faculty. Normally, students will be required to plan work, perform experiments, report results and give interpretation of the same.

### Industrial Training and Project Work

In the 4th Semester candidates are assigned to industries for 5 months. Each candidate will be required to submit a typed report (2 copies) as "Project work" giving methodology, findings etc. in detail as a part of industrial training.

Performance during industrial exposure provided in industrial unit will be evaluated, based on the report to be submitted by each candidate and necessary assessment/certificate as may be obtained by the Institute from the concerned unit. 300 marks each are assigned for industrial training and project work.

The marks will be based on regularity in attendance, conduct and progress as reported by the industrial supervisor, quality of report and viva voce examination, besides behaviour etc.

### Faculty

Faculty is drawn from renowned educational institutions in Mumbai & Delhi besides packaging professionals from industry. Packaging subjects are taught by qualified faculty of the institute and from industries.

In-house faculty:

#### **Prof. A.A. Joshi**

Post Graduate in Science, Post Graduate in Management studies, Advanced course in Packaging from Michigan states university, USA, M.Inst. Pkg (U.K) . Prof Joshi is on the panel of experts of International Trade Centre, Geneva, who provide assistance to many countries for export packaging. He is also on the Editorial board of Filling & Packaging Business magazine published from UK. Prof. Joshi was instrumental in introducing Bar coding Technology in the country.

Prof.Joshi, has over 34 years of work experience, including 6 years in a Multinational pharmaceutical company. He has been connected with the packaging activities of the IIP for the last 28 years.

He is the visiting faculty to many institutions & has written many articles in leading national dailies and magazines.

At present he is the Head of Training & Education Division of the Institute.

#### **Prof P.L. Nagarsekar**

Mechanical Engineer, He has studied Industrial Engineering at Post graduate level. He has done advance studies in Packaging at Michigan State University, USA, PIRA-UK and at Institutions in Germany. He has worked on projects for ITC-Geneva, CFTC-UK, World Bank etc.

He has conducted a study at Cairo, Egypt, on packaging Industry

He is engaged in consultancy & market survey activities of the Institute since last 29 years.

He has written many articles and at present he is Head of Consultancy & Projects Division.

**Prof N.C. Saha**

Post Graduate in Food Technology, Advance studies in Packaging at Michigan State University, USA and other institutions in India and abroad. Mr. Saha has been involved in many packaging development projects. He is presently heading the Laboratory division of IIP, Mumbai

**Mrs. M.C. Dordi**

Post graduate in science

Mrs Dordi has done advance studies in Packaging under UNDP Fellowship of EMPA, Switzerland, TNO-CIVO, Netherlands. PIRA UK for Packaging of IQF shrimps at Denmark, Sweden and Norway.

With 30 years of experience in IIP in laboratory division, Mrs. Dordi is professor in Consultancy and Projects.

**Mrs. Sucheta. B**

M.Sc (Nuclear Chemistry) Mrs. Sucheta has done advance studies in packaging with UNDP Fellowship at Institute of Packaging Warsaw Poland & International Trade Centre Geneva, Switzerland. She is with IIP since 23 years and at present she is Assistant Director in T & E Division.

**Mr. M. Chakraborty**

Post Graduate Diploma in Packaging. Mr. Chakraborty Asst. Director, is involved in Packaging Testing & Evaluation and other activities of Delhi Centre.

**Mrs. Manjiri Chakraborty**

Post Graduate Diploma in Packaging, Mrs. Chakraborty Asst. Director is involved in Package Testing & Evaluation and other activities of Delhi Centre.

**Mr. B. Singh**

B.Sc, M.Sc Tech (Plastic Processing Technology).

Experience in Chemical Industry

At present Assistant Director, T & E division

**Mr. P.S. Gutlikar**

Asst. Director is involved in Packaging Testing & Evaluation activities.

**Visiting Faculty: From Prominent educational institution like IIT, SBM Polytechnic, D J Sanghvi college of Engg. and also other technical and management institutions besides eminent personalities from industries and consultants connected with international bodies.**

Prof. E. Narayanan

Dr. A. Ramanathan

Dr. Ghosh A.

Prof. V.R. Aletkar

Prof. A. D Maydeo

Prof. B.A Chidre

Prof. K.K. Tiwari

Mr. M.R. Anaokar

Mr. J.R. Jadhav

Mr. U.D. Laad

Mr. A.B. Apte

Dr. Anup Kumar Ghosh

Prof. N.M Deo  
Prof. A.S. Joglekar  
Prof. P.M Bhole  
Prof. Anjali Joshi

Dr. Sanjay Roy Chowdhary  
Mr. Shanthi Karan  
Dr. V.K. Wadhwa  
Mr. Praveen Sharma  
Mr. Anil Sethi  
Mr. R.S. Kapoor  
Mr. Shailesh Kumar

## Placement

### List of Some of the Companies Who Recruit From IIP Campus

1. Ajanta Pharma Pvt. Ltd
2. Cipla Ltd
3. Colgate - Pamolive (India)Ltd
4. Cadila Pharmaceuticals Ltd
5. Cadbury Indian Ltd
6. Dabur India Ltd
7. Dr. Reddy's Laboratories Ltd
8. Daman Foils Pvt. Ltd
9. Elete India Transport Packaging Co. Pvt. Ltd
10. Glaxo Smith Kline Ltd
11. Guinness UDV India Ltd
12. Gulf Oil India Ltd
13. Himalaya Drugs Company
14. Hindustan Lever Ltd
15. Hindustan Petroleum Corporation Ltd
16. I.T.C Ltd
17. I.T.C Ltd (BPL)
18. IPCL
19. ITW Signode India Ltd
20. L & T
21. Marico Ltd
22. Manjushree Extrusions Ltd
23. Parksons Packaging Ltd
24. Pidilite Industries Ltd
25. Packaging India Pvt. Ltd
26. P & G Ltd
27. Paharput Industries Ltd
28. Paper Products Ltd
29. Perfetti India Ltd
30. Positive Packaging Industries
31. P.G. Foils Ltd
32. Pearl Polymers Ltd
33. Ranbaxy Laboratories Ltd
34. Supreme Industries Ltd
35. Sweet Industries
36. Saptagiree Packaging
37. The Paper Products Ltd
38. The Tinplate Co of India Ltd
39. United Phosphorus Ltd
40. Unichem Laboratories Ltd
41. Vardhaman Plastichem Pvt. Ltd

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3 months Certificate Course(ITC)

Programme Objectives of 3 Months Intensive Training Course

In the past few years, while the production technology and management have witnessed a remarkable growth in India, the same cannot be said to be true of Packaging. Changes in the technology of transportation and distribution system, market expansion, environmental considerations and more discerning attitude of consumer demand the packaging standards to be radically improved. It is with this in view that the present programme is designed to give insight into the sophisticated field of packaging. This certificate programme demands full time attention and is for a period of three months.

### Who Can Participate?

Graduates in science or Technology or Graduates in Economics / Commerce / Mathematics / Diploma holders from Polytechnics / person with working experience packaging / Purchase / Design / Marketing / Production / Research Department of an Industrial Undertaking would be preferred. The qualification is relaxable in exceptional cases.

### Syllabus

The course comprises over 120 - lecture session on various aspects of packaging to be dealt by experts from respective fields. Besides theoretical exposure, practical demonstrations on of testing and evaluation of packaging together with discussions on case studies have been included in the programme. Visits to various industrial establishments and production centers which provide an opportunity to the participants to get familiarised with the methods of manufacture and the choice of packaging materials and packages, are an essential feature of this programme. Special visits to Ports, Handling & Transportation Centers, etc. have also been planned.

### Fees

Non - Members	Rs.15,000/- per participant
I.I.P.- Members	Rs.14,000/- per participant
Patron - Members	Rs.13,000/- per participant

The fee takes care of tuition, cost of essential course materials and expenditure towards transportation for industrial visits. It does not cover lodging, boarding, and food cost.

### Application Forms

A set of the Prospectus and Syllabus along with the prescribed application form can be had from the Institute after paying a sum of Rs.100/- in cash or by demand draft in favour of Indian Institute of Packaging, payable at Mumbai.

### Registration

Duly filled in application form, together with attested copies of Degree and Work Experience certificate if any and remittance of fees by Demand Draft / Cash should be forwarded to the Institute at the earliest to reserve the seat.

If Application form is downloaded from the net, than kindly send Rs.100 extra along with the fee towards the cost of application form.

### Admissions

Admissions will be on the basis of first - come - first - served, subject to eligibility and availability of seats.

### Venue

The venue for this programme will be the Institute's premises in [Mumbai, Delhi, Chennai and Kolkata](#).

### Timings

The programme will normally be held between 10.00 a.m. and 5.00 p.m., from Monday through Friday. Occasionally Saturdays may also be used, if necessary.

### Duration

The programme is of about 3 month's duration as indicated in the **Course Commencement** Table below.

#### Course Commencement

Hyderabad	1st August 2005 - 1st December 2005
Chennai	14th October 2005 - 13th January 2006
Delhi	9th September 2005 - 30th November 2005
Kolkata	1st September - 30th November 2005
Mumbai	1st September - 30th November 2005

### Performance Evaluation

Evaluation is through quiz, written tests, dissertation, literature survey and seminar presentation. In addition, there will be a group project.

Minimum qualifying marks required in all the written tests, and viva-voce are 40 per cent in the individual subject and 50 per cent on the aggregate.

### Certificate

A Certificate of attendance will be issued to all the participants whose attendance is regular. All candidates passing the examination will be awarded Certificates.

### Overseas Participants

Fee:US\$ 800

The fee covers, application form cost, course fee and hostel accommodation in the students hostel (separate for boys and girls).

Fee does not include food and incidental expenses which are expected to be US\$ 400-500 for the entire course duration.

Special A/C guest rooms are also available at additional cost with prior intimation.

Registration of overseas participant: By sending nomination on letterhead of the organisation giving details of the person, his background, qualification etc. alongwith demand draft for US\$ 800 in favor of Indian Institute of Packaging payable at Mumbai at the following Address.

#### INDIAN INSTITUTE OF PACKAGING

E-2, MIDC AREA, ANDHERI (EAST)  
MUMBAI - 400 093.

TEL.NOS.: 2821 9803/6751/9469

FAX NO.: 91-22-2837 5302

E-MAIL: [rneiip@iip-in.com](mailto:rneiip@iip-in.com)

E-MAIL: [iip@bom4.vsnl.net.in](mailto:iip@bom4.vsnl.net.in)

## Accommodation

Limited hostel accommodation separate for boys and girls on twin sharing will be available for participants on prior intimation & subject to availability.

Note:-Hostel facilities are available in Mumbai Campus only.



IIP Hostel at Mumbai Campus

## IIP Regional Centers

### Kolkata

Block C.P. Sector-V  
Salt Lake  
Bidhan Nagar  
Kolkata – 700 091  
Tel.: 2367 0763/2367 6016  
Fax: 033-2367 9561  
E-Mail: [iipcal@cal.vsnl.net.in](mailto:iipcal@cal.vsnl.net.in)

### Chennai

Plot 169, Indl. Estate,  
Perungudi,  
Chennai- 600 096  
Tel: 044- 2496 1560  
Fax: 044- 2496 1077  
E-Mail: [iipche@giasmdo1.vsnl.net.in](mailto:iipche@giasmdo1.vsnl.net.in)

### New Delhi

Plot 21, Functional Ind. Est.  
Patparganj, Opp. Patparganj Bus Depot,  
Delhi- 110 092  
Tel: 011- 2216 6703  
Fax: 011 - 2216 9612  
E-Mail: [iipdelhi@nde.vsnl.net.in](mailto:iipdelhi@nde.vsnl.net.in)

### Hyderabad

Lux - 3, Industrial Centre  
Sanath Nagar  
Hyderabad - 500 018.  
Tel.: 2381 4321  
E-mail: [karnaips@yahoo.co.in](mailto:karnaips@yahoo.co.in)

## Other Facilities

### Laboratories

Our laboratories at the Head Office and the Regional Centers extend testing facilities to industry for domestic distribution and for exports as per national and international standards like the Bureau of Indian Standards (BIS), International Standard Organization (ISO), British Standards (BS), American Society for Testing Materials (ASTM), and others. The IIP also issues UN certification of export packages for hazardous goods and equipment calibration standardization certificates.



## Information and Library

Packaging India the official journal of the Institute, Published six times a year, is an invaluable source of information for the packaging industry. It is mailed free of cost to members of the Institute, Packaging and related institutions all over the world. Individual subscriptions are available on request. Monographs and textbooks, seminar papers and reference books are published periodically. The Institutes publications are available at the head office and the Regional Centers.

IIP has one of the best reference libraries in the world, with 6500 books, 53 international periodicals, besides a large number of reports, national and international standards. Database on products and materials and reprographic facilities are also available. Library facilities are extended to members of the Institute, its students and faculty.



## Exhibition and Design

INDIAPACK, the annual national exhibition organized at various cities around the country, offers the packaging industry an opportunity to display developments in the machinery and materials sector.

The Institute takes on active part in international packaging exhibitions and organizes industry participation in them. The permanent exhibition centers in Mumbai, Chennai and Delhi offer display outlet for the products of the industries.

Industrial designs are developed as per client's requirements. The biennial INDIASTAR AWARD is recognition of excellence in packaging development for functional design and appeal. Likewise the PACMACHINE AWARD symbolizes achievements in the field of packaging and converting machinery, material handling and testing equipment.

Winning INDIASTAR entries can compete for the ASIASTAR and the WORLDSTAR awards.

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## Distance Education (Correspondence Course) Programme

### Graduate Diploma in Packaging

The 18 months "Graduate Diploma in Packaging" is accredited by Asian Packaging Federation and is recognized internationally.

**The course commences on 1st January every year** and registration is done in November - December (in prior two months).

### Admission Eligibility

Admission to the Graduate Diploma in Packaging program requires:

- Bachelor's degree in Science/ Commerce/ Arts or a related field with one year of working experience.

- Engineering / Pharmacy / technology graduates with minimum one year of experience.
- Diploma holders (10 + 3) with 2 years of working experience in packaging or related field.

International students whose native language is not English must also confirm adequate knowledge of the English language.

### Admission Procedure

The course begins in 1st January every year. Admissions to the Graduate Diploma in Packaging can be taken during November-December.

### Documents to be submitted (Attested Copies only)

- Degree/ Diploma certificates.
- Proof of residence
- Proof of work experience
- Two Passport / Stamp size photographs
- Prescribed application form with complete address, email and telephone number for communication.
- Course fee as prescribed.

To apply for admission to the Graduate Diploma in Packaging program, students must file an "Application for Graduate Diploma in Packaging " and pay the appropriate fee. Application forms can be downloaded from the Web Site: [www.iip-in.com](http://www.iip-in.com)

Application can be submitted electronically by e-mail, along with the fee and attested documents, to the Graduate Diploma in Packaging Coordinator, at the Indian Institute of Packaging, Mumbai.

To know the status of your application, or for other information or for assistance, contact: Graduate Diploma in Packaging Coordinator.

### Indian Institute of Packaging

E-2, MIDC Area,

Andheri (East)

Mumbai - 400 093

Phone: 91-22 2821 9803 /2821 9469 / 2821 6751

Fax: 91-22-2837 5302

E-mail: [iip@bom4.vsnl.net.in](mailto:iip@bom4.vsnl.net.in) [rneiip@iip-in.com](mailto:rneiip@iip-in.com)

Web Site: [www.iip-in.com](http://www.iip-in.com)

### Course Fee

	Resident Indians (INR)	NRIs (US Dollars)
Application Form	500	20
Course Fees	22,000	750
Total	22,500	770

Entire fee is payable along with application, however for Resident Indians fees can be paid in two installments of Rs. 15,000 at the time of admission & Rs. 7,000 within 6 months. Fees can be paid either by cash or by Demand Draft (D.D.) drawn in favour of "**Indian Institute of Packaging, Mumbai.**"

Students who download the forms from website have to pay the total fee of Rs. 22,500 (Tuition fees Rs. 22,000 plus cost of form Rs. 500) / US \$ 770

Course Curriculum The Diploma course offered by the Indian Institute of Packaging leads to qualification "**Graduate Diploma in Packaging**".

## Course Duration

18 months

## Syllabus

1. Concepts and Principles  
Introduction to packaging and packaging principles.
2. Materials  
Paper - Specialty papers, Paper board and Corrugated/ Solid boards  
Glass - Containers  
Plastics - Rigid, Semi-rigid and Flexible  
Metals - Black plate, GI, Tinsplate, TFS and Aluminium  
Wood and Plywood  
Textiles and Jute  
Cellulosics and Laminates  
Ancillary materials - Cushioning materials  
Adhesive - Tapes,  
Straps, Caps, Closures, Wads, Label's  
Inks, Varnishes, Lacquers, Coating materials etc.
3. Testing and Quality control  
Testing and Quality control of packaging materials  
Testing and Quality control of retail/consumer packages  
Transportworthiness / Performance evaluation of shipping containers  
Shelf life evaluation  
Testing and quality Control of ancillary materials
4. Packaging of products  
Packaging of agricultural products  
Packaging of processed food  
Packaging of horticultural products  
Packaging of pharmaceuticals  
Packaging of health care products  
Packaging of engineering and electronic goods  
Packaging of textile and leather goods  
Packaging of consumer durables and others
5. Package Printing  
Printing techniques  
Printing inks  
Print evaluation
6. Packaging Machinery & Technique
7. Package Management  
Palletization and Containerization  
Packaging laws and Environmental issues  
Packaging standardization and variety reduction  
Packaging cost and Economics  
Essay on a selected Topic is to be submitted prior to the exam.
8. Dissertation Topics Will be given after registration
9. Study Material: The study material for the course prepared by experienced faculty members will be provided.

## Library Facility

Library facility can be availed by the students of correspondence course. The library will remain open from 9.30 a.m. to 6.00 p.m. Monday - Friday. Students can contact the course coordinator regarding any doubts related with admission procedure and the course content and the examination.

## Identity Card:

- The participant will be issued an Identity Card on admission.
- The candidate has to carry the identity card while appearing for any examination or while visiting the Institute.
- On producing a valid Identity card, the candidate can visit the Institute Library for any reference work.
- The validity period of an Identity card is one and half years.

## How to Apply

Application form and prospectus will be available at the Institute office on payment of Rs.500. One can also download the details from website [www.iip-in.com](http://www.iip-in.com), The form, duly filled in, should be submitted to the Coordinator of the program along with fees at Indian Institute of Packaging.

### Indian Institute of Packaging

E-2, MIDC Area,

Andheri (East)

Mumbai - 400 093

Phone: 91-22 2821 9803 /2821 9469 / 2821 6751

Fax: 91-22-2837 5302

E-mail: [iip@bom4.vsnl.net.in](mailto:iip@bom4.vsnl.net.in)

[rneiip@iip-in.com](mailto:rneiip@iip-in.com)

Web Site: [www.iip-in.com](http://www.iip-in.com)

## Examination Details

The Examinations will be conducted near the end of the 18 months in June. The examination would be conducted at Indian Institute of Packaging, Mumbai or at its regional offices at Chennai, Delhi, and Kolkata.

The examination will consist of four papers of 100 marks each of 3 hr duration and dissertation in the form of an essay of 100 marks.

### Re Examination

Rs. 500 per semester for Resident Indians.

US Dollar 20 per semester for NRIs.

### Examination Attempts

A candidate can make maximum three attempts.

### Grading, Pass/ Fail Criteria

The minimum marks for passing would be 40 percent in each head of passing with 50 percent aggregate.

### Regional Centers

#### Chennai

Plot 169, Indl. Estate,

Perungudi,

Chennai- 600 096

Tel: 044- 2496 1560

Fax: 044- 2496 1077

E-Mail: [iipche@giasmdo1.vsnl.net.in](mailto:iipche@giasmdo1.vsnl.net.in)

#### New Delhi

Plot 21, Functional Ind. Est.

Patparganj, Opp. Patparganj Bus Depot,

Delhi- 110 092

Tel: 011- 2216 6703

Fax: 011 - 2216 9612

E-Mail: [iipdelhi@nde.vsnl.net.in](mailto:iipdelhi@nde.vsnl.net.in)

**Kolkata**

Block C. P. Sector - V,  
Salt Lake, Bidhan Nagar  
Kolkata - 700 091  
Tel: 033- 2367 0763  
Fax: 011 - 2367 9561  
E-Mail: [iipcal@cal.vsnl.net.in](mailto:iipcal@cal.vsnl.net.in)

**Hyderabad**

Lux - 3 Industrial Centre, Sanath Nagar  
Hyderabad - 500 018  
Tel: 23814321  
E-Mail: [karnaips@yahoo.co.in](mailto:karnaips@yahoo.co.in)

[Executive Development Programmes](#)**Industry Sponsored Programmes**

IIP conducts inplant/ incompany programme which are tailored to meet specific needs of the company / organisations.

IIP faculty studies current packaging practices at the plant and conducts the programme at plant in consultation with company officials. For details contact IIP Mumbai or regional centres.

**Executive Development Programmes [2005-2006]**

Title	Dates	Location
<a href="#">Packaging of Pharmaceuticals</a>	18-19th May, 2005	Mumbai
One Week (Part Time) Training Programme on Corrugated Fibre Board Boxes	16-20th May, 2005	Delhi
Unit and Bulk Packaging Systems for Food, Pharmaceuticals, Cosmetics and Consumer Goods	26-27th May, 2005	Bangalore
Seminar on Packaging India	30th May, 2005	Hyderabad
Package Printing	8-9th June, 2005	Mumbai
One Week (Part Time) Training Programme on Package Testing & Evaluation	20-24th June, 2005	Kolkata
One Week Training Programme on Corrugated Box	11-15th July, 2005	Hyderabad
Seminar on Corrugated Fibre Board in Packaging	21st July, 2005	Chennai
One Week (Part Time) Training Programme on Plastics in Packaging	8-12th August, 2005	Delhi
Seminar on Plastics in Packaging	24-25th August, 2005	Kolkata
Seminar on UN Packaging Certification for Export	30th August, 2005	Hyderabad
Training Programme on Packaging Principles & Development	13-14th Sept., 2005	Pune
Conference on Food Processing & Packaging	5-6th Oct., 2005	Srinagar
Training Programme on Packaging of Electrical, Electronics and Engineering Goods	19-20th Oct., 2005	Chennai
Seminar on Packaging of Cosmetics & Toiletry Products	18th November,	Delhi

	2005	
One Week Training Programme on Flexible Packaging	5-9th December, 2005	Hyderabad
Training Programme on Packaging for Exports	18-19th January, 2006	Cochin
Seminar on Corrugated Fibre Board Boxes	19-20th January, 2006	Kolkata
Seminar on Textile & Fashion Garments	19-20th January, 2006	Hyderabad
Packaging of Dangerous Goods	11th January, 2006	Mumbai

### CERTIFICATE PROGRAMME IN PACKAGING

1 <sup>st</sup> September – 30 <sup>th</sup> November 2005	Kolkata
1 <sup>st</sup> September – 30 <sup>th</sup> November 2005	Mumbai
1 <sup>st</sup> August - 1 <sup>st</sup> November 2005	Hyderabad
9 <sup>th</sup> September - 30 <sup>th</sup> November 2005	Delhi
14 <sup>th</sup> October – 13 <sup>th</sup> January 2006	Chennai

	1 day	2 days	1 week	2 weeks	Certificate Programme in Packaging
Category	Fees in Rupees				
Non Member	3000	5000	5000	10000	15000
IIP Member	2700	4700	4700	9500	14000
IIP Life Member	2500	4500	4500	9000	13000

### POST GRADUATE PROGRAMME (FULL TIME)

2 Year's Diploma Course	:	Mumbai-Delhi
Date of Commencement	:	5 <sup>th</sup> August 2005
Tuition Fee per Semester	:	Rs.18,000/-

### CORRESPONDENCE COURSE

18 months' Graduate Diplom in Packaging through Correspondence Course.

Date of Commencement	:	1 <sup>st</sup> January 2006
Course Fees	:	Rs.22,000/-

### IN-PLANT/COMPANY ORIENTED PROGRAMME

The Institute conducts Inplant Training Programmes for middle and senior level executives of an organisation/industry. These programmes are tailored to meet specific requirements of the organisation/industry and are conducted in the premises of the organisation/industry or at the Institute.

### IN-LABORATORY HANDS-ON TRAINING FOR TESTING AND EVALUATION OF PACKAGES

The Institute conducts special programmes for groups of supervisory and Q.C. personnel, on testing and evaluation of packaging materials and packages at the Institute's laboratories at Mumbai, Chennai, Delhi and Kolkata. These programmes are particularly designed for those involved in testing, quality control of packaging materials and packages and package developments.

### SEMINARS AND CONFERENCES

The Institute organises seminars and conferences on specific topics of interest to the industry. These are sponsored programmes and are designed to suit the interest and needs of the industry (announced separately).

### INDIAN INSTITUTE OF PACKAGING

E-2 MIDC Area, Post Box. No. 9432  
 Andheri (E), Mumbai 400 093.  
 Phone: 28219803/28216751/28219469/2825 4631.  
 Fax 91-22-2837 5302  
 E-Mail: [iip@bom4.vsnl.net.in](mailto:iip@bom4.vsnl.net.in) or [mneiip@iip-in.com](mailto:mneiip@iip-in.com)  
 Website: URL-<http://www.iip-in.com>

## IP CENTRES:

<b>KOLKATA:</b> Block C.P. Sector-V Salt Lake Bidhan Nagar Kolkata - 700 091 Tel.: 2367 0763/2367 6016 Fax: 033-2367 9561 E-Mail: iipcal@cal.vsnl.net.in	<b>CHENNAI:</b> Plot 169 Industrial Estate Perungudi Chennai - 600 096 Tel.: 2496 1077/2496 1560 Fax: 044-2496 1077 E-Mail: iipche@giasmd01.vsnl.net.in E-Mail: iipdelhi@nde.vsnl.net.in	<b>DELHI</b> Plot No.21, Functional Industrial Estate, Patparganj Opp. Patparganj Bus Depot Delhi - 110 092 Tel.: 22166 6703-05 Fax: 011-2216 9612	<b>HYDERABAD :</b> Lux – 3, Industrial Centre Sanath Nagar Hyderabad – 500 018. Tel.: 2381 4321 Fax : 040-23814321 E-mail: <a href="mailto:karnaips@yahoo.co.in">karnaips@yahoo.co.in</a>
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## **SIES School of Packaging Packaging Technology Centre**

**Nerul, Navi Mumbai, India**

*Sponsored by*

**Department of Scientific &  
Industrial Research (DSIR)**

Ministry of Science & Technology,  
Government of India

## **Developments in Packaging Conversion Technologies Potential for International Trade**

**6th-10th December, 2005 – Navi Mumbai, India**

### **BACKGROUND**

The advent of development and commercial availability of a large number of basic raw materials augmented by the demand for a variety of package forms have led to the demand for conversion technologies. The technology needed were of different levels suited to SMEs and organised large scale to cater to developing and developed economies. The resources available in the developing economies are indeed a boon and need to be shared to bridge the gaps. The interaction should also help to avoid reinventing the wheel and open up export potential and understanding of technology capabilities available, mutually.

### **OBJECTIVE**

The theme is to bring together the resource industries particularly from the developing countries and deliberate on the capabilities developed in the field of packaging conversion technologies. The platform should lead to sharing of individual country strengths in specific areas and pave the way for technology adoption with mutual benefit.

### **SPONSORING ORGANISATION**

The programme has been supported by the **Department of Scientific and Industrial Research (DSIR)**, Ministry of Science & Technology, Government of India. The DSIR, interalia, promotes development of capital goods industry and endeavours to enhance international technology trade and transfer.

### **ORGANISING RESOURCE**

The **SIES School of Packaging** (a premier institution fully devoted to the cause of packaging), a DSIR approved Scientific & Industrial Research Organisation (SIRO), will be the resource agency who will be responsible for designing, organising and conducting the international event.

*Awareness Programme held in October 2004*

**Day - 0** Arrival of delegates

**Day - 1**

09.30 a.m. : Registration of Delegates

10.00 a.m. : **Programme Inauguration**

Welcome

Programme Brief  
Delegate Introduction  
Inaugural Address  
Vote of Thanks  
10.45 a.m. : Beverage Break  
11.00 a.m. : **Session – I**  
**Packaging Conversion Technologies**

– A Global Perception  
– Conversion Processes  
– Machinery – material compatibility  
needs

01.00 p.m. : Lunch Break

02.00 p.m. : **Session – II**

**Paper & Board Conversion**

– Paper bags and multiwall paper sacks  
– Moulded pulp trays and pulp containers

03.30 p.m. : Beverage Break

03.45 p.m. : **Session – III**

**Paper & Board Conversion**

– Selection criteria for cutting/creasing  
rules  
– Folding board cartons – platen & rotary  
systems

05.15 p.m. : **Open House Discussion**

**Close of Day - 1**

## **PROGRAMME AND COVERAGE**

The packaging industry uses a large variety of packages in different types and forms made from a variety of materials. The technology of conversion assumes greater significance in the context of quality requirements and purpose of it for the use. The programme therefore, is designed to deliberate on and highlight the technologies and machinery for production of packages from a variety of packaging materials. The broad contents of the programme include:

- Programme Introduction
- Packaging Conversion Technologies – Global Perception
- Paper & Board Printing and Conversion
- Corrugated Board/Box – Designs & Conversion
- Rigid & Semi Rigid Plastics – Injection & Blow Moulding
- Flexible Packaging – Co-extrusion & Lamination
- Package-Printing – Paper/Board/Plastics/Metals/Flexibles and Combipress
- Retail Packs – Cups, Pouches (Stand-up and Spouted), Zip System
- Metal Containers – Conversion including Printing
- Lined Carton Systems
- Flexible Bults – Sacks & FIBCs, the Integrated Process
- Factory Visits
- Country Paper Presentations
- Group/Panel Discussions
- Valedictory Session & Award of Certificates

## **Day - 2**

10.00 a.m. : **Session – IV**

**Corrugated Board/Box Conversion**

– Semi automatic & automatic system  
– Board/Box manufacture  
– Printer – Folder Gluer

11.30 a.m. : Beverage Break

11.45 a.m. : **Session – V**

**Rigid & Semi Rigid Plastics**

– Injection moulding  
– Blow moulding

01.15 p.m. : Lunch Break

02.00 p.m. : **Session – VI**  
**Rigid & Semi Rigid Plastics**  
– Stretch blow moulding  
– Thermoforming.  
03.30 p.m. : Beverage Break  
03.45 p.m. : **Session – VII**  
**Flexible Packaging**  
– Co-extrusion technology  
– Lamination technology  
05.15 p.m. : **Open House Discussion**  
**Close of Day - 2**

#### **Day - 3**

10.00 a.m. –  
06.00 p.m. : **Industry visits**  
(Full day)

#### **Day - 4**

10.00 a.m. : **Session – VIII**  
**Package – Printing**  
– Flexography/Gravure  
– The Combipress  
11.30 a.m. : Beverage Break  
11.45 a.m. : **Session – IX**  
**Retail Packs**  
– Paper cups  
– Stand up pouches, zip bags,  
spout application  
01.15 p.m. : Lunch Break  
02.00 p.m. : **Session – X**  
Country Papers – Presentation  
05.15 p.m. : **Open House Discussion**  
**Close of Day - 4**

#### **Day - 5**

10.00 a.m. : **Session – XI**  
• Metal containers- conversion  
• Lined carton systems  
11.30 a.m. : Beverage Break  
11.45 a.m. : **Session – XII**  
**Flexible Bulks**  
– Woven sacks  
– FIBCs  
01.15 p.m. : Lunch Break  
02.00 p.m. : **Session – XIII**  
Country Papers – Presentation  
03.30 p.m. : Beverage Break  
03.45 p.m. : **Group / Panel Discussion**  
**Valedictory Session**  
**Award of Certificates**  
05.00 p.m. : **Programme Summing-up**  
**Programme conclusion**

#### **Close of Day - 5**

#### **Close of Programme**

#### **VENUE**

The event will be held at the conference facilities at the SIES School of Packaging/Packaging Technology Centre (SIES-SOP/PTC) at Plot 1C, Sector-V, Nerul Navi Mumbai - 400 706, India.

#### **FACULTY**

Packaging Conversion Technology developments will be presented by experts from the industry with SIES School of Packaging providing the backdrop and co-ordination. The programme also features industry visits to promote interaction of participants with shop floor personnel.

### **PROGRAMME**

The schedule for the programme is 6th December, 2005 to 10th December, 2005. The coverage is detailed separately in the brochure. The Schedule also includes industry visits and opportunity for one to one delegate-industry meet of specific interest, subject to delegates intimating well in advance the area of interest.

### **COUNTRY PAPER**

Each delegate is required to submit a country paper, highlighting the status, growth, potential of the packaging industry in their country, particularly packaging conversion, technologies developed and used. Each country delegate is also requested to present the paper followed by open house discussion. The delegates should send the country paper document elaborating the packaging industry status in general and highlighting the packaging conversion technologies prevalent in their country.

The paper should be in CD ROM in power point with photographs and illustrations separately in Photoshop/Corel Draw format as well as hard copy in A4 size.

### **DELEGATES**

The programme is open to all countries in the world. The nominations should be routed and endorsed by the respective organisations of the candidate. Eligibility is open to industry representatives having work experience in the field of packaging as well to representatives of technology and industrial research promotion agencies.

### **FINANCIALS**

**A. Delegates:** Each delegate shall be responsible for his/her to & fro air travel, and costs for passport, visa, medical insurance and incidentals at their country and personal expenses at training location. Each delegate should ensure passport validity through the Indian Embassy/Consulate at their respective countries.

**B. Sponsor Support:** DSIR/Ministry of Science & Technology, Government of India, will provide:

- Twin sharing hotel accommodation (6 nights)
- DSA Rs. 4,500/- (6 days) to meet local boarding & transport
- Arrangement for pick-up & drop: Airport – Hotel – Airport
- Lunch/tea/coffee/snacks during programme days
- Transport for factory visit
- Course materials/books/literatures/catalogues

### **DELEGATES – GROUP**

The intake of participants is limited to 20 including from India. Attempt will be to include delegates from a larger number of countries.

### **SUBMISSION OF APPLICATIONS**

The application form duly filled in should be sent to the SIES School of Packaging with copies of certificates and 2 passport size photographs on or before 15th October, 2005.

### **SELECTION INTIMATION**

The participants selected will be intimated by 1st November, 2005. They should ensure to reach the Programme Venue/Centre on 5th December, 2005.

The SIES School of Packaging/Packaging Technology Centre has been established with the following objectives:

- To undertake Research & Development in the fields related to Package Design and Manufacture and Packaging Processes
- To conduct Educational Programmes in Packaging Sciences and Technology for grooming packaging professionals
- To offer Technical Advisory Services to industries and organisations in the following areas related to packaging:
  - Testing and Quality Assessment
  - Quality Evaluation and Upgradation
  - Packaging Audit and Package Design and Development
  - Packaging Enhancement and Promotion
  - Market and Economic Feasibility Studies
  - Industry Specific Programmes
  - Hands on Laboratory Training

• To Establish a Data Centre for collating and disseminating information. In a very short span, the SIES School of Packaging/Packaging Technology Centre has earned for itself a position as an Institute of repute. The Packaging Technology Centre, today, is regarded as one of the most well-equipped centres for package testing, research & development, etc.

Plot-1C, Sector-V, Nerul, Navi Mumbai - 400 706, India.

Tel.: +91-22-2771 3841 / 3834 / 3357 • Fax: +91-22-2771 8620

E-mail: siessopptc@vsnl.net • siescom@vsnl.net

### **Department of Scientific & Industrial Research (DSIR)**

Ministry of Science & Technology, Government of India

### **A Centre for Education and Technology Development**

### **SIES School of Packaging/Packaging Technology Centre**

Plot-1C, Sector-V, Nerul, Navi Mumbai - 400 706, India. • Tel.: +91-22-2771 3841 / 3834 / 3357

Fax: +91-22-2771 8620 • E-mail: siessopptc@vsnl.net • siescom@vsnl.net

## **The Organisation:**

The SIES founded in 1932, has since its inception, fully devoted the cause of education, research and human resource development, through the establishment of various institutions that include a High School, Arts, Science, Commerce Colleges, College of Commerce & Economics, School of Economics, College of Management and Engineering.

The SIES also is privileged to start the "School of Packaging/ Packaging Technology Centre" at its Nerul Academic Complex, Navi Mumbai, alongside the Commerce & Economics, Management & Engineering Centres

## **Preamble:**

Packaging, considered a luxury till recently, has now come to be recognised as a need of the industry, country and the society. It is a contributor and facilitator to the industrial growth and economic

### **Post-Graduate Course In Packaging Science and Technology:**

*Concepts in Packaging:*

**Introduction, Role of Packaging, Status Review of Packaging Industry, etc.**

*Packaging Development (Factors & Criteria)*

**Product and Packaging Materials Characteristics, Packaging Evaluation, Product-Package Computability.**

*Packaging Media (Science, Technology, Manufacture, Conversion, Properties & Application)*

**Paper and Board, Fiberboard Boxes, Composite Containers and Drums, Cellulosics, Glass, Metal Containers and Components, Polymers and Plastics, Flexible packaging materials, Flexible bulk packaging media, Wooden Containers.**

*Ancillary Packaging Materials:*

**Cushioning, Adhesives, Corrosion preventives, Reinforcements, Printing Inks, Coatings and Lacquers, Colourants for Plastics, Wadding systems, Labels.**

*Packaging Machinery and Systems:*

**Packaging and Converting Machines, Packaging line machines, Packaging systems machinery, Testing Equipments, Material handling equipment.**

*Packaging Printing & Graphics:*

**Packaging Design, Decoration factors, Prepress, Printing Techniques, Thermal and Foil stamping.**

*Standardisation, Variety Reduction & Cost Optimisation:*  
**Standards, Objectives and Benefits, Variety reduction and approach, Packaging Cost and Packaging Cost and Packaging Economics, Value Analysis.**

*Product Packaging:*  
**Agricultural, Processed foods, Marine products, Pharmaceuticals, Cosmetics, Soaps & Detergents, Chemical Pesticides, Textiles, Handicrafts, Preservation of Foods and Techniques of Food Packaging Systems.**

*Packaging Distribution & Marketing:*  
**Distribution, Branding, Retailing, Break Bulks, Palletisation and Containerisation.**

*Packaging Laws & Regulations:*  
**Loss Prevention, PFA, FDA, Pollution Control, Legal Meteorology (WM Act/ PC Act).**

*Packaging Laws & Marking:*  
**Marking and Coding, Bar Coding, Shipping marking, Statutory markings.**

*Packaging Storage & Handling:*  
**Storage types and effect on packaging media, Handling Equipment and Techniques & Damage Control, Warehousing.**

*Packaging Environment:*  
**Eco issues, Wastage control, Waste Disposal, Eco-friendly Packaging.**

*CAD in Packaging:*  
**Auto CAD for Package Designing, Drawing, Moulds and Mould Flow.**

*Management Concepts in Packaging:*  
**Principles of Management, Marketing Management, Research Questionnaire Preparation, Material/Inventory Management, Packaging in Organisation Structure, Packaging Relevance to supply Chain Management, Marketing, Export Marketing, e-commerce, Industrial Policy and Packaging.**

*Laboratory Training:*  
**Hands on Training & Projects.**

*Industrial Visits:*  
**Packaging, Converting and Ancillary Industries, Package User Industries.**

*Prototype Development:*  
**Projects & Groupwork.**

## **PACKAGING TECHNOLOGY COURSE (PART TIME)**

- **TECHNICAL SESSION**

### **Concepts in Packaging:**

Introduction, Role of Packaging, Status Review of Packaging Industry, etc.

### **Packaging Development (Factors & Criteria)**

Product and Packaging Materials Characteristics, Packaging Evaluation, Product-Package Computability.

### **Packaging Media (Science, Technology, Manufacture, Conversion, Properties & Application)**

Paper and Board, Fiberboard Boxes, Composite Containers and Drums, Cellulosics, Glass, Metal Containers and Components, Polymers and Plastics, Flexible packaging materials, Flexible bulk packaging media, Wooden Containers.

### **Ancillary Packaging Materials:**

Cushioning, Adhesives, Corrosion preventives, Reinforcements, Printing Inks, Coatings and Lacquers, Colourants for Plastics, Wadding systems, Labels.

**Packaging Machinery and Systems:**

Packaging and Converting Machines, Packaging line machines, Packaging systems machinery, Testing Equipments, Material handling equipment.

**Packaging Printing & Graphics:**

Packaging Design, Decoration factors, Prepress, Printing Techniques, Thermal and Foil stamping.

**Standardisation, Variety Reduction & Cost Optimisation:**

Standards, Objectives and Benefits, Variety reduction and approach, Packaging Cost and Packaging Cost and Packaging Economics, Value Analysis.

**Product Packaging:**

Agricultural, Processed foods, Marine products, Pharmaceuticals, Cosmetics, Soaps & Detergents, Chemical Pesticides, Textiles, Handicrafts, Preservation of Foods and Techniques of Food Packaging Systems.

**Packaging Distribution & Marketing:**

Distribution, Branding, Retailing, Break Bulks, Palletisation and Containerisation.

**Packaging Laws & Regulations:**

Loss Prevention, PFA, FDA, Pollution Control, Legal Meteorology (WM Act/ PC Act).

**Packaging Laws & Marking:**

Marking and Coding, Bar Coding, Shipping marking, Statutory markings.

**Packaging Storage & Handling:**

Storage types and effect on packaging media, Handling Equipment and Techniques & Damage Control, Warehousing.

**Packaging Environment:**

Eco issues, Wastage control, Waste Disposal, Eco-friendly Packaging.

**Management Concepts in Packaging:**

Principles of Management, Marketing Management, Research Questionnaire Preparation, Material/Inventory Management, Packaging in Organisation Structure, Packaging Relevance to supply Chain Management, Marketing, Export Marketing, e-commerce, Industrial Policy and Packaging.

- **PROJECT WORK**
- **HANDS ON LABORATORY TRAINING (OPTIONAL)**
- **FACULTY: INDUSTRY AND INSTITUTE FACULTY**

**CONTACT US**

Sri Chandrasekarendra Saraswathy Vidyapuram, Plot 1C,  
Sector-5, Nerul, Navi Mumbai 400 706, INDIA.

Phone: +91-22-7713841/3834/3357

Fax: +91-22-7708379

E-mail: [siescom@vsnl.net](mailto:siescom@vsnl.net)

## Educational Programmes on Packaging in Sri Lanka

Full application address, Phones, telefax	Sri Lanka Institute of Packaging, 290 D.R. Wijewardene, Mawathe, Colombo 10, Sri Lanka. Phone: + 94 11 4734351, 2386519 Fax : + 94 11 2386519
WEB address	
e-mail	slip@sltnet.lk
Authorized person/(s) for further information	Dharmatilake Ratnayake – President SLIP
Since when is the programme active, year of establishment	Since 1990
Education hours: Is it a full day programme? Certain days of a week, weekend, ONLINE/OFLINE Internet education etc..	Off line – Conducted on 10 consecutive Saturdays - 6 hours of teaching time on each Saturday – Class Room Instructions.
Specify the level of the programme; (high school, undergraduate, graduate, certificate, etc):	A certificate Course
Entry requirements	General Certificate of Education – Advanced Level or minimum of two year employment in packaging / related industry
Type of the certification/ degree/ recognition (certificate, diploma, licence,etc):	Certificate of Proficiency
Programme Specification/ structure/ outline	Packaging Materials, Packaging Processes, Packaging Machinery, Packaging Quality, Marketing and Legal aspects of Packaging. At Introductory level
Total hour of the programme	60 Hrs.
Units and content of the programme	Modules on (1) Paper & paper board packaging (2) Polymer packaging, Glass packaging, wooden packaging, market requirements, legal / environmental requirements, Q.A. Techniques.
By whom is the content of the programme decided? Government, industry, academicians etc	Industry and the National Packaging Centre
Does the Packaging industry influence/contribute the content of the programme? If Yes specify	Course contents and it's depth perused by the industry. Industry provides trainees & some trainers
The fee of the programme(s)	US \$ 125.00 to be amended shortly to US \$ 250.00
What is the capacity of the programme. (How many students)	Maximum of 25 students
Does the programme use any external funds, other than tuition fees. If yes please specify.	No
Related programme is accredited or not? If it is YES, please specify from which institution	Yes. Recognized by the Asian Packaging Federation
What is the education language of the programme?	English Language
Any guarantee or assistance to find a job position after completion	No

**Name of the person who filled this form: Mr. J.D.Amarasooriya, Executive Director, National Packaging Centre of Sri Lanka ( On behalf of the Sri Lanka Institute of Packaging)**

## Educational Programmes on Packaging in TUNIS

Full application address, Phones, telefax	PACTEK  BP 802-3018 Sfax Tel: 216 74 276400 Fax: 216 74 274437
WEB address	<a href="http://www.fss.rnu.tn">www.fss.rnu.tn</a>
e-mail	<a href="mailto:fss@fss.rnu.tn">fss@fss.rnu.tn</a>
Authorized person/(s) for further information	Raja Ben AMMAR
Since when is the programme active, year of establishment	2000
Education hours: Is it a full day programme? Certain days of a week, weekend, ONLINE/OFLINE Internet education etc..	Yes It's a full day programme
Specify the level of the programme; (high school, undergraduate, graduate, certificate, etc):	Graduate
Entry requirements	Bac
Type of the certification/ degree/ recognition (certificate, diploma, licence,etc):	Technician Diploma (Bac + 3)
Programme Specification/ structure/ outline	Refer to attached document
Total hour of the programme	Refer to attached document
Units and content of the programme	Refer to attached document
By whom is the content of the programme decided? Government, industry, academicians etc	By the goverment in collaboration with industry.
Does the Packaging industry influence/contribute the content of the programme? If Yes specify	Yes by proposing new projects to be conducted by students in collaboration with the compnies.
The fee of the programme(s)	Free
What is the capacity of the programme. (How many students)	
Does the programme use any external funds, other than tuition fees. If yes please specify.	No
Related programme is accredited or not? If it is YES, please specify from which institution	It's a govermental programme
What is the education language of the programme?	French
Any guarante or assistance to find a job position after completion	Yes

## WEEKLY PROGRAMME

<b>Intitulé du module</b>	<b>Durée</b>
Mathématiques	3
Interaction onde matière	3
Structure de la matière	3
Thermodynamique et cinétique chimique	4.5
Chimie des solutions	4.5
Chimie inorganique	4.5
Chimie organique	4.5
Informatique	1.5
Anglais	1.5
Français	1.5
Mécanique	3
Chimie analytique	4.5
Technique d'analyse I	4.5
Technique d'analyse II	4.5
Grandes fonctions C. Org	3
Matériaux d'emballage I : Polymères	3
Matériaux d'emballage II : Verres - métaux	4.5
<b>Volume hebdomadaire</b>	<b>31.5</b>

## Deuxième année TE2

<b>Intitulé du module</b>	<b>Durée</b>
Photophysique photochimie	1.5
Technologie et transfert de matière et d'énergie	4.5
Physicochimie des surfaces et interfaces	1.5
Matériaux renforcés	1.5
Papier et carton	1.5
Encre et technique d'impression	2
Mise en forme des matériaux d'emballage I	4.5
Résistance des matériaux	4.5
Dégradation et protection des métaux	1.5
Dégradation et protection des polymères	1.5
CAO /DAO	3
Anglais	1.5
Français	1.5
Mise en forme des métaux	3
Mise en forme verre et céramique	1.5
Papier et carton	3
Colles, adhésifs et assemblage	3
Techniques d'impression (colorimétrie)	4
Conception création et critères de choix d'un emballage	1.5
Technologie des machines d'emballage	1.5
Electronique et électrotechnique	4.5
Informatique	1.5
Mise en forme des métaux	3
<b>Volume hebdomadaire</b>	<b>29.5</b>

### Troisième année TE3

<b>Intitulé du module</b>	<b>Durée</b>
Contrôle des matériaux d'emballage I	4.5
Emballage et environnement	3
Marketing	1.5
Gestion de la qualité	1.5
Alimentarité des emballages	1.5
Papier et carton I	1.5
Papier et carton II	1.5
CAO /DAO	4.5
Droit de travail	1.5
Anglais	1.5
PFE (deuxième semestre)	1.5
Contrôle des matériaux d'emballage II	4.5
<b>Volume hebdomadaire</b>	<b>26.5</b>

***An educational Programme on Packaging  
in Germany in collaboration with Austrian Pack Institutue  
Packaging Professionals programme by DVI and Austrian OFI***

<b>Title or name of the programme</b> Full application address, phones, telefax	Deutsches Verpackungsinstitut e. V. Hohenzollernstr. 12 14163 Berlin Tel. +49 (0)30 80496811 Fax +49 (0)30 80496812
web-address	<a href="http://www.verpackung.org">www.verpackung.org</a>
E-mail	<a href="mailto:wohlatz@verpackung.org">wohlatz@verpackung.org</a>
Authorized person for further information	Lena Wohlatz
Since when is the programme active, year of establishment	June 2005
Education hours: Is it a full day programme? Certain days of a week, weekend, online/offline internet education etc.	yes It is a series of programme modules There are individual seminars held either in Gemant or in Austria
Specify the level of the programme; (high school, undergraduate, graduate, cer- tificate, etc.)	Certificate
Entry requirements	
Type of the certification/degree/recognition (certificate, diploma, licence, etc.)	Private certificate
Programme specification/structure/outline	
Total hour of the programme	370 h
Units and content of the programme	Find enclosed
By whom is the content of the programme decided? Government, industry, academi- cians, etc.	Industry
Does the packaging industry influence the content of the programme? If yes specify	Yes, because our speakers are mostly from the Packaging Industry and they update our contents.
The fee of the programme	9,980,00 EUR
What is the capacity of the programme. (How many students)	15 x 14 = 210 per year
Does the programme use any external funds, other than tuition fees. If yes please specify.	No, not yet.
Related programme is accredited or not? If it is yes, please specify from which institution	No
What is the education language of the pro- gramme?	German
Any guarantee or assistance to find a job position after completion	No, net yet

## ***An educational Programme on Packaging in the U.S.A. by IOPP***

<b>Title or name of the programme</b> Full application address, phones, telefax	<b>Fundamentals of Packaging Technology</b> Produced by: Institute of Packaging Professionals, 1601 N Bond Street, Suite 101, Naperville, Illinois 60563 Phone: 800-432-4085 Fax: 630-544-5055
web-address	<a href="http://www.iopp.org">www.iopp.org</a> <a href="http://www.iopp.org/pages/index.cfm?pageid=288">www.iopp.org/pages/index.cfm?pageid=288</a>
E-mail	<a href="mailto:jpeters@iopp.org">jpeters@iopp.org</a>
Authorized person for further information	Jim Peters, Director of Education
Since when is the programme active, year of establishment	Approximately 1995
Education hours: Is it a full day programme? Certain days of a week, weekend, online/offline internet education etc.	12 days. Offered in person only, not available on-line, program can be customized for specific companies
Specify the level of the programme; (high school, undergraduate, graduate, certificate, etc.)	Continuing education, covers all aspects of packaging
Entry requirements	None, except the fee
Type of the certification/degree/recognition (certificate, diploma, licence, etc.)	Completion of course is excellent preparation for the certification examination for Certified Packaging Professional
Programme specification/structure/outline	Detailed at web site
Total hour of the programme	88 hours
Units and content of the programme	See website
By whom is the content of the programme decided? Government, industry, academicians, etc.	Institute of Packaging Professionals Education Committee
Does the packaging industry influence the content of the programme? If yes specify	Instructors are employed or retired from the industry
The fee of the programme	\$ 2.800 for members of IoPP, \$ 3.300 for non-members
What is the capacity of the programme. (How many students)	Prefer no more than about 15
Does the programme use any external funds, other than tuition fees. If yes please specify.	No
Related programme is accredited or not? If it is yes, please specify from which institution	No
What is the education language of the programme?	English
Any guarantee or assistance to find a job position after completion	No guarantee but statistics show that completion of the course is looked upon favorably by industry

## An educational Programme on Packaging in UK by Institute of Packaging

<b>Title or name of the programme</b>	Fundamentals of Packaging Technology
Full application address, phones, telefax	Certificates / Diploma Programmes
web-address	<a href="http://www.iop.co.uk">www.iop.co.uk</a>
E-mail	<a href="mailto:Alan.kinnear@iom3.org">Alan.kinnear@iom3.org</a>
Authorized person for further information	Alan Kinnear
Since when is the programme active, year of establishment	2004
Education hours: Is it a full day programme? Certain days of a week, weekend, online/offline internet education etc.	120 hours/ 64 hours e-learning programme
Specify the level of the programme; (high school, undergraduate, graduate, certificate, etc.)	Level 3 – certificate Level 4 – diploma
Entry requirements	“O” levels “A” levels
Type of the certification/degree/recognition (certificate, diploma, licence, etc.)	Diploma/certificate
Programme specification/structure/outline	Certificate 4 days or e-learning Diploma 15 days or e-learning
Total hour of the programme	120 / 64 hours
Units and content of the programme	A+ 4 units
By whom is the content of the programme decided? Government, industry, academicians, etc.	Government
Does the packaging industry influence the content of the programme? If yes specify	Yes
The fee of the programme	
What is the capacity of the programme. (How many students)	12 on certificate 15 on diploma
Does the programme use any external funds, other than tuition fees. If yes please specify.	No
Related programme is accredited or not? If it is yes, please specify from which institution	Accredited by the government
What is the education language of the programme?	English
Any guarantee or assistance to find a job position after completion	No



Institute of Packaging UK

<http://www.pi2.org.uk/iop/default.asp?title=Home%20Page>

**IoP: The Packaging Society**

Institute of Materials, Minerals and Mining

Willoughby House

Broad Street

Stamford

Lincolnshire PE9 1PB Tel - 01780 759200 , Fax - 01780 759220

E-Mail - [iop@pi2.org.uk](mailto:iop@pi2.org.uk) Web Site - <http://www.pi2.org.uk>

## Courses, Seminars and Corporate Partnering

### QCA Accredited Qualifications Certificate in Packaging

Designed to meet the needs of everyone concerned with the packaging industry, the Certificate in Packaging covers all the major packaging functions to provide students with a sound knowledge base upon which to build successful career development. Further details can be found by clicking on [course details](#) and /or [registration form](#).

### Diploma in Packaging Technology

The Diploma in Packaging Technology is internationally recognised as the premier degree level qualification for packaging professionals, acknowledging the high standards of knowledge and skill required in an extremely specialised industry. Please click on [course details](#), study options and/or [registration](#) form for full details.

### Other Courses

#### Packaging for the Pharmaceutical sector - 3 days

Please click on [course details](#) or [registration](#) form for full details. For more information please contact Glennis Harwood at [glennis.harwood@pi2.org.uk](mailto:glennis.harwood@pi2.org.uk) or telephone 01780 759207.

### Seminars/workshops

#### 1. Packaging legibility: Is your packaging exclusive?

An IOP/RNIB joint production looking at the discrimination act, design, and print on packaging. Next Seminar date mid-late 2005. A must for brand owners, see our [News](#) section for full details.

#### 2. Packaging Minimisation: Is your packaging fit for purpose?

An IOP/Envirowise joint production looking at packaging minimisation, rationalisation and optimisation on non food packaging. the seminar in May was attended by 30 people .The next session is mid September (Leeds or Manchester)

#### 3. Packaging Management: Managing design for packaging

An IOP production looking at generating best practice when taking a customers brief and converting it into reality. A practical workshop giving you a real insight into managing design to give quality, service and repeat business.

### Corporate Partnering

Corporate Partnering -Training for Success-with the IOP is a unique and tailor made package of courses to meet the exact training needs of individual companies.It allows employees from all functions and levels to gain an appreciation of packaging technology, jargon and processes, whilst placing them on a pathway to further skills development and qualifications.All Corporate partners benefit from an annual review of packaging skill needs within their organisationand courses can be adapted accordingly.

For all the above courses please contact Alan Kinnear at [alan.kinnear@pi2.org.uk](mailto:alan.kinnear@pi2.org.uk) or telephone 01780 759204.

## Diploma in Packaging Technology - Course Details

The Diploma in Packaging Technology is internationally recognised as the premier degree level qualification for packaging professionals, acknowledging the high standards of knowledge and skill required in an extremely specialised industry.

The course is divided into five units, and students must satisfactorily complete all units to gain the Diploma. However students may choose to study individual units if preferred, to gain a Certificate of Achievement. The Diploma and other courses offered by the Institute of Packaging lead to qualifications awarded by the [Packaging Industry Awarding Body \(PIABC\)](#) which is recognised by the UK Government's Qualifications and Curriculum Authority for providing qualifications for the packaging industry.

Successful completion of this course prepares students for progression in the packaging industry to a position where they can assume responsibility for packaging in a company at any point in the supply chain. Success also provides students with an entry level qualification for the MSc in Packaging Technology at the University of Loughborough and Brunel University.

Candidates will normally be expected to have a minimum of 1 GCE A level and 5 GCSEs at grade A – C, or equivalent, including once science subject, in addition to the key skills of numeracy, communication and information technology, or, the Certificate in Packaging. Industrial experience can be used as an alternative to formal qualifications. Overall it is expected that courses will take approximately 120 hours. In addition, students will be expected to carry out additional reading and other work to complete each unit.

Students have a variety of Study options from which to choose.

The format and organisation of the Diploma in Packaging Technology changed in August 2003. Assessment and examination arrangements for those who completed the course prior to that date are also different.

### **Diploma in Packaging Technology - Old Style**

In August 2003, responsibility for administering the assessment and certification of the Diploma was taken over by the Packaging Industry Awarding Body Company (PIABC). Further details of PIABC can be found at [www.piabc.org](http://www.piabc.org).

Students who took the course before that date but who have not completed all their examinations, and those who started the Open Learning option before then, will all be assessed under the previous regulations administered by the Institute of Packaging.

Examination and dissertation assessment for the old style diploma will continue to be available for several years, according to the following timetable.

	Summer Examination	Autumn Examination	Dissertation Topic
2005	*		*
2006	*		*
2007	*		*
2008			*

Fees which are not subject to VAT (payable on examination registration)	
Full examination (Papers 1, 2 & 3 and Dissertation)	£150
Written papers taken individually at different sittings attract a fee per paper	£40
Any two written papers at one sitting	£60
Any three papers at one sitting	£90
Dissertation	£60

### **Venues**

Examinations are held at several centres. Details are notified at the time of registration.

### **Exam structure**

The examination is based on the Diploma syllabus issued by the Institute of Packaging that was applicable for students registering for courses before August 2003. Candidates must complete 3, three hour written examination papers and submit a 10,000 word dissertation, the topics for which are published annually in January. Submission of the dissertation must be made within 6 months of successful completion of all the written papers. Exemption from Paper 1 may be gained during diploma studies.

Written papers cover:

Paper 1 - Fundamentals of Packaging

Paper 2 - Packaging Materials, Forms and Components

Paper 3 - Packaging Design, Development and Production

For details of the syllabus, past examination papers, regulations etc and to register for the exams, contact Glennis Harwood on 01780 759200 or e-mail [glennis.harwood@pi2.org.uk](mailto:glennis.harwood@pi2.org.uk)

### **Certificate in Packaging - Course Details**

The Certificate comprises a classroom based core unit, along with 12 on-line options, of which students have to successfully complete 4 to gain the Certificate in Packaging.

The core unit comprises a four day course covering:

- The Fundamental Principles of Packaging
- Understanding and Managing Packaging Cost
- Packaging Development
- Introduction to Packaging Materials

Through the core unit course, students also have the opportunity to become familiar with the course as a whole, and to be introduced to the simple-to-use, on-line learning system. This unit is assessed by one-hour written examination.

Candidates then select a further four option units for on-line study from the following list to complete their certificate:

- Legislation in Packaging
- Understanding Packaging Line Operations
- Understanding the Hazards of Warehousing and Distribution
- Packaging Design and Marketing
- Paper and Board Packaging
- Plastics Packaging
- Flexible Packaging
- Printing of Packaging
- Labelling and Coding
- Corrugated Board Packaging
- Rigid Plastics Packaging
- Environmental Aspects of Packaging

All these options are taken on-line with tutor support, through [www.learnpackaging.org](http://www.learnpackaging.org). This means that students can choose where and when they study, and work at their own pace. Each unit is assessed by a 1,500 word assignment.

The cost of the course is £1,350.00 (this fee does not attract VAT)

This fee includes:

- Attendance for the 4-day core unit with:
  - The Fundamentals of Packaging Technology textbook
  - A folder with extensive supplementary notes and presentation materials
  - Magnifying glass
  - Associated administration documents
- Access to the on-line course materials for 4 option units, plus:
  - On-line tutor support for each unit
  - Hard copy *Welcome Pack*
- PIABC Examination fees
- Institute of Packaging Affiliate Membership for two years from the date of registration

Not included:

- Travel, accommodation and subsistence costs associated with the core unit
- On-line internet fees incurred
- Examination resit fees

#### **Dates for the 2005 Core Unit Courses**

CORE UNIT: UNDERSTANDING PACKAGING

4 days held at the Institute of Packaging, Stamford

Course 1 1 - 4 February 2005

Course 2 4 - 7 July 2005

Course 3 17 - 20 October 2005

The syllabus can be found at [www.piabc.org.uk](http://www.piabc.org.uk)

For more information contact Glennis Harwood on 01780 759200 or E-Mail [glennis.harwood@pi2.org.uk](mailto:glennis.harwood@pi2.org.uk)

<http://www.learnpackaging.org> is the entry point for the Institute's on-line learning facility.

On-line learning provides the learner with a flexible way of studying that can fit around work and domestic responsibilities.

Studying on-line with the IoP not only provides access to top class materials that are well presented, but also to support from tutors and virtual classroom facilities that enables interaction with fellow students to take place.

The following courses are either offered on-line or have on-line elements.

- Diploma in Packaging Technology
- Certificate in Packaging
- EQIPT



## University of Wisconsin-Stout Bachelor of Science Degree in Packaging

**For more information about the program, contact:**

Ken Neuburg, Program Director  
281F Technology Wing, Jarvis Hall  
University of Wisconsin-Stout  
Menomonie, WI 54751-0790  
Phone: 715/232-1246  
E-Mail: [neuburgk@uwstout.edu](mailto:neuburgk@uwstout.edu)

**For more information about UW-Stout, contact:**

Admissions Office  
124 Bowman Hall  
University of Wisconsin-Stout  
Menomonie, WI 54751-0790  
Phone: 715/232-1232 or 1 800 44 STOUT  
Online: [admissions@uwstout.edu](mailto:admissions@uwstout.edu) or [website](#)

### Introduction to Packaging

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We have a package for you at UW-Stout — the bachelor of science degree in Packaging. This package leads to interesting, challenging, and rewarding careers in package printing; business and sales; foods and packaging; package graphic design; manufacturing and quality management; or package design, research and development.

The packaging career field involves the use of materials, methods, design concepts and machinery to develop and produce the packages that protect and preserve a product, help market the product and instruct the consumer in its proper use. Virtually every product, whether grown or manufactured, must be packaged so that it reaches the consumer in an acceptable condition. With the quantity and variety of products produced in the world, it is easy to understand that packaging is a dynamic, multibillion dollar industry in need of well-educated men and women.

More people are employed in packaging operations and the directly related support industries than any other industry. On the basis of gross domestic product, packaging is the third largest industry in the United States and is expanding. Projected personnel requirements indicate that the demand for packaging professionals will significantly exceed the number of future graduates, and starting salaries are very impressive!

UW-Stout is one of only a few schools in the United States (and the only school in the UW System) that offer a B.S. degree in Packaging. The program combines general education with technical and professional studies. You will have an opportunity to apply theory to real problems. Through laboratory and co-op work experiences, you will apply the principles of science, mathematics and communications skills.

Several factors make UW-Stout an ideal location for the Packaging program—our heritage, faculty and instructional laboratory facilities. Throughout its history, UW-Stout has developed technical programs to meet the needs of business and industry. These programs have focused upon the direct application of technical knowledge to the solution of practical problems.

Our specialized staff has developed a curriculum to prepare graduates to work with both traditional and emerging materials, manufacturing processes and technologies.

Our resources include a highly successful cooperative education program and the Stout Technology Transfer Institute, a nationally recognized center that assists industry in solving problems. As you progress toward graduation, both will provide opportunities to learn through on-the-job experiences while still enrolled at the university.

## Preparing for UW-Stout

Students in the Packaging program must have an aptitude for communication skills, the sciences and mathematics. We encourage you to take as many upper-level math, chemistry, physics, writing and speech courses in high school as possible. Early development of computer skills is also very helpful.

## Starting Out

Industry's packaging problems are not only technical in nature. They are also social and economic. Packaging professionals must therefore have a broad education.

The first two years of the program includes English composition, speech communications, and other general education offerings as well as calculus, chemistry, physics, computer applications and foundation packaging courses.

## As You Progress

The trend in the packaging industry is to hire employees who can function in more than one area at career entry. UW-Stout's Packaging program recognizes this trend by offering the student the opportunity to select an "emphasis" which includes course and lab work beyond the technical core of the program. Students can select from several emphasis areas; package graphic design, package printing, manufacturing/quality, business/sales, foods/packaging, or package design, research and development.

An off-campus co-op experience in the packaging industry of at least six months is strongly encouraged. Today's employers show a preference for the graduate who has completed at least one co-op.

Student professional organizations offer another opportunity to learn outside the classroom setting. The UW-Stout student chapter of the Institute of Packaging Professionals (IoPP) helps packaging program students begin "networking" with their professional colleagues.

## Entry Positions

The packaging industry seeks qualified professionals with a broad-based career entry education. A B.S. degree in Packaging can lead to positions with local, national or international firms. Entry level is determined by several variables, including the emphasis selected, work experience, personal contacts, grade point average and economic cycles.

The employment rate for graduates from the 2002–03 school year was 93 percent with salaries ranging from \$31,000 to \$80,000 — the average being \$48,000.

# Stout Graduates at Work

Bachelor of Science degree in Packaging

College of Technology, Engineering and Management • University of Wisconsin-Stout

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## Typical Job Titles

- Senior Packaging Engineer
- Distribution Sales Manager
- Sales Engineer
- Design Department Manager
- Structural Designer
- Packaging Specialties Buyer
- Package Cushioning Designer
- Product Development Manager
- Package Testing and Development Engineer
- Technical Services
- Customer Service/Package Engineer

## Where Graduates Work



- General Mills
- International Paper
- Snap-On Tools
- Abbott Laboratories
- Digital Computer
- Medtronic
- Bristol Meyers
- Kell Container
- Kohler
- Helene Curtis
- Hormel
- Federal Express
- Georgia-Pacific

- IBM
- H.B. Fuller
- Baxter
- GM-Delco
- FRITO-LAY
- 3M

## Meet the Faculty

Bachelor of Science degree in Packaging

College of Technology, Engineering and Management • University of Wisconsin-Stout

	<p><b>Ken Neuburg</b>  <b>Lecturer and Program Director</b>  <a href="mailto:neuburgk@uwstout.edu">neuburgk@uwstout.edu</a>        281F Technology Wing Jarvis Hall        715/232-1246</p> <p><b>Degrees:</b> B.S. UW-Stout [Packaging]; M.S. Rochester Institute of Technology [Packaging Science] Program</p> <p><b>Courses Taught:</b> In addition to teaching, student advisement, and R&amp;D efforts, Ken has served as the Packaging Program Director since 1996.</p> <p><b>Industrial Experience:</b> While a student, he spent seven months in Boulder, Colorado with IBM as a packaging engineering co-op. Worked as a packaging engineer for 11 years with IBM in both the Tucson, Arizona and Rochester, Minnesota locations. Ken has kept current in electronics packaging through summer employment with Cray Research, Phillips Plastics, and Silicon Graphics Inc. each of the past four summers.</p> <p><b>Professional Organizations:</b> Active member of the International Safe Transit Association (ISTA) and the National Institute of Packaging, Handling and Logistic Engineers (NIPHLE).</p>
	<p><b>Claire Sand</b>  <b>Associate Professor</b>  <a href="mailto:sandc@uwstout.edu">sandc@uwstout.edu</a>        231 Technology Wing Jarvis Hall        715/232-2138</p> <p><b>Degrees:</b> B.S. and M.S. Michigan State University [Packaging]; Ph.D. University of Minnesota [Food Science]</p> <p><b>Industrial Experience:</b> Includes employment as a packaging engineer with Gerber Products, Grand Metropolitan (Pillsbury), Dominick's, Kraft Foods, Fraunhofer Institute for Lebensmittel Technologie (Munich, Germany), and project work in Thailand and for the Organization of American States in Colombia. Has published extensively and spoken at a number of conferences internationally.</p> <p>Grants and research work: product/package interactions, food packaging, polymer science, test methods, and the package development process.</p> <p><b>Professional Organizations:</b> Institute for Food Technologists Global Interests committee, a National Councilor, former Chair of the Food Packaging Division and a member of the Michigan State University Alumni Board.</p>
	<p><b>Dannette F. Casper</b>  <b>Lecturer</b>  <a href="mailto:CasperDa@uwstout.edu">CasperDa@uwstout.edu</a>        231 Technology Wing -- Jarvis Hall</p>

## Articles of Interest

Bachelor of Science in Packaging

University of Wisconsin-Stout • College of Technology, Engineering and Management

In order to read following articles Please visit following <http://www.uwstout.edu/programs/bsp/articles.html>

- [Annual Employment Report](#) [PDF]  
Career Services
- [Co-op Annual Report](#) [PDF]  
Career Services
- [A perfect partnership](#)  
Entrepreneur finds help from retail and packaging students  
UW-Stout *NewsPlus*
- [Creating Colorful Ideas](#)  
*Stout students develop new packaging solutions for Binney and Smith*  
UW-Stout News Bureau
- [Adding Value to a Top-Seller](#)  
*UW-Stout packaging students create designs for Rayovac*  
UW-Stout News Bureau
- [Building the Best Box | Students Take Bronze in Competition](#)  
*Students join forces to create package designs for premium golf balls*  
UW-Stout *NewsPlus* and UW-Stout News Bureau
- [A More Arduous Pursuit](#)  
American Society for Engineering Education's PRISM  
*A Tennessee legislator praises UW-Stout's approach to education.*

### *Bachelor of Science Degree*

### **Packaging**

*College of Technology, Engineering and Management*

*University of Wisconsin-Stout*

### **Application Procedure**

Apply to UW-Stout using the UW System Application form available from your Student Services Office or online at <http://apply.wisconsin.edu>. In addition, we will need a copy of your final high school transcript (if you have not already earned your Associate Degree) and an official transcript from all post-secondary institutions where you have earned college credit. If you took any Advanced Placement tests while in high school and received a score of 3 or higher, a copy of your score report is required to earn college credit. Transferring directly from any of the UW Colleges the \$35 application fee is not required.

### **Admissions Requirements**

[http://www.uwstout.edu/admissions/transfer\\_req.html](http://www.uwstout.edu/admissions/transfer_req.html)

### **General Education Requirements met by completing courses at the UW Colleges**

[UW-Stout General Education Requirements](#) approved listings

*Specifically listed courses below indicate courses required for the major and must be taken at UW-Stout if they were not taken as part of the student's associate degree.*

COMMUNICATION SKILLS	
13 credits required	
UW-Stout Course	UW-Colleges Course
ENGL 101	ENG 101
ENGL 102	ENG 102
SPCOM 100	COM 103
ENGL 415	ENG 206 OR EGR 106
2 CREDITS ANY FOREIGN LANGUAGE	2 CREDITS ANY FOREIGN LANGUAGE

<b>ANALYTICAL REASONING</b> <b>6 credits required</b>	
<b>UW-Stout Course</b>	<b>UW-Colleges Course</b>
MATH 153	MAT 211
STAT 130	MAT 117

<b>HUMANITIES &amp; THE ARTS</b> <b>9 credits from minimum of 3 different areas required</b> <i>(Automatically met with completion of Associate Degree)</i>	
<b>UW-Stout Course</b>	<b>UW-Colleges Course</b>
Any 9 credits from 3 different areas of Fine Arts & Humanities <i>(see <a href="#">UW-Stout General Education Requirements</a> courses, Humanities &amp; the Arts, for examples of different areas)</i>	

<b>SOCIAL &amp; BEHAVIORAL SCIENCES</b> <b>9 credits from minimum of 3 different areas required</b>	
<b>UW-Stout Course</b>	<b>UW-Colleges Course</b>
ECON 201 OR 210	ECO 101 OR 203
Any additional 6 credits from 2 different areas of Social Sciences other than Economics <i>(see <a href="#">UW-Stout General Education Requirements</a> courses, Social &amp; Behavioral Sciences, for examples of different areas)</i> Additional credits met with completion of Associate Degree	

<b>HEALTH &amp; PHYSICAL EDUCATION</b> <b>2 credits required</b> <i>(Automatically met with completion of Associate Degree)</i>	
Any of the following courses: PED 001-061; 102-118; 127 or 206	

<b>NATURAL SCIENCES WITH LAB</b> <b>18 credits required</b>	
<b>UW-Stout Course</b>	<b>UW-Colleges Course</b>
CHEM 115 OR 135	CHE 125 OR 145
PHYS 231 & 232 OR PHYS 241 & 242 OR PHYS 281 & 282	PHY 141 & 142 No equivalent PHY 201 & 202
Environmental Science	BIO 103
Elective Science	Refer to Packaging Advisor

<b>TECHNOLOGY</b> <b>2 credits required</b> <i>(Automatically met with completion of Associate Degree)</i>	
<b>UW-Stout Course</b>	<b>UW-Colleges Course</b>
ENGL 218	COM 201

**Program, Major, School courses available in Colleges' curriculum not part of General Education**

<b>PROFESSIONAL REQUIREMENTS</b>	
<b>UW-Stout Course</b>	<b>UW-Colleges Course</b>
<b>Professional/Management Studies</b>	
INMGT 300	EGR 282
<b>Major Studies</b>	
CADD 112	GRA 113
ART 101	ART 111

With completion of Associate Degree student has also met the Ethnic Studies Graduation Requirement. The Global Perspective Requirement *may* have been met. See requirements within the UWStout general education listing link above.  
Additional Resources

[Program Plan \[PDF\]](#)

[TIS equivalences](#) (to the General Education "Wizard") Use this page to determine the equivalent College courses to UW-Stout GE courses.

**Contact Person**

Linda Young  
 Transfer Coordinator  
 Admissions Office  
 UW-Stout  
 Menomonie, WI 54751  
 1-800-447-8688  
[youngl@uwstout.edu](mailto:youngl@uwstout.edu)

<h1 style="margin: 0;">PACKAGING</h1> <p style="margin: 5px 0;"><b>Bachelor of Science Degree</b></p>	<p>Name _____</p> <p>I.D.# _____</p> <p style="text-align: center;"><b>Program Plan Sheet Projected Graduation Date</b></p> <p>Date _____</p>
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**GENERAL AND OTHER REQUIREMENTS**

I. Communication Skills (13 cr.)	CR	YR	VI. Health Enhancement/Physical Well-Being (2 cr.)		
Select one:			Select from Approved List		
ENGL-101 Freshman English-Comp AND	3		<b>VII. Technology (2 cr.)</b>		
ENGL-102 Freshman English-Reading & Writing <b>OR</b>	3		Select from Approved General Education List		
ENGL-111 Freshman English-Honors I AND	3		<b>TOTAL GENERAL AND OTHER REQUIREMENTS</b>	<b>59</b>	
ENGL-112 Freshman English-Honors II	3				
Select one:			<b>PROFESSIONAL REQUIREMENTS</b>		
ENGL-346 Research Reporting <b>OR</b>	3		I. Professional/Management Studies (14 cr.)		
ENGL-415 Technical Writing	3		INMGT-120 Quality Concepts	3	
SPCOM-100 Fundamentals of Speech	2		INMGT-200 Production/Operations Management	3	
Select one:			INMGT-300 Engineering Economy	3	
SPCOM-xxx Advanced Speech (Appr. List) <b>OR</b>	2		INMGT-400 Organizational Leadership	3	
Foreign Language	2		PKG-495 Packaging Seminar	2	
<b>II. Social and Behavioral Sciences (9 cr.)</b>			<b>II. Major Studies (35-36 cr.)</b>		
Select one:			Select One:		
ECON-201 General Economics <b>OR</b>	3		GCM-141 Graphic Comm/Elect Publishing <b>OR</b>	3	
ECON-210 Principles of Economics I	3		ELEC-204 Electricity/Electronics	3	
(Choose from at least 2 other Social & Behavioral Science Areas):			MFGT-110 Manufacturing Materials Process I	3	
			MGFT-340 Plastics Processing	3	
			CADD-112 Principles of Engineering Drawing I	2	
			CADD-234 Computer Assisted Design & Drafting	2	
<b>III. Humanities and the Arts (9 cr.)</b>			Select One:		
(Choose from at least 3 areas on GE listing):			RD-205 Design for Industry <b>OR</b>	3	
			ART-101 Fundamentals of Design	3	
			PKG-150 Packaging Fundamentals	2	
			PKG-200 Packaging Materials	3	
<b>IV. Natural Sciences (18 cr.)</b>			PKG-250 Consumer Packaging Systems		
Select one:			PKG-260 Distribution Packaging	3	
CHEM-115 General Chemistry <b>OR</b>	5		PKG-335 Packaging Machinery	3	
CHEM-125 Principles of Chemistry for Health Sci <b>OR</b>	5		PKG-350 Packaging Design & Evaluation	3	
CHEM-135 College Chemistry I	5		PKG-490 Packaging Development	3	
Select one:			PKG-xxx Packaging Co-op	1-2	
PHYS-231 General Physics I AND	4		<b>TOTAL PROFESSIONAL REQUIREMENTS</b>	<b>50</b>	
PHYS-232 General Physics II <b>OR</b>	4		<b>PACKAGING EMPHASIS COMPONENT</b>	<b>15-16</b>	
PHYS-241 College Physics I AND	5		<b>TOTAL PROGRAM REQUIREMENTS</b>	<b>124</b>	
PHYS-242 College Physics II <b>OR</b>	5				
PHYS-281 University Physics I AND	5		<b>Program Approval</b>		
PHYS-282 University Physics II	5				
Environmental Science ( Appr. List)	2		<b>Student</b>	<b>Date</b>	
Elective Science (Appr. List)	3		<b>Advisor</b>	<b>Date</b>	
<b>V. Analytical Reasoning (6 cr.)</b>			<b>Program Director</b>	<b>Date</b>	
MATH-153 Calculus I	4		<b>Associate Dean</b>	<b>Date</b>	
STAT-130 Statistics	2				

# Course Sequencing: B.S. Degree in Packaging

## Freshman Year

Semester I		Semester II	
PKG-150 Packaging Fund.	2 cr	PKG-200 Packaging Materials	3 cr
ENGL-101 Freshman English	3 cr	ENGL-102 Freshman English	3 cr
INMGT-120 Quality Concepts	3 cr	INMGT-200 Prod/Op Mgmt	3 cr
MATH-153 Calculus I	4 cr	SPCOM-100 Fund/Speech	2 cr
xxx-xxx Hum/Soc Science	3 cr	CHEM-xxx Chemistry I	5 cr
HLTH-xxx Health/Wellness	1 cr		
<b>Total</b>	<b>16 cr</b>	<b>Total</b>	<b>16 cr</b>

## Sophomore Year

Semester I		Semester II	
PKG-250 Pkg Consumer Sys	3 cr	PKG-260 Distribution Pkg	3 cr
xxx-xxx Hum/Soc Science	3 cr	xxx-xxx Emphasis Component	3 cr
PHYS-xxx Physics I	4 cr	PHYS-xxx Physics II	4 cr
CADD-112 Engineering Draw	2 cr	ELEC-204 Electronics (or) GCM-141 Dig Prepress Graph	3 cr
MFGT-110 Mfg/Mat Proc I	3 cr		
HLTH-xxx Health/Wellness	1 cr	PKG-100 GE/Technology	2 cr
<b>Total</b>	<b>16 cr</b>	<b>Total</b>	<b>15 cr</b>

## Junior Year

Semester I		Semester II	
PKG-335 Pkg Machinery	3 cr	PKG-350 Pkg Design/Eval	3 cr
xxx-xxx Emphasis Comp.	3 cr	xxx-xxx Emphasis Compon.	3 cr
xxx-xxx Hum/Soc Science	3 cr	MFGT-340 Plastics Processing	3 cr
CADD-234 Comp Aid Draft	2 cr	xxx-xxx Hum/Soc Science	3 cr
BIO-xxx Elective Science	3 cr	RD-205 Design for Industry (or) ART-101 Fund of Design	3 cr
STAT-130 Statistics	2 cr		
<b>Total</b>	<b>16 cr</b>	<b>Total</b>	<b>15 cr</b>

## Senior Year

Semester I		Semester II	
PKG-490 Pkg Development	3 cr	PKG-495 Pkg Seminar	2 cr
xxx-xxx Emphasis Compon	3 cr	ENGL-415 Tech Writing	3 cr
INMGT-300 Eng Econ	3 cr	xxx-xxx Emphasis Component	3 cr
xxx-xxx Hum/Soc Science	3 cr	INMGT-400 Org Leadership	3 cr
SPCOM-xxx Advan. Speech	2 cr	xxx-xxx Hum/Soc Science	3 cr
BIO-xxx Environ Science	2 cr		
<b>Total</b>	<b>16 cr</b>	<b>Total</b>	<b>14 cr</b>

## Bachelor of Science Degree – Packaging

### “Emphasis” Areas:

**RATIONALE:** The diversity of career opportunities within the field of packaging justifies the selection of a supporting emphasis in addition to the technical core of the program. Graduates with a supporting emphasis will be employable in segments of the packaging industry previously denied to them.

**EMPHASIS ALTERNATIVE:** Transfer students and students changing programs will be advised of options to meet their career objectives.

Pkg. Graphics Design:			Package Printing:		
ART-100	Drawing	3 cr	GCM-151	Elec & Convent Prepress	3 cr
ARTH-222	Intro to Art	3	GCM-266	Press Systems	3
	<b>OR</b>		GCM-270	Postpress Op & Dist	3
DES-205	Present Techniques	3	GCM-343	Graph Comm Integ Mfg	3
DES-200	Design Thry & Methods	3	GCM-356	Color Elec Prepress	3
DES-310	Graphic Design I	3	GCM-363	Package Printing	3
DES-360	Graphic Design II	3	GCM-475	Cost Estimating	3
DES-410	Prod & Pkg Graphics	3	PKG-349/449	Packaging Co-op	1-3
PKG-349/449	Packaging Co-op	1-3			
Select 15 cr			Select 15 cr		

**Manufacturing/Quality:**

INMGT-220	Quality Systems	3 cr
INMGT-320	Quality Assurance	3
INMGT-325	Quality Management	3
(Select six (6) credits below):		
INMGT-305	Prod Inven Control	3
INMGT-330	Material Handling	3
INMGT-340	Time and Motion	3
INMGT-350	Facilities Planning	3
BUACT-410	Mfg Cost Analy 3	
PKG-349/449	Packaging Co-op 1-3	
		Select 15 cr

**Business/Sales:**

BUACT-200	Financial Mgr Accounting	3 cr
<b>OR</b>		
BUACT-206	Intro to Financial Account	3
BUMGT-304	Principles of Management	3
BUMKG-330	Principles of Marketing	3
BUMIS-333	Mgmt Info Systems	3
BUMKG-334	Sales & Sales Mgmt	3
Select 15 cr		

**Foods/Packaging:**

FN-240	Food Science	<b>4 cr</b>
FN-342	Advanced Foods	<b>3</b>
FN-350	Food Processing	<b>3</b>
(Select six (6) credits below):		
FN-410	Food Pol Reg & Law	<b>3</b>
FN-442	Basic Sensory Anly	<b>3</b>
FN-450	Food Engineering	<b>3</b>
BIO-406	Food Microbiology	<b>3</b>
CHEM-315	Food Chemistry	<b>3</b>
PKG-349/449	Packaging Co-op	<b>1-3</b>
		Select 16 cr

**Packaging Design, Research & Development:**

MECH-290	Mech of Solids I <b>OR</b>	3 cr
PHYS-331	Statics <b>AND</b>	3
MECH-291	Mech of Solids II <b>OR</b>	3
PHYS-325	Strength of Materials <b>OR</b>	3
PHYS-321	Statics and Strength <b>AND</b>	4
CADD-436	Comp Assist Des Probs	2
MECH-392	Mech of Machinery <b>OR</b>	3
PHYS-333	Dynamics	3
(Select six (6) credits below):		
RD-320	Proto Dev & Model Mak	3
RD-420	Research & Dev <b>AND</b>	2
RD-421	Res & Dev Lab	1
CHEM-341	Chemistry of Materials	4
AEC-458	Wood & Fiber Materials	3
PKG-349/449	Packaging Co-op	1-3
		Select 15 cr

**NOTE: Course prerequisites must be met when making course selections.**

## Undergraduate Courses

In order to read all courses detailed please visit  
[http://www.uwstout.edu/ugbulletin/ug\\_courses.html](http://www.uwstout.edu/ugbulletin/ug_courses.html)

Below only PKG packaging is downloaded.

Undergraduate courses are provided online as separate HTML files, listed by college or school and curricular subject abbreviations. If there is no link, then no undergraduate courses are available in that particular subject.

- [General Education, Ethnic Studies and Global Perspective Requirements](#)  
This document describes the purpose of and outlines the requirements of each of these course categories.
- [Interpreting Course Descriptions](#)  
This document will help you understand the various codes used in the course descriptions that follow.

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### Academic Affairs

- [TRDIS](#) Transdisciplinary

### College of Arts and Sciences

- [APSC](#) Applied Science
- [CAS](#) College of Arts and Sciences
- [WS](#) Women's Studies

### Art and Design

- [ART](#) Art
- [DES](#) Design
- [ARTH](#) Art History

### Biology

- [BIO](#) Biology

### Chemistry

- [CHEM](#) Chemistry

### English and Philosophy

- [ENGL](#) English
- [LIT](#) Literature
- [LOG](#) Logic
- [PHIL](#) Philosophy

### Mathematics, Statistics and Computer Science

- [CS](#) Computer Science
- [MATH](#) Mathematics
- [MSCS](#) Mathematics, Statistics and Computer Science
- [STAT](#) Statistics

### Physics

- [PHYS](#) Physics

### Social Science

- [ANTH](#) Anthropology
- [ECON](#) Economics
- [GEOG](#) Geography
- [HIST](#) History
- [POLS](#) Political Science
- [SOC](#) Sociology
- [SOCWK](#) Social Work

### Speech Communication, Foreign Languages, Theatre and Music

- [FREN](#) French
- [SPAN](#) Spanish
- [CHIN](#) Chinese
- [GER](#) German
- [HMON](#) Hmong
- [RUS](#) Russian
- [MUSIC](#) Music
- [SPCOM](#) Speech Communication
- [THEA](#) Theatre

### College of Human Development

- [CHD](#) College of Human Development
- [SRVM](#) Service Management

### Food and Nutrition

- [FN](#) Food and Nutrition
- Hospitality and Tourism**
- [HT](#) Hospitality and Tourism
- Human Development and Family Studies**
- [HDFL](#) Human Development and Family Living
- Physical Education and Athletics**
- [HLTH](#) Health
- [PE](#) Physical Education and Athletics
- Psychology**
- [PSYC](#) Psychology
- [MFT](#) Marriage and Family Therapy
- Rehabilitation and Counseling**
- [COUN](#) Counseling
- [REHAB](#) Vocational Rehabilitation
- College of Technology, Engineering and Management**
- [CTEM](#) College of Technology, Engineering and Management
- [SRVM](#) Service Management
- Apparel and Communication Technologies**
- [APRL](#) Apparel Design/Manufacturing
- [GCM](#) Graphic Communications Management
- [MEDIA](#) Media Technology
- [TCS](#) Telecommunication Systems
- [TECH](#) Technology
- Business**
- [BUACT](#) Business Accounting
- [BUINB](#) Business International Business
- [BULGL](#) Business Legal
- [BUMGT](#) Business Management
- [BUMIS](#) Business Management Information Systems
- [BUMKG](#) Business Marketing
- [BURTL](#) Business Retail
- Engineering and Technology**
- [CADD](#) CADD/Drafting
- [ELEC](#) Electricity/Electronics
- [MECH](#) Engineering Mechanics
- [MFGE](#) Manufacturing Engineering
- [MFGT](#) Manufacturing Technology
- [PKG](#) Packaging
- [POWER](#) Power
- [RD](#) Design, Research and Development
- [TRANS](#) Transportation/Energy
- Military Science**
- [MSL](#) Military Science and Leadership
- Operations, Construction and Management**
- [AEC](#) Architecture, Engineering and Construction
- [INMGT](#) Industrial Management
- [RC](#) Risk Control
- [TRHRD](#) Training and Human Resource Development
- School of Education**
- [ARTED](#) Art Education
- [CTE](#) Career and Technical Education
- [ECE](#) Early Childhood Education
- [EDUC](#) Education
- [FCSE](#) Family and Consumer Sciences Education
- [MEBE](#) Marketing Education/Business Education
- [SCOUN](#) School Counseling
- [SPED](#) Special Education
- [SPSY](#) School Psychology
- [TECED](#) Technology Education

# PKG Packaging

## **PKG-100 Packaging and Society** (2 cr.)

TECH GLP Fall and Spring

A broad overview of the importance of packaging in society. Introduction to packaging and its interrelationship to multiple disciplines including impact on people and the environment.

## **PKG-150 Packaging Fundamentals** (2 cr.)

Fall and Spring

Relationship to marketing and consumer behavior, control through legal and industrial regulations, function within larger organization, roles of professional engineer, packages and their function.

## **PKG-200 Packaging Materials** (3 cr.)

Fall and Spring

Origin, composition, properties and application of packaging materials; lab work in packaging and materials testing methods.

Prerequisite: take PKG-150.

## **PKG-250 Consumer Packaging Systems** (3 cr.)

Fall and Spring

The study of packaging from the design concept through production. Lab work on structural design, sample making, and machine operation. Discussions on standard packages and their applications.

Prerequisite: take PKG-200.

## **PKG-260 Distribution Packaging** (3 cr.)

Fall and Spring

Packaging systems to support the distribution functions. Topics will include shipping containers, palletizing, unitizing, barrier problems, marking and coding for shipment, freight regulations, military specifications and hazardous materials regulations.

Prerequisite: take PKG-200.

## **PKG-335 Packaging Machinery** (3 cr.)

Spring

Weighing, forming, filling, sealing, cartoning, capping, labeling, wrapping, casing, uncasing, palletizing/depalletizing machines as applies to the functional capabilities of speed, materials, containers, and operating functions.

Prerequisite: take PKG-200.

## **PKG-350 Packaging Design and Evaluation** (3 cr.)

Fall and Spring

Chemical and physical protection problems; materials, structure, graphics and regulations in package design; shock and vibration forces in package evaluation; practical applications of evaluation using electronic instrumentation.

Prerequisite: take PKG-250 and PKG-260.

## **PKG-489 Business and Industry Internship** (1-8 cr.)

Fall and Spring

Off-campus work and study in student's area of concentration; approved salaried position with cooperating company for a semester or summer session. Junior level or higher. **R**

## **PKG-490 Packaging Development** (3 cr.)

Fall and Spring

Applications of packaging functions: developing a product's complete packaging system, from final production of product to consumer.

Prerequisites: take PKG-350.

## **PKG-495 Packaging Seminar** (2 cr.)

Fall and Spring

Current packaging problems or developments (subject based on students' interests and current issues).

## Advanced Degree Programs

Bachelor of Science degree in Packaging

College of Technology, Engineering and Management • University of Wisconsin-Stout

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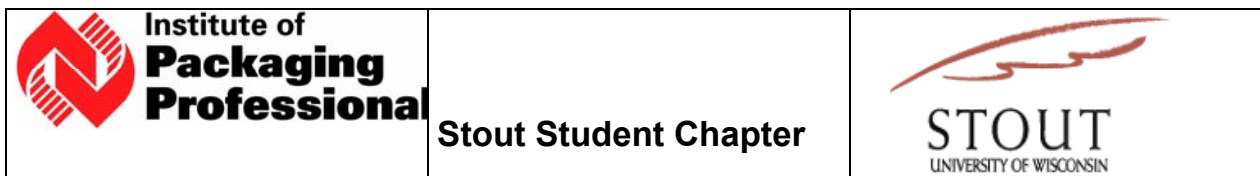
### [M.S. degree in Food and Nutritional Sciences --](#)

Food Packaging Concentration

University of Wisconsin-Stout

### [M.S. degree in Management Technology](#)

University of Wisconsin-Stout



To learn more please visit <http://iopp.uwstout.edu/>

### Our Goals

We the Executive board were selected by the Stout chapter, of the Institute of Packaging Professionals, to help facilitate the social and professional growth of the group as a whole. We will strive to make all possible attempts to obtain insight and generate interest, provide educational opportunities, and represent Stout IoPP with as much enthusiasm as possible.

It is our intention to make the University of Wisconsin Stout student chapter, the best chapter in the country.

To do this we will strive to plan activities and opportunities for Stout members with the goal of becoming the best possible professionals we can be.

Revised: April 2003

## INSTITUTE OF PACKAGING PROFESSIONALS

### Stout Student Chapter Constitution

#### ARTICLE 1: GROUP NAME

The name of the organization shall be the Institute of Packaging Professionals – Stout Student Chapter (IoPP-SSC).

#### ARTICLE 2: AFFILIATION

The Institute of Packaging Professionals – Stout Student Chapter shall be affiliated with the Institute of Packaging Professionals – Minnesota Chapter.

#### ARTICLE 3: PURPOSE

The purpose of this Institute is to be of service to the Packaging Major and Students and to promote the Institute of Packaging Professionals – Minnesota Chapter.

#### ARTICLE 4: MEMBERSHIP

##### Section I: ASSOCIATION MEMBERSHIP

Membership in IoPP-SSC shall be open to all persons. Voting membership shall be open to all paid members of IoPP-SSC.

##### Section II: APPLICATION

Application for new membership shall require designated application dues.

##### Section III: DUES

Dues shall be twenty dollars (\$20.00) per semester or thirty dollars (\$30.00) annually. This fee includes national membership.

##### Section IV: HONORARY MEMBERSHIP

Part 1: Faculty members and any other person in the packaging field shall be eligible for honorary membership.

Part 2: Honorary members shall be elected by a simple majority vote.

Part 3: Honorary members shall have a voice, but no vote in the IoPP-SSC.

##### Section V: ADVISORS

IoPP-SSC shall have one advisor with voting rights in the event of a tie as approved by the Executive Board.

#### ARTICLE 5: OFFICERS

##### Section I: OFFICERS

The elected officers of the IoPP-SSC shall be the President, Vice-President, Treasurer, Secretary, Publicity/Membership, Events Coordinator, Fundraising, Web Master, and Assistant Web Master.

##### Section II: RESPONSIBILITIES

Part 1: The duties of the President shall be, but are not limited to:

A. Chair all the meetings of the IoPP-SSC

B. Enforce due observation of the constitution

C. Oversee all program committees

D. Create Agendas for all Executive Board and General meetings

E. Maintain a relationship with the National Chapter of IoPP

F. Maintain a relationship with the Minnesota Chapter of IoPP

G. Forward relevant information from the University to the Executive Board

H. Organize and run annual election of officers

Part 2: The duties of the Vice-President shall be, but are not limited to:

- A. Chair the meetings of the IoPP-SCC in the absence of the President
- B. Provide organizational leadership when the President is out
- C. Assist the President with various tasks
- D. Arrange and Contact speakers for the IoPP-SCC meetings

Part 3: The duties of the Secretary shall be, but are not limited to:

- A. Record and report the proceedings of all General and Executive Board meetings
  - a. Keep one copy of each minutes in the "IoPP Secretary" binder
  - b. E-mail a copy of the Executive board minutes to the Executive Board and advisor after each meeting
  - c. E-mail a copy of the General Meeting minutes to the Webmaster after each meeting so that he can put them on the web page
- B. Post all minutes in designated locations
  - a. On IoPP board outside room 128 AA
  - b. On cork board in hallway outside of teachers offices
- C. Write formal thank-you letters for all speakers and trips

Part 4: The duties of the Treasurer shall be, but are not limited to:

- A. Administer the finances of the IoPP-SCC
- B. Keep an accurate account and record of the IoPP-SCC Checking, Savings, and SSA Accounts
- C. Write up and organize the annual budget for the Stout Student Association (SSA) budget hearings (This will happen in the Fall Semester only)
- D. Collect and keep record of all dues paid by members
- E. Have the IoPP checkbook at all IoPP-SCC meeting and pay for the food at the meetings
- F. Reimburse board members of expenses. Reimbursement is only plausible with documentation of purchase
- G. Keep a receipt book, one receipt shall be for the party with whom the business is conducted and one receipt for the Treasures permanent records

Part 5: The duties of the Publicity/Membership shall be, but are not limited to:

- A. Post signs and notices for the IoPP-SCC for their upcoming events and speakers at least two weeks in advance
- B. Take roll and keep a record of attendance for all meetings. Attendance for the general meeting should be copied and distributed to all of the Packaging teachers mailboxes

Part 6: The duties of the Events Coordinator shall be, but are not limited to:

- A. Plan and organize all events for the IoPP-SCC. This includes social and educational events. Pack Expo and the student Jamboree included.
- B. Order all food for meetings and/or work with the company so that food will be provided for the meeting
- C. Responsible for overseeing all community service activities. (The Holiday Giving Tree, Ect...)
- D. Work with the Vice-President in finding companies to come and speak at meetings

Part 7: The duties of the Fundraiser shall be, but are not limited to:

- A. To organize and carry out all fundraising events for the IoPP-SCC. It is required to have several within an academic year

Part 8: The duties of the Web Master and Assistant Web Master shall be, but are not limited to:

- A. To keep the IoPP-SSC web page up to date with current information and graphics. This includes changing the meeting minutes as necessary so that the members may stay informed.
- B. Take care of the mass e-mails. This includes keeping the list up to date with the correct e-mails and sending e-mails out when necessary to keep the people informed
- C. Update the web page as necessary
- D. Work with other board members to obtain accurate information for the web page
- E. Work with the Assistant Webmaster so that they are informed as to what is going on and can fill your position as necessary

Part 9: The duties of Every Executive Board member shall be, but are not limited to:

- A. To attend all IoPP Events, Meetings, and Social Functions

This includes, but is not limited to:

- a. General Meetings
- b. Executive Board Meetings
- c. Social Events
- d. Pack Expo
- e. Student Jamboree
- B. Keep the webmaster informed so that he/she may post all information on the IoPP web site

### Section III: **NOMINATIONS OF OFFICERS**

Nominations of officers for the IoPP-SCC are open to any voting member of the Institute who has been a member for at least one semester and has an all-university grade point average of 2.25 or above.

### Section IV: **ELECTION OF OFFICERS**

Part 1: Election of officers shall take place at a designated meeting at the end of the semester. New officers shall take office after the last meeting of the semester.

Part 2: Election of officers shall be made by a simple majority of the votes. The candidate receiving the greatest number of votes for each position shall be elected.

Part 3: The new officers shall remain in office until the completion of their elected term, except in cases of resignation or removal from office.

#### **Section V: THE EXECUTIVE BOARD**

Part 1: The Executive Board shall consist of the elected officers and one IoPP-SCC Advisor.

Part 2: The Executive Board shall carry out Institute business not requiring voting action by the entire membership.

Part 3: The Executive Board shall meet at least once a month to conduct Institute business. The board shall not carry out action unless at least five Executive Board members are present. At least one of the five members has to be the President and/or Vice-President.

Part 4: After elections have been held at the end of the year for the next year's Executive Board, there shall be a "Hand-Down" meeting. At this meeting the two Executive Board will meet and discuss procedures and what is expected of the new Executive Board. Also, each position will meet with the newly elected for that position and go over the details for that specific position.

#### **Section VI: REMOVAL OF OFFICERS**

Part 1: Officers who are absent twice without sufficient cause stated before the absence, to the President or Vice-President, or who are derelict in their duties may be voted out of office.

Part 2: A vote of five Executive Board members shall impeach and remove any Executive Board member with just cause provided that the member has been given written notice of the charges and an opportunity to defend him/herself.

#### **Section VII: FILLING VACANCIES**

Part 1: When vacancy occurs in an elected office, a successor shall be elected as soon as possible according to the rules of Article 5, Sections III and IV. There is an exception to this rule if the Positions of President or Webmaster becomes vacant (See Part 2).

Part 2: If the position of President becomes vacant then the Vice-President has the option to accept the position of President before the rules of Article 5, Sections III and IV take place. This is also true if the position of Webmaster becomes vacant. The Assistant Webmaster may accept the position before the rules of Article 5, Sections III and IV take place.

#### **ARTICLE 6: QUORUM**

Part 1: A quorum is not required to conduct a meeting, but a quorum is required to vote.

Part 2: A quorum shall consist of one-third (1/3) of the total membership.

Part 3: A vote shall consist of a member who fulfills all membership requirements.

#### **ARTICLE 7: PARLIAMENTARY AUTHORITY**

The parliamentary authority to conduct IoPP-SCC meetings shall be Robert's Rules of Order, Revised, unless otherwise stated in the constitution.

#### **ARTICLE 8: AMENDMENTS**

Amendments to this constitution shall:

- A. Be in writing
- B. Be read and discussed at an Executive Board meeting
- C. Have at least a five person vote in favor for adoption



R.I.T

# Rochester Institute of Technology

## Packaging Science



Department of Manufacturing & Mechanical  
Engineering Technology/Packaging Science

[http://www.rit.edu/~932www/ugrad\\_bulletin/colleges/cast/packsci.html](http://www.rit.edu/~932www/ugrad_bulletin/colleges/cast/packsci.html)

Packaging  
Science

<http://www.rit.edu/~703www/>

### **Program Overview**

The curricula offer broadly based programs, covering every aspect of protective packaging, including development/design, testing, marketing and production. Related legal, economic, and environmental concerns are also addressed. Students choose from three options and take coursework in College of Science, Business and Liberal Arts, and can specialize through technical electives. The options are:

**Technical Option:** Students interested in engineering or science can prepare for careers as packaging engineers, packaging scientists, research analysts or packaging development specialists by selecting this option.

**Management Option:** Students interested in project management, purchasing, sales and marketing can prepare for careers in packaging development, project coordination or customer technical sales and service through this option.

**Printing Option:** Students may take concentrated study in printing by means of this program option. The program prepares them to especially consider the impact of printing requirements on packaging development for all applications of packaging.

### **BS DEGREE**

#### **Course Descriptions for Packaging Science**

##### **0607-200 New Student Seminar**

An introduction to RIT and the department of packaging science. Course covers the basics of the packaging profession. **Class 1, Credit 1**

##### **0607-201 Principles of Packaging**

An overview of packaging: the historical development of packaging; the functions of packaging; and the materials, processes and technology employed to protect goods during handling, shipment and storage. A brief review of container types, package design and development, and research and testing are presented, along with information about economic importance, social implications and packaging as a profession. **Class 4, Credit 4.**

##### **0607-202 Packaging Science Freshman Seminar II**

Continuation of new student seminar. **Credit 1.**

##### **0607-210 TM & D Skills Seminar**

A beginning course for students interested in pursuing a career in technical sales. The student is introduced to seasoned technical sales professionals, traditional and TQM sales organizations, and different styles of selling. Students learn what strategies are important for a successful career in technical sales. **Class 2, Credit 2**

##### **0607-301 Engineering Design Graphics**

A basic course in engineering drawing. Topics include, but are not limited to, lettering, line quality, use of instruments, free-hand sketching, orthographic projections, pictorials, sections, auxiliary views and dimensioning. Students learn how drawing is accomplished using a computer-aided drafting (CAD) application package. Drawing assignments required, concentrating on packaging applications. **Class 3, Lab 2, Credit 4**

##### **0607-302 CAD Drawing**

A course in advanced computer-aided drafting (CAD). Drawing assignments required, concentrating on packaging applications. (0607-301) **Class 1, Lab 4, Credit 3**

##### **0607-311 Packaging Materials I**

The manufacture, physical and chemical properties, and uses of common packaging materials. Emphasis is on metals and plastics used in packaging and on adhesives, propellants and other component materials. (0607-201) **Class 4, Credit 4**

### **0607-312 Packaging Materials II**

The manufacture, physical and chemical properties, and uses of common packaging materials. Emphasis is on paper, paperboard, wood, glass and pressurized packaging used in packaging applications (0607-201) **Class 4, Credit 4**

### **0607-313 Methods of Evaluation**

Information about recognized standard testing procedures is presented, and students gain practical experience in the operation of various commonly used testing instruments that determine physical properties of fiber, metal, plastic and glass packaging materials. (0607-201, 311, 312) **Class 1, Lab 4, Credit 3**

### **0607-321 Rigid Containers**

A detailed study of primary packages. History, manufacturing processes characteristics and applications for containers in direct contact with the product. Structural design, chemical compatibility and suitability of container for intended use are analyzed for basic container types. Students practice structural design and testing of prototype containers. Primary emphasis is on rigid paperboard, glass, plastic and metal containers. (0607-301, 311, 312) **Class 3, Lab 2, Credit 4**

### **0607-322 Flexible Containers**

Corollary course for 0607-321. Primary emphasis is on flexible paper, foil, plastic and laminated materials and on selected processing techniques. Topics to include folding cartons, heat seal technology and test methodologies, permeability theory, modeling and empirical testing. (0607-301, 311, 312) **Class 3, Lab 2, Credit 4**

### **0607-341 Computer Applications**

Application of computer techniques for packaging. Review and analysis of current computer software packages for packaging and packaging-related applications, including design, optimum sizing, prototyping, simulation and specification preparation. (0607-321, 322) **Class 3, Lab 2, Credit 4**

### **0607-401 Career Seminar**

Career opportunities in packaging science; methods and procedures used in obtaining co-op and entry-level positions. Career advancement within the corporate organization; job changes. (Recommended end of second year, prior to co-op) **Class 1, Credit 1**

### **0607-420 Technical Communication**

Introduction to the principles of effective written technical communication for the packaging professional. Topics include memos, business letters, summary activity reports, technical proposals and research papers. Open only to packaging majors and required as part of the packaging program's writing skills certification process. A grade of C or better is required. (0504-225, 226 and 0607-321, 322) **Class 4, Credit 4**

### **0607-431 Packaging Production Systems**

A study of package forming and filling, closing, product/package identification, inspection and other machinery commonly used in packaging, plus consideration of handling and storage/retrieval systems. Students become aware of project management techniques, setting timelines, critical path and resource evaluation. Quality issues are integrated into line and machinery designs. Students gain practice in setting up complete production lines for packaging various products. (0607-321, 322) **Class 4, Credit 4**

### **0607-432 Packaging for Distribution**

An exploration of different shipping, storage and use environments common to various products and packages. Structural design of shipping containers for product physical protection and methods for testing and predicting package performance are studied. (0607-321, 322) **Class 2, Lab 4, Credit 4**

### **0607-433 Packaging for Marketing**

The interrelationship between packaging and marketing, detailing how the retail consumer package can be used as a marketing tool. Concentrates on a systematic approach to developing an optimum package for a given product to meet the demands of the retail market. Advertising, marketing demographics and the impact of color upon packaging are considered. Students gain practice in the development of a complete package system. (0607-431, 432) **Class 4, Credit 4**

### **0607-462 Packaging Regulations**

A detailed study of federal, state and local regulations that affect packaging. History of the development of packaging law; detailed study of recent packaging regulations, including the Fair Packaging and Labeling Act and the Poison Prevention Packaging Act; consideration of Food and Drug Administration regulation of packaging, including requirements for tamper-evident packaging; hazardous materials packaging regulations administered by the Department of Transportation; freight classifications, freight claims; weights and measures law; consumer product safety law; environmental law; and patent, trademark and copyright law as they apply to packaging. (0607-431, 432) **Class 4, Credit 4**

### **0607-485 Principles Shock & Vibration**

A study of the factors involved in analyzing potential damage to packaged items resulting from impact or vibration forces. Students are expected to master basic mathematical and physical concepts and to use various pieces of testing equipment. (0607-432) **Class 2, Lab 4, Credit 4**

### **0607-499 Packaging Co-op Work Block**

One quarter of appropriate work experience in industry. Two quarters of co-op experience are required. (0607-321, 322) **Credit 0**

### **0607-510 Introduction to Electrostatics**

An introduction to the factors involved in understanding and controlling electrostatic phenomena and protecting sensitive devices from ESD and other waveforms. Evaluation and analysis of protective materials and performance standards are taught, as well as equipment operation and evaluation procedures. (0607-322, 1017-211) **Class 4, Credit 4**

### **0607-520 Packaging Management**

A study of packaging organization in the contemporary corporation and project management techniques available to the packaging manager. Organization theory is discussed and compared with typical industry practice. Other topics include PERT,

value analysis and the impact of regulatory agencies upon packaging from a management standpoint. (0607-321, 322) **Class 4, Credit 4**

**0607-524 Packaging Economics**

A study of firm behavior with concentration on production costs and revenues. Market structures are analyzed in order to develop an understanding of how packaging fits into the general economy. Students are instructed in the use of basic economic reference materials for research purposes. A paper is required. (0607-321, 322) **Class 4, Credit 4**

**0607-530 Packaging and the Environment**

Consideration of packaging in a social context. Factors that enhance secondary use, recycling, recovery of resources and proper disposal are discussed. Package design in relation to solid waste disposal and materials and energy shortages are considered. Other topics of current social interest are discussed. Primarily a discussion class for senior students. Open to non-majors. (0607-321, 322 or equivalent) **Class 4, Credit 4**

**0607-531 Packaging Process Control**

An advanced course designed to give packaging students instruction in design, process and quality control techniques for packaging applications. Topics include the concepts of zero defects, computer applications for control charts and acceptance sampling. (0607-321, 322 and 1016-319 or equivalent) **Class 4, Credit 4**

**0607-536 Medical Products Packaging**

Study of unique requirements for pharmaceuticals and packaging materials and containers for sterilized devices. Current sterilization techniques, impacts on material properties and distribution requirements are considered for this specialized product group. FDA regulations for product development and manufacturing GMP's are addressed. (0607-321, 322) **Class 3, Lab 2, Credit 4**

**0607-555 Military & Export Packaging**

Study of the particular forms and requirements for packaging for the military and export environments. Preservation techniques, military specifications, crates and large export containers, construction techniques, the export handling and transportation environment, and related topics. (0607-485) **Class 3, Lab 2, Credit 4**

**0607-568 Food Preservation & Packaging**

Study of food products, common methods of processing and preservation, impact on quality and nutritional value of the product, and the relationships with common packaging methods and distribution practices. (0607-321, 322) **Class 3, Lab 2, Credit 4**

**0607-570 Point-of-Purchase Display**

An interdisciplinary course considering the unique requirements for display packaging at the retail point of purchase. The retail store environment, display techniques, customer motivation, product tie-ins, construction techniques, production and distribution requirements, product promotion and point-of-purchase support materials and activities, design and printing of point-of-purchase displays. (An interdisciplinary, senior elective for students in packaging, packaging design, marketing, retailing and printing.) (0607-433; or equivalent) **Class 3, Lab 2, Credit 4**

**0607-575 Technical Skills for Professional Sales**

Introduction to a systematic problem-solving methodology in the sales profession. The core of the course explains the systematic 13 steps that lead to professional sales success. The rationale for each step is thoroughly explained, as are the procedures for implementing it. This course is required for all entering TM&D students. (0607-321, 322) **Class 4, Credit 4**

**0607-577 Packaging Internship**

This course number is used by students in the packaging science program for earning internship credits. The number of credits and the nature of on-location experience is determined by the student's advisor, subject to approval of the department. **Credit variable 1-8**

**0607-590 Senior Thesis**

An in-depth study of a selected phase of packaging that enables the student to make use of the knowledge and skills acquired during the course of the program. **Credit 4**

**0607-598 Independent Study**

Independent study, in consultation with the instructor, on any packaging-related topic. (Independent study total credit allowed is limited to a maximum of 8 credits) **Credit variable 1-4**

**0607-599 Independent Study**

Independent study, in consultation with the instructor, on any Packaging-related topic. (independent study total credit allowed is limited to a maximum of 8 credits) **Credit variable 1-4**

Adam Dickinson, Rochester, NY

"Having a co-op program really helps to use the skills you have gained at RIT, and also to learn some new skills. All of the packaging professors have a wide range of knowledge and experience to bring to the program. Both RIT and the co-op program give you many skills to be successful in industry."

## Packaging Science MS Degree:

- [Traditional Program](#)
- [Executive Leader Program](#)

With the rapid advancement in new packaging materials and containers, packaging professionals need to become better educated in this dynamic field. Our program provides an opportunity to learn the skills necessary to enter the work force, apply new knowledge to your current job, or prepare you for career advancement or change.

### Opportunities

RIT's master's degree programs in packaging science are designed to enhance your employment opportunities in the multi-billion dollar packaging industry.

Graduate students will examine the procedures for developing new, improved packages; test the physical and chemical properties of materials; and learn the economic and legal aspects of packaging and current application of computer-based technology. Structural design is learned through making and testing sample containers in the department's advanced testing facilities. Programs reflect departmental awareness of the energy, environmental, ecological impacts of packaging technical development, and our faculty members have long been proponents of rational package design. Graduates from the department are hired in areas such as package design and development, testing, production, research, marketing, new business development, sales, technical services, purchasing, and quality assurance.

### Faculty

The faculty in RIT's Packaging Science program are experts who love to teach. To prepare graduate students for top careers in the packaging industry, they offer the nation's most advanced knowledge and skills. They are committed to meeting educational needs while offering individual guidance to each student.

Daniel L. Goodwin, Ph.D., MS, BS Michigan State University

Deanna M. Jacobs, MA SUNY Geneseo, MS, BS Rochester Institute of Technology

Karen L. Proctor, MBA Rochester Institute of Technology, BS Michigan State University

Fritz Yambrach, MBA, BS Utah State University, BS Michigan State University

### Adjunct Faculty

The faculty is supported by a pool of excellent industry practitioners:

*Beth Aubry*, BS, Rochester Institute of Technology

*Lesley Bates*, BFA, Rochester Institute of Technology

*Craig E. Densmore*, MS, BS Rochester Institute of Technology

*James W. Jacobs, Jr.*, Ph.D. University of Buffalo, MS Troy State University

*James Myers*, Ph.D. Michigan State University, MS, BS, Rochester Institute of Technology

*Stephen R. Pierce*, MS, BS Michigan State University

*Lisa Talty*, MBA, BS Rochester Institute of Technology

*Dennis Young*, Dennis Young and Associates, Inc., BS Michigan State University

*Damon Revelas*, Ph.D. University of Buffalo, Ms Rochester Institute of Technology

*William Wynkoop*, BS, Rochester Institute of Technology

### Facilities

The Packaging Science program at RIT has one of the most extensive university packaging facilities in the United States. Facilities include a state-of-the-art packaging dynamics laboratory; a fully-equipped packaging materials and container development and testing laboratory; a computer lab with ArtiosCAD, Adobe Illustrator, AutoCAD, Solid Works, CAPE, and TOPS; an environmental exposure lab with a temperature-and-humidity-controlled walk-in cabinet; permeability testing; plastics fabrication and testing laboratory.

## TRADITIONAL MASTER OF SCIENCE PROGRAM

The graduate program in packaging science allows students with diverse undergraduate educational backgrounds to continue their studies at a more intensive level and earn a master's degree in an exciting field of study.

The graduate curriculum includes packaging core courses, electives and a research component. Students in the MS program must complete 48 credits of graduate-level work.

Core courses: A minimum of 20 credit hours, including Research Methods and any four of the following courses:

Packaging Administration, Advanced Packaging Economics, Distribution systems, Legal Environment, Packaging for End-Use, Packaging Dynamics, Advanced Computer applications, Advanced Package Design, and Advanced Food Packaging.

Elective courses: Students must take at least 16 elective credits selected in consultation with their advisors. Courses can be from packaging science selections or from other synergistic disciplines such as printing, service management, statistics and product design.

Research: Students must prepare and defend a 12-credit thesis.

### Admission

The traditional graduate program is designed to admit applicants who have earned, from an accredited college or university, a bachelor's degree in packaging science or a related area. Students from non-packaging disciplines will be required to successfully complete a bridging program that will encompass the subjects of packaging materials, containers, marketing and distribution of products.

Applicants must have maintained a 3.0 grade point average in their last two years of undergraduate study. In designated cases Graduate Records Examination and TOEFL might be required. For more information see [www.rit.edu/admissions](http://www.rit.edu/admissions)

## **NEW FORMAT! EXECUTIVE LEADER MASTER OF SCIENCE**

Meeting the needs of our colleagues by providing a quality program through a new blended delivery format! This is the only accelerated graduate program in packaging science delivered both on campus and on line!

Beginning with our summer 2004 cohort we started offering RIT's Executive Leader Master of Science degree in packaging science in a blended delivery format. The blended program will consist of four courses during two 2-week summer sessions, four courses on line and an independent research project. For the prepared and focused individual this program can be completed within fourteen months. It is designed to enhance the career development of individuals who have had at least five years of work experience related to the packaging industry.

Our colleagues – past, current, and future – have expressed an interest in a blended format. This format will provide individuals an opportunity to pursue professional development by optimizing the amount of time needed to travel and minimizing lengthy absences from work. Yet colleagues still have an opportunity to develop face-to-face relationships with other members of their cohort and the instructors.

The program will be “book ended” with the on campus aspects of the program. In June, of the first summer, colleagues will begin their program at RIT (Session I), meet their cohort and instructors (as well as colleagues from other Executive Leader programs) and take and complete two courses.

After completing four courses on line (Session II-III), over the next four quarters, the colleagues will return in August of the second summer to complete the last two courses (Session IV) on campus, defend their theses, and participate in commencement. Course offerings should be completed within 14 months.

Session I for 2005 begins June 6-17, 2005. Please contact [Deanna M. Jacobs](#) for more information

### **Colleagues**

The Executive Leader program in packaging allows colleagues with diverse educational backgrounds and a variety of professional career experiences to study at an intensive level. For packaging professionals already working in the field, the program may enhance career development and provide opportunity for concentrated study in areas of special interest.

For graduates of related disciplines, or individuals working in packaging-related areas, the program offers an exciting opportunity to develop new skills to enhance career development or provide the knowledge base for working with packaging professionals on a continuing basis.

### **Admission Criteria**

- A four-year baccalaureate degree from an accredited college or university
- An undergraduate GPA of 3.0 or higher on a 4.0 scale. (A GPA lower than 3.0 will be considered, given superior endorsements, GRE scores and length of time since the candidate's graduation)
- A minimum of five years experience in the packaging (or related) industry required, seven years experience or more preferred
- Test of English as a Foreign Language (TOEFL) with minimum score 550 paper based (213 computer based) required for students whose native language is not English

### **Prerequisite Skills**

These skills are required for all entering Executive Leader colleagues and may be waived based on undergraduate, graduate, or work experience:

- Computer Literacy – knowledge of basic software tools (word processing, spreadsheets, data bases, etc.) and their applications
- Descriptive Statistics – basic descriptive statistics skills

### **Curriculum**

The Executive leader program in Packaging Science requires 48 hours of graduate credit. The basic curriculum is comprised of eight required graduate courses in packaging, plus completion and oral defense of a graduate thesis project. Colleagues can receive up to 10 graduate credit hours for their professional career-related experience or transfer credit from another accredited college or university. Credit to be granted will be determined after a portfolio review of the candidate's work by the program chair.

### **Course Offerings**

#### **Summer 2005**

June (Session I) – Packaging for End Use and Packaging Dynamics

#### **Summer 2005-Spring 2006**

On-line courses (Session II-III) – Research Methods, Packaging Economics, Leadership/Administration, Advanced Computer Applications

#### **Summer 2006**

August (Session IV) – Advanced Distribution and Legal Environment

### **Core Courses**

Core graduate courses are built around the skills and theory necessary to stay current in the dynamic packaging field. Course content will include:

- Methods and requirements for completing a research project and crafting a quality research document
- Design and development of packaging systems and the regulations and economics affecting them

- Current computer applications related to design, testing, and delivery of packaging systems
- The study of the distribution environment, including the instrumentation systems used to evaluate the dynamics of the shipping environment, and its influence on packaging design and development
- The professional leadership functions necessary for organizational excellence and strategies of continuous learning organizations and opportunity management

**Graduate Project**

The graduate project is required of all colleagues. Topics should reflect the candidate’s training as well as his or her professional career experiences and interests. The final project will be completed during the year between summer sessions under the guidance of a faculty member. The final project and oral presentation are required at the beginning of Session IV.

**Graduation Requirements**

To earn the MS Packaging Science degree, Executive Leader students must:

- Complete a minimum of 48 credit hours (36 of which must be earned through RIT)
- Maintain a cumulative grade point average of 3.0 (B) or better
- Complete a final project

Faculty & Staff



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 Shauna Newcomb  
 Dennis Young  
 Craig Densmore  
 Beth Mascone  
 Bill Lynkoop

# Executive Leader Program

## *Karen Proctor, Program Chair*

The interdisciplinary packaging science program, leading to the bachelor of science degree, provides educational opportunities for men and women seeking careers in the multifaceted packaging industry. Graduates are prepared for initial employment in such areas as package development, sales, purchasing, structural design, production, research, and marketing.

The program was developed as a result of a close and long-established relationship between the packaging industry and RIT. The multibillion-dollar industry exhibits dynamic growth and provides employment for many thousands of men and women with wide-ranging skills and expertise.

Packaging is increasingly related to total marketing concepts; it has even greater dependence on new developments in materials and processes. Therefore, the industry requires management personnel with creativity and strong backgrounds in business, engineering, and science.

### **Program educational objectives**

Graduates from the packaging science program will demonstrate:

- A professional work ethic and commitment to lifelong learning through the clear ability to achieve increasing technical and/or management responsibility.
- Ability to lead and participate in teams that act as change agents and innovators in the packaging field and related organization.
- Ability to design effective and efficient new packaging systems, as well as improve the performance of existing packaging systems.
- Ability to communicate at all levels of the organization and articulate the economic and organizational importance of packaging to companies.

### **Program characteristics**

The program is:

1. **Career oriented**-graduates are ready to enter directly into a position of responsibility
2. **Interdisciplinary**-students become familiar with the many facets of packaging through courses in several RIT colleges
3. **Flexible**-offering three options (management, technical and printing) with ample opportunity for electives according to interest
4. **Representative of industry needs**-content developed with the assistance of an industry advisory board, consultants from the industry and educational specialists
5. **Adaptable to a modified cooperative plan**-scheduled at the student's convenience, following development of appropriate skills.

### **Transfer admission**

Transferring into the program with advanced standing is particularly advantageous, since RIT has had many years of experience in assimilating graduates of two-year colleges into its programs and moving them directly into a chosen career field. Some candidates now in four-year colleges will find in the packaging science program a career opportunity with outstanding potential. Courses for associate degree holders (AA, AS, AAS) are arranged to meet program requirements and to correct deficiencies resulting from work taken at other institutions not offering the courses required for graduation. With a selective choice of electives, graduates of two-year colleges find it possible to complete the packaging science curriculum in two additional years at RIT.

### **Principal field of study**

The principal field of study is defined to be all courses in the packaging science department, as well as the required courses in the College of Science (for the technical option), colleges of Business and Science (management option), and colleges of Science and Imaging Arts and Sciences (printing option). Matriculated students not maintaining a 2.0 cumulative grade point average in their principal field of study are subject to academic probation or suspension, according to Institute policy.

## Packaging science—Management Option, BS degree, typical course sequence

<i>First Year</i>	<i>Quarter Credit Hours</i>
New Student Seminar I, II 0607-200, 202	2
Principles of Packaging 0607-201	4
Engineering Design Graphics 0607-301	4
Packaging Materials I, II 0607-311, 312	8
Survey of General Chemistry & Lab 1011-201, 205	6
Survey of Organic Chemistry & Lab 1011-202, 206	5
Algebra for Management Science 1016-225	4
Calculus for Management Science 1016-226	4
Liberal Arts (Foundation)*	12
Physical Education†	0

### *Second Year*

Methods of Evaluation 0607-313	3
Rigid Containers 0607-321	4
Flexible Containers 0607-322	4
College Physics & Lab 1017-211, 271	4
Principles of Economics I, II 0511-301, 302	8
Computer Applications 0607-341	4
Materials and Processes I, II 2082-321, 322	8
Liberal Arts (Foundation)*	12
Physical Education†	0
Cooperative Education 0607-499	Co-op

### *Third Year*

Career Seminar 0607-401	1
Technical Communication 0607-420	4
Packaging Production Systems 0607-431	4
Packaging for Distribution 0607-432	4
Packaging for Marketing 0607-433	4
Shock & Vibration 0607-485	4
Data Analysis 1016-319	4
Financial Accounting 0101-301	4
Organizational Behavior 0102-430	4
Principles of Marketing 0105-363	4
Liberal Arts (Concentration)*	12
Cooperative Education 0607-499	Co-op

### *Fourth Year*

Packaging Regulations 0607-462	4
Professional (Packaging) Electives	12
Liberal Arts (Electives & Senior Seminar)*	18
Management Electives	8
Free Electives	6

Total Quarter Credit Hours	193
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\* [See liberal arts requirements](#)

† [See policy on physical education](#)

## Packaging science—Technical Option, BS degree, typical course sequence

<b><u>First Year</u></b>	<b><u>Quarter Credit Hours</u></b>
New Student Seminar I, II 0607-200, 201	2
Principles of Packaging 0607-201	4
Engineering Design Graphics 0607-301	3
Packaging Materials II 0607-312	4
College Algebra & Trig 1016-204	4
Introduction to Calculus 1016-214, 215	6
College Chemistry 1011-208	4
Intro Chem of Mat and Lab 1011-273, 277	4
Intro to Organic Chemistry and Lab 1011-213, 207	4
Liberal Arts (Foundation)*	12
Physical Education†	0
<b><u>Second Year</u></b>	
Packaging Materials I 0607-311	4
Methods of Evaluation 0607-313	3
Rigid Containers 0607-321	4
Flexible Containers 0607-322	4
Computer Applications 0607-341	4
Materials and Processes I, II 2082-321-322	8
Data Analysis 1016-319	4
Introduction to Polymer Technology 1029-301	2
Liberal Arts (Foundation)*	12
Free Electives 4 Physical Education†	0
Cooperative Education 0607-499	Co-op
<b><u>Third Year</u></b>	
Career Seminar 0607-401	1
Technical Communication 0607-420	4
Packaging Production Systems 0607-431	4
Packaging for Distribution 0607-432	4
Packaging for Marketing 0607-433	4
Shock and Vibration 0607-485	4
College Physics I, II, III 1017-211, 212, 213	9
College Physics Lab I, II, III 1017-271, 272, 273	3
Liberal Arts (Concentration) *	12
Free Electives	4
Cooperative Education 0607-499	Co-op
<b><u>Fourth Year</u></b>	
Packaging Regulations 0607-462	4
Professional (Packaging) Electives	12
Principles of Marketing 0105-363	4
Organizational Behavior 0102-430	4
Liberal Arts (Electives & Senior Seminar) *	18
Free Electives	5
<b>Total Quarter Credit Hours</b>	<b>193</b>

## Packaging science—Printing Option, BS degree, typical course sequence

<u>First Year</u>	<u>Quarter Credit Hours</u>
New Student Seminar I, II 0607-200, 202	2
Principles of Packaging 0607-201	4
Engineering Design Graphics 0607-301	4
Packaging Materials I, II 0607-311, 312	8
Survey of General Chemistry & Lab 1011-201, 205	6
Survey of Organic Chemistry & Lab 1011-202, 207	5
Algebra for Management Science 1016-225	4
Calculus for Management Science 1016-226	4
Liberal Arts (Foundation)*	12
Physical Education†	0
<u>Second Year</u>	
Methods of Evaluation 0607-313	3
Rigid Containers 0607-321	4
Flexible Containers 0607-322	4
College Physics & Lab 1017-211, 271	4
Principles of Economics I, II 0511-301, 302	8
Computer Applications 0607-341	4
Materials and Processes I, II 2082-321-322	8
Liberal Arts (Foundation)*	12
Physical Education†	0
Cooperative Education 0607-499	Co-op
<u>Third Year</u>	
Career Seminar 0607-401	1
Technical Communications 0607-420	4
Packaging Production Systems 0607-431	4
Packaging for Distribution 0607-432	4
Packaging for Marketing 0607-433	4
Shock & Vibration 0607-485	4
Data Analysis 1016-319	4
Organizational Behavior 0102-430	4
Packaging Solutions 2082-311	4
Printing Elective	4
Liberal Arts (Concentration)*	12
Cooperative Education 0607-499	Co-op
<u>Fourth Year</u>	
Packaging Regulations 0607-462	3
Professional (Packaging) Electives	12
Printing Elective	4
Liberal Arts (Electives & Senior Seminar)*	18
Free Electives	10

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**Total Quarter Credit Hours** **193**

\* [See liberal arts requirements](#)

† [See policy on physical education](#)

# Manufacturing and Mechanical Engineering Technology/ Packaging Science

**George Sutherland**, BSME, Alberta; MEng, McMaster University; Ph.D., Stanford University; PE--Chair, Professor  
**Ronald F. Amberger**, BME, Rensselaer Polytechnic Institute; ME, Pennsylvania State University; PE—Professor  
**Scott J. Anson**, BSME, SUNY Binghamton; MSME, SUNY Binghamton; PE—Assistant Professor  
**Phillip J. Batchelor**, BSME, Marquette University; MSME, University of Illinois—Visiting Lecturer  
**Beth A. Carle**, BSE, University of Pittsburgh; MS, Ph.D., University of Illinois; EIT Professional Certification—Associate Professor  
**Mario H Castro-Cedeno**, BSME, MSME, Puerto Rico-Mayaguez; MEMS, University of California-Berkley—Assistant Professor  
**Charles L. DeRoller**, BS, ME, Rochester Institute of Technology—Associate Professor Emeritus  
**Jon E. Freckleton**, BSME, University of Rochester; MS, Nazareth College—Visiting Professor  
**Martin Gordon**, BSME, MSME, MBA, State University of New York Buffalo—Associate Professor  
**Daniel Johnson**, BS, MS, Rochester Institute of Technology—Assistant Professor  
**Guy Johnson**, BS, Pennsylvania State; MS, Syracuse University—Professor  
**Seung H. Kim**, BS, Hanyang University; MS, Ph.D., University of Illinois—Assistant Professor  
**William Leonard**, AAS, State University of New York College at Canton; BS, MS, Rochester Institute of Technology—Assistant Professor  
**Ti-Lin Liu**, MS, Tsinghua University—Associate Professor  
**Carl A. Lundgren**, BS, Rensselaer Polytechnic Institute; MBA, University of Rochester—Professor  
**Robert A. Merrill**, BS, Clarkson College; MS, Northeastern University; PE—Professor  
**S. Manian Ramkumar**, BE, PSG, College of Technology—Bharathiar; ME, Rochester Institute of Technology—Associate Professor  
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## Packaging Science

**Daniel L. Goodwin**, BS, MS, Ph.D., Michigan State University—Professor  
**Deanna M. Jacobs**, BS, State University of New York College at Plattsburgh; MS, State University of New York College at Geneseo; MA, Rochester Institute of Technology—Associate Professor  
**Karen L. Proctor**, BS, Michigan State University; MBA, Rochester Institute of Technology—Professor  
**Maria Rubino**, BS, Kutztown State University; MS, Michigan State University; Ph.D., University of Manitoba—Assistant Professor  
**Fritz J. Yambrach**, BS, Michigan State University; BS, MBA, Utah State University—Associate Professor

## General Requirements

To earn any academic credential from RIT, you must satisfy a number of requirements. Graduation requirements may vary slightly from program to program, and all students are strongly encouraged to seek out and use the academic advising resources within their colleges. In general, students should expect to satisfy the following requirements before they can graduate from RIT:

### A. Completion of academic curricula

1. Satisfactorily complete all of the courses in your academic program. General education requirements and specific course requirements for each program are identified in the following pages. This bulletin and careful consultation with your academic adviser provide the best resources for planning your academic program at RIT.
2. Your program curricula may include several types of courses, including cooperative education, field experience, practicum, thesis and research, and wellness. Most RIT students will need to satisfy a wellness requirement, and many academic programs require one or more quarters of cooperative education.
3. The curriculum in effect at the time of your admission into a program will normally be the one you must complete in order to graduate. Occasionally, with faculty approval, course substitutions and other minor curricular modifications may occur. Although there is no time limit within which you must complete your course requirements, the curriculum under which you are certified to graduate must be no more than seven years old.

### B. Grade point average standard

1. Successful candidates for an undergraduate degree, diploma, or certificate must have a program cumulative grade point average of at least 2.0.\*
2. Graduation honors are conferred on associate and bachelor's degree recipients who achieve a 3.40 or higher program cumulative GPA.

### C. Residency and minimum earned hours

At least 45 of the credit hours used toward a degree program must be earned by successfully completing RIT courses. In addition, at least 30 of the final 45 hours of any program must be earned through RIT courses. Credit earned through transfer, credit by exam/experience, CLEP, advanced placement, or audit are excluded from these residency calculations. RIT academic programs vary as to the total number of credit hours required; however, under no circumstances will a student be allowed to graduate with a bachelor's degree with fewer than 180 cumulative earned hours (90 hours for associate degrees). Cumulative earned hours include RIT courses, transfer credit, credit by exam/experience, CLEP and advanced placement credit.

### D. Demonstration of writing skills

Students must demonstrate, to the satisfaction of the dean of their college, that they have the writing skills needed for successful entry into their chosen careers. The criteria and standards for evaluating abilities are determined by each academic department.

### E. Full payment of all financial obligations to RIT

## The Liberal Arts General Education Curriculum

Under the university's newly revised curricular requirements (implemented September 1, 2005), students in all baccalaureate degree programs are required to complete at least 90 credit hours of general education. This includes a minimum of 36 credit hours in the humanities and social sciences taken in the College of Liberal Arts. Students enrolled in bachelor of science (BS) programs also must complete at least 20 credit hours of general education in the College of Science.

The College of Liberal Arts general education curriculum is divided into an introductory core, an Arts of Expression course, and advanced courses in a liberal arts concentration or liberal arts minor. The requirements for baccalaureate degree programs are summarized below.

I. The introductory core totals 20 credit hours and is composed of the following 200- to 300-level courses:

- Writing (0502-227) (4 credit hours)
- Two humanities courses (8 credit hours) taken from two different disciplines:
  - Fine Arts
  - History
  - Literature
  - Philosophy
  - Science, Technology, and Values or Introduction to Environmental Studies
- Two social science courses (8 credit hours) taken from two different disciplines:
  - Anthropology
  - Economics
  - Political Science
  - Psychology
  - Sociology

II. Arts of Expression course (0504-319) (4 credit hours)

III. Advanced course work in a liberal arts concentration or minor (minimum 12 credit hours required in 400- to 500-level courses).

Students enrolled in associate degree programs will generally complete only a portion of the liberal arts requirements listed above. Additional information is provided in the academic program listings in this bulletin, and through academic advisers.

### Liberal arts concentrations and minors

The College of Liberal Arts offers students two options for completion of their upper-level liberal arts requirements. Students may choose to complete either a liberal arts concentration or a liberal arts minor. It is important to note that the lower-level liberal arts requirements (the core requirements) remain the same regardless of whether a student elects to complete a concentration or a minor.

A liberal arts concentration is a cohesive set of three upper-level courses (12 credits) approved by the faculty for use in meeting RIT's general education requirements. Concentrations may be disciplinary or interdisciplinary, and some may require prerequisite course work.

The College of Liberal Arts offers concentrations in more than 25 areas of study, including American artistic experience, American English for ESL students, American politics, art history, communication, criminal justice, economics, environmental studies, foreign language/culture, global studies, history, international relations, Latino/Latina/Latin American studies, literary and cultural studies, minority relations in the United States, music, peace studies, philosophy, psychology, public policy, religious studies, science and technology studies, sociology/anthropology, women's and gender studies, and writing studies. Specific course requirements for these liberal arts concentrations can be found on page 176.

Students who are looking for greater depth in the humanities and social sciences may choose to meet the advanced course work requirement by completing a liberal arts minor. Minors require the completion of five upper-level courses (20 credits) in a designated liberal arts area. Students who choose this option will complete a total of 44 credit hours (or more) in the humanities and social sciences as part of their general education curriculum. Liberal arts minors may be disciplinary or interdisciplinary, and some may require prerequisite course work

The College of Liberal Arts offers minors in more than 30 areas of study, including American politics; art history; communication; creative writing; criminal justice; economics; foreign language (French, German, Italian, Japanese, Spanish); foreign language/culture; history; historical perspectives on science and technology; international relations; literary and cultural studies; music; philosophy; psychology; public policy; science, technology and environmental studies; sociology/anthropology; women's and gender studies; and writing studies. Specific course requirements for these liberal arts minors can be found on page 161.

### **Liberal arts advising**

Liberal arts requirements vary within the individual degree programs on campus. Therefore, it is important that students carefully plan their liberal arts program to meet their specific degree requirements. Advising staff are available every day in the College of Liberal Arts' Office of Student Services, located on the second floor of the Liberal Arts Building, to provide assistance in planning and selecting appropriate liberal arts courses. Through this office, the college provides academic worksheets for each degree program to help students maintain records of progress toward their degree.

The College of Liberal Arts faculty recommends that students who wish to pursue their liberal arts studies beyond the minimum general education requirement consider any of the following options:

- the additional courses needed to complete a liberal arts minor,
- the additional courses needed to complete a second liberal arts minor,
- the additional courses needed to complete a liberal arts double major,
- a 500-level seminar course,
- at least one multicultural or international/global studies course,
- additional courses that feature writing,
- courses that complement or add depth to professional studies,
- courses that play to personal interest - even if immediate ties to professional studies are not apparent, or
- the study of a foreign language to facilitate study abroad or professional development.

## **Wellness Education Requirements**

RIT recognizes the need for wellness education in today's society and offers specifically designed courses to help students develop and maintain a well-balanced, healthy lifestyle that encourages the use of free time in an enjoyable and constructive manner. The wellness education requirement is designed to assist students in making healthy decisions to support their academic and social interactions in college and beyond. The wellness curriculum provides learning experiences that are an integral part of the educational experience at RIT.

### **First-Year Enrichment**

#### **Freshmen only**

All first-year students are required to satisfactorily complete the First Year Enrichment course and two different wellness activity courses to satisfy their graduation requirement. NTID Pre-Baccalaureate, AAS, or AOS students must complete the Wellness for Life course and one wellness activity course to satisfy their graduation requirement.

#### **Course offerings**

##### **1105-051 First-Year Enrichment I**

The first part of the two-quarter First-Year Enrichment course is designed to enhance the personal, academic, and professional success of first-year students and to facilitate their academic and social integration into RIT. Students must pass both FYE I and FYE II to satisfy the wellness requirement for graduation. Offered fall quarter only.

##### **1105-052 First-Year Enrichment II**

The second part of the two-quarter First-Year Enrichment course is designed to enhance the personal, academic, and professional success of first-year students and to facilitate their academic and social integration into RIT. Students must pass both FYE I and FYE II to satisfy the wellness requirement for graduation. Offered winter quarter only.

##### **1105-048 First-Year Enrichment 10 Week**

A 10-week, one-quarter First-Year Enrichment course is available, but restricted to designated college programs. Successful completion of the First-Year Enrichment 10 Week course satisfies the wellness requirement for graduation. Offered fall quarter to selected majors.

## **Wellness for Life**

**Upperclass and transfer students seeking a bachelor's degree** who have not completed the requirements for First-Year Enrichment (or an equivalent) must successfully complete the Wellness for Life course (or an acceptable transfer equivalent) and two different wellness activity courses to satisfy graduation requirements.

**Upperclass and transfer students seeking an associate degree** who have not completed the requirements for First-Year Enrichment (or an equivalent) must complete the Wellness for Life course (or an acceptable transfer equivalent) and one wellness activity course to satisfy graduation requirements.

**Transfer Students'** physical education courses taken at previous colleges will be accepted in transfer at RIT. Transfer students entering in their first or second year must complete or transfer in the same requirements as incoming freshmen (complete the Wellness for Life course plus two different wellness activity courses). Transfer Students entering RIT in

year 3, 4, or 5 must complete the Wellness for Life course (or transferred in an acceptable equivalent course) and one wellness activity course. Important Note: Transfer students may apply course work completed at the previous institution. Decisions regarding the transfer of courses is based on the course description and a review by a wellness program administrator. These activity experiences are accepted in lieu of wellness course work, as long as: (1) the experience was completed no more than one year before matriculation at RIT; and (2) the experience was the same as a course offered within the Wellness Instructional Program curriculum.

### **Credit/Exemption Scenarios**

**A permanent medical excuse** may exempt a student from participation in the activity segment of the graduation requirement, but they must complete First-Year Enrichment or Wellness for Life. The exemption will be granted only by the college dean, with input from the Wellness Program staff. One copy of the medical excuse (signed physician's memo) should be filed with the Center for Intercollegiate Athletics and Recreation and the other copy taken to the student's academic department.

**Intercollegiate athletics** Students participating in the intercollegiate athletic programs are granted wellness activity course credit for the season(s) of participation, but must complete First-Year Enrichment or Wellness for Life.

**Club sports** In addition to intercollegiate sports and intramural programs, RIT offers several club sports. The program is a division of RIT Student Government and the Center for Intercollegiate Athletics and Recreation. Its purpose is to provide extramural/intercollegiate competition for recognized club sports, although some are solely for recreational or instructional purposes. Participation is open to all RIT students (full- and part-time).

**Veterans** Students who have completed six months or more of active military duty are not exempt from the wellness education requirement, but are encouraged to enroll in any wellness course on a space-available basis.

**Age** Students who are 25 or older at their date of matriculation are exempt from the wellness education requirement but may enroll in any course on a space-available basis.

**Nonmatriculated status** Nonmatriculated students are exempt from the wellness education requirement.

**Prior bachelor's degree** Students who have acquired a prior bachelor's degree are exempt from the wellness education requirement.

**NTID students** NTID Pre-Baccalaureate and associate degree students are required to complete the Wellness for Life course and one wellness activity course to satisfy their graduation requirement.

**Intramural Participation** No credit is granted for intramural sports participation.

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### **Cooperative Education Requirements**

Many academic programs at RIT require that students participate in the university's cooperative education program. Other academic programs may offer co-op as an option or provide other experiential education opportunities (e.g., internships). Cooperative education involves alternating quarters of classroom study and full-time paid employment in a position related to the student's academic program. Requirements, which may vary significantly, are included for each program in this bulletin.



## Institute of Packaging Professionals RIT Students Chapter

### **Mission Statement:**

*"To serve the professional, personal, and social growth of the RIT Packaging Science students"*

Please check the calendar weekly to keep up to date with events

Nov. 4 Meeting in BD: 70 RM: 1435

Pack-Nic: Fall Picnic this Friday (October 28) [\[info\]](#)

Pie Professor Voss in the face at the picnic for only one dollar. This may be the best spent dollar of your lifetime.

### **Fall Picnic Event October 28, 2005**

- Where: **East Side of CIMS** (the front entrance to the CIMS building)
- When: **October 28, 2005 at TBA**
- This event will feature:
  - Free food for Members
  - Socialization between other members, packaging students, and faculty.
- **You Must RSVP For This Event!** E-Mail James Sorel at [jps1219@rit.edu](mailto:jps1219@rit.edu) with your full name and that you wish to attend the picnic.  
Deadline to RSVP for the picnic is October 24, 2005.
- If you have any questions about this event please e-mail James Sorel (events coordinator) at [jps1219@rit.edu](mailto:jps1219@rit.edu)

### **Meeting Summaries (RIT IOPP activity)**

September 16, 2005

- This was the first meeting for the packaging science club. Pizza and soda were available for all of those who attended.
- The IOPP and Packaging Science membership applications were collected along with membership dues.
- Officers were nominated, elected, and they were assigned tasks.
- The club advisor had an open forum discussion with members on where dues were going and how more money could be raised for the club.
- Questions on whether to join the student government were addressed but the subject was left open for further discussion.

September 23, 2005

An announcement was made that Packaging Science majors could still join the IOPP RIT student chapter until September 30th. Membership forms are available with Julie at the Packaging Science office. Students who do not sign up by September 30th will not have an opportunity to join again until the middle of the academic year.

The club name was changed from the Packaging Science club to the Institute of Packaging Professionals RIT student chapter.

The president and vice president went over ideas for future events sponsored by the club. The floor was opened for suggestions for the club and where members thought the club should be headed.

## Brunel Centre for Packaging Technology –West London

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### Contact Information

<b>Uxbridge Campus</b>	Uxbridge, Middlesex UB8 3PH Tel: 01895 274000 Fax: 01895 232806
<b>Osterley Campus</b>	Borough Road, Isleworth, Middlesex TW7 5DU Tel: 0208 891 0121 Fax: 0208 891 8211
<b>Runnymede Campus</b>	Englefield Green, Egham, Surrey TW20 0JZ Tel: 01784 431341 Fax: 01784 472879
<b>General admissions enquiries</b>	Admissions Office (Undergraduate or Postgraduate) Tel: 01895 265265 E-mail <a href="mailto:Admissions@brunel.ac.uk">Admissions@brunel.ac.uk</a>
<b>Student Welfare</b>	<a href="#">Student Support Services</a>
<b>Prospectus requests</b>	<a href="#">Prospectus Request Form</a>
<b>Course brochures</b>	24-hour answerphone: 01895 203007
<b>Contract and consultancy enquiries</b>	<a href="#">Brunel Enterprise Centre</a> 01895 816273 (Direct line: no access to other departments)
<b>Marketing and Advertising</b>	Marketing Tel: 01895 265592 <a href="mailto:marketing@brunel.ac.uk">marketing@brunel.ac.uk</a>
<b>Media enquiries</b>	<a href="#">Press and Public Relations</a> Tel: 01895 265585 Fax: 01895 269702
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## Brunel Centre for Packaging Technology

This new centre was established in 2002 to co-ordinate and promote the packaging activities within the former Faculty of Technology and Information Systems at Brunel University (now the [School of Engineering & Design](#)).

The centre aims to:

- Increase research partnerships with industry and other organisations;
- Develop new consultancy opportunities;
- Expand the provision of packaging training;
- Promote Brunels packaging activities.

Brunel has a long history of providing quality education and research for industry. Our Masters programmes are part of the EPSRC sponsored IGDS (Integrated Graduate Development Scheme) programme. We have been successful in winning many government and industry research grants.

We have strong interdisciplinary interests in packaging technology within the School of Engineering & Design. A number of different research centres and subject areas are involved:

- Brunel Institute for Computational Mathematics
- Centre for Environmental Research
- Experimental Techniques Centre
- Design
- Systems Engineering
- Mechanical Engineering
- Wolfson Centre for Materials Processing

For specific packaging information please [contact us](#).

The following examples demonstrate our varied areas of expertise but it is by no means an exhaustive list.

- Adhesives
- Anti-counterfeiting technologies
- Biodegradable packaging materials
- Business strategy
- Education and training
- Environmental toxicology - interactions of packaging materials with contents Extrusion of packaging polymers
- Injection moulding of packaging polymers
- Marketing
- Modelling of thermoforming and in-mould-decoration of polymer sheets for packaging
- New product development
- Packaging design
- Packaging supply chain management
- Printed Electronics
- Problem solving using experimental techniques
- Smart materials
- Sustainable packaging materials design

### **Packaging Technology MSc**

<http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/design/pactec/>

This course aims to produce high-calibre packaging technologists and managers who have the vision and flexibility to create opportunities and to solve problems effectively.

For more information, select one of the links at the top of this page.

Course Resources for Current Students can be found on our [Packaging Technology Student Resource Page](#).

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Tel: 01895 265873 - Fax: 01895 269763 - [packaging@brunel.ac.uk](mailto:packaging@brunel.ac.uk)

### **Bursaries**

The PPMA is offering two Bursaries for UK Home students awarded each year to help students meet some of the costs of the course : The King Award for individuals working in the packing industry (£1200) and the Guisti Award for individuals working in the processing industry (£1200). These bursaries are awarded on academic merit and students wishing to apply for them must be holding an offer for the Packaging Technology course.

## Packaging Technology MSc - Who?

The course is relevant to a wide range of industries including:

- Raw materials producers
- Packaging converters and printers
- Product manufacturers including fast moving consumer goods
- Packaging machine suppliers
- Retailers

You will benefit if you are involved in the design, manufacture, specification or use of packaging.

## Packaging Technology MSc - Benefits

Becoming a student on the course provides you with:

- An opportunity to obtain a higher degree whilst pursuing a career
- Enhanced technical and managerial skills
- Contact with students from other sectors of the industry and the opportunity to exchange ideas and experiences
- The potential for accelerated career development
- The confidence to make good decisions

Successful completion of the course will make you eligible to become a Fellow of the Institute of Packaging.

There are also benefits for your company too. Active involvement can:

- Realise employees' full potential for contributing to the business
- Raise the technical and managerial skill levels within the company
- Help with the recruitment and retention of high-calibre personnel
- Provide cost-effective access to University research facilities

## Packaging Technology MSc - Course

### Possible Qualifications

We offer nine modules, detailed below. These can be studied individually or you can build them up to gain one of three qualifications.

#### 1. Postgraduate Certificate in Packaging Technology

You gain the certificate by completing successfully four taught modules. This can be completed over one year part-time study.

#### 2. Postgraduate Diploma in Packaging Technology

You gain the Diploma by completing successfully eight taught modules. The Diploma can be gained over two years of part-time study.

#### 3. MSc in Packaging Technology

You gain this by completing successfully eight taught modules and an [extensive work-based project](#). The MSc usually takes 2-3 years part-time study.

### Modules

#### Module 0

**Title:** Overview of Packaging  
**Mode of Study:** Distance Learning: January - June

This module provides you with an overview of the packaging industry and acts as an introduction to the whole course. You are taken through the supply chain which runs from raw materials through packaging converters, packaging users, retailers and product users, to the final disposal of the packaging. This chain involves many activities such as design, choice of material, manufacturing, retailing and distribution, all of which are covered in greater depth in subsequent modules.

A significant part of the module focuses on the basic science of materials and lays the foundation for the subsequent technical modules. This allows you and your fellow students to reach a similar level of understanding of the materials science related to the four major groups of packaging materials: plastics, metals, glass, paper and board.

#### Module 1

**Title:** Project Management  
**Mode of Study:** Distance Learning: January - June

Projects involving multi-disciplinary teams are becoming a common and important feature of modern management. Most of your work in the medium/long term will take the form of projects. Indeed, your participation in the MSc course could, in itself, be viewed as a project. Whatever your current and future roles, you will need to understand how to manage projects effectively.

This module teaches you the major factors in successful project management. We recognise that there are two sides to project management: the specific tools to manage project "milestones", and the "human" aspects of managing the team.

Both are covered in the module, but the strongest emphasis is on the human aspects such as leadership, team building, motivation, problem solving, decision making and managing meetings. The specific tools for project management, such as critical path analysis, Gantt charts and PERT are reviewed in detail. This gives you an understanding of their attributes and supports your use of the software packages that are now widely available. Other issues covered in the module include legal aspects of project, health and safety, and project audit.

## Module 2

**Title:** Packaging Materials 1  
**Mode of Study:** Distance Learning: June - October

The aim of Module 2, [Module 4](#) and [Module 6](#) is to give you an appreciation of the major packaging materials and specifically of their processing. You learn how the control of processing affects the performance of the packaging material. Having completed these modules you will be able to understand the opportunities and problems associated with each packaging format. Module 2 focuses on two main areas: plastics processing and materials characterisation. For plastics processing you will study extrusion, injection moulding, polymer foams, extrusion coating and lamination. Materials characterisation is very important for a number of reasons. It is used:

- in the design and testing of new packs
- to evaluate competitive materials
- to monitor production of packaging
- for forensic purposes, to study "what went wrong"

There are a large number of characterisation techniques used in the packaging industry - you learn about the most common ones. The aim is not to make you an expert in any one technique (although you might become one during the course), but rather to give you an appreciation of what the techniques can and cannot achieve. At the end of the course you will be able to choose the right approach to help you solve specific problems. The techniques you study are centred around light microscopy, electron microscopy, thermal analysis, surface analysis and gas chromatography.

## Module 3

**Title:** Marketing or Financial Management  
**Mode of Study:** Distance Learning: June - December

At this point of the course you can choose to study either marketing or financial management. Your choice will depend on your background and the needs of your company.

### Module 3A: Marketing

In this module you study the basis of marketing, namely satisfying customer needs. You consider a number of issues and techniques including: the marketing environment, targeting, segmentation, positioning, consumer and industrial buyer behaviour. New product development forms an important part of the marketing challenge as does the pricing and distribution of products.

Packaging plays a very important part in the promotion of products so you will study issues such as advertising, sales promotion and public relations. None of these issues can be tackled without effective market research so you learn the techniques used by modern marketing organisations. Finally, you consider the increasingly important international markets and the specific problems associated with operating in them.

### Module 3B: Financial Management

In this module you focus on those aspects of financial management that relate most to internal decision making within companies. These include an understanding of the major tools such as balance sheets, profit and loss accounts, and cash flow statements.

Financial decision making in projects is important and you learn of the major methods such as simple payback, discounted cash flow and internal rate of return. Budgeting is an integral part of any financial control mechanism and you learn how to produce meaningful budgets.

## Module 4

**Title:** Packaging Materials 2  
**Mode of Study:** Distance Learning: December - March

This module enables you to complete the plastics processing started in [Module 2](#) by considering thermoforming, blow moulding and film lamination. Surface technology is a very important part of packaging technology, particularly with reference to printing and adhesive lamination. By studying issues associated with surface technology you will be able to diagnose problems such as print defects more easily.

The second major component of this module is centred on metallic packaging. [Module 0](#) will have given you an understanding of basic metallurgy and this is now developed to consider some of the processing aspects of metallic packaging. You study how and why tinplate is used as an integral part of steel packaging. Aluminium is the common alternative to steel and you consider its properties in various packaging formats: cans, foils, metallised films and papers. The final part of this module considers the effects of corrosion with particular reference to foodstuffs.

## Module 5

**Title: Manufacturing Strategy**

**Mode of Study: Distance Learning: December - June**

Increasingly the manufacturing function is seen as an area where companies can gain competitive advantage. Such advantage may come from some, or all of these factors: speed, quality, cost, flexibility and dependability. During this module you will be able to recognise which of these competitive factors are most important to your company and how your company might maximise its competitive advantage.

You start the module by considering the role of the manufacturing function and manufacturing manager. A key decision in any manufacturing operation is the degree of flexibility the operation should have. This depends on many factors, such as batch sizes, lead times, customer variability. Dedicated plant may offer the advantage of lower unit cost in stable environments; flexible plant might be more suitable where run lengths and lead times are short and unpredictable.

## Module 6: Packaging Materials 3

**Title: Packaging Materials 3**

**Mode of Study: Distance Learning: June - October**

This module will complete your study of the major packaging materials by concentrating on glass, papers and boards. [Module 0](#) will have given you the basic science of these materials. Here you concentrate on their production and applications.

On the glass side this includes bottles, jars and vials. For papers and boards you study fibreboard and corrugated boxes, cartons, bags, spirally wound tubes and labels. Specialist papers such as Tyvek and other medical papers are also covered.

## Module 7: Packaging Design

**Title: Packaging Design**

**Mode of Study: Distance Learning: June - December**

This module introduces you to the principles and criteria to be considered in good packaging design. Many of these criteria are drawn from the needs of the distribution and retailing chains and these are considered in some depth. You are made aware of the conflicts in finding a practical solution to a packaging design problem: cost reduction, differentiation, barrier requirements, environmental issues, ergonomics, 'user friendliness'.

The needs of distributors are considered: palletisation, transportation, automatic warehousing, bar coding. This module also includes a comprehensive analysis of the major printing and decoration techniques for packaging.

## Module 8: Environmental and Legal Considerations of Packaging

**Title: Packaging Materials 2**

**Mode of Study: Distance Learning: December - April**

Environmental pressures and legislation are becoming major factors in the design, manufacture and use of packaging. You study the main environmental issues and how these should be incorporated into your activities. Specific issues include: the use and limitations of environmental impact models, disposal routes (landfill, incineration, reuse, recycling), international environmental legislation, hazardous products, measurement and control of emissions.

## Information about third year project

The third year project, to be completed by Master's degree students, is designed to reinforce many of the skills acquired on the preceding modules. You are encouraged to choose a project that involves multi-disciplinary skills which will help to broaden your experience within your company.

The project is undertaken on company premises and is designed to address real issues. The project is supervised jointly by the universities and the company and you can have access to the full resources of the universities if required.

## Timings & Exam / Coursework Dates

Module No.	Title	Delivery	Study Period	Assignment Submission	Exams
0	<a href="#">Overview of Packaging</a>	RB DL	1 week in Jan Jan to June	April	n/a
1	<a href="#">Project Management</a>	DL	Jan to June	June	June
2	<a href="#">Packaging Materials 1</a>	RB DL	1 week in June June to Oct	October	October
3	<a href="#">Marketing OR Financial Management</a>	DL	June to December	December	December
4	<a href="#">Packaging Materials 2</a>	RL DL	1 week in Dec Dec to March	March	March
5	<a href="#">Manufacturing Strategy</a>	DL	December to June	June	June
6	<a href="#">Packaging Materials 3</a>	RB DL	1 week in June June to Oct	October	October
7	<a href="#">Packaging Design</a>	DL	June to Dec	December	n/a
8	<a href="#">Environmental and Legal Considerations</a>	RL DL	1 week in Dec Dec to April	April	n/a

## **Distance Learning**

All nine modules can be taken by distance learning. The emphasis is on you to organise your study to suit your normal pattern of work, family commitments and recreations.

All the material you require will be provided in the form of a "Study Pack". This consists of written texts, CDs, Videos and other materials appropriate for each element of the programme.

## **Assessment**

The assessment of the modules is through a combination of assignments and examinations. Some modules are assessed by assignments alone. The assignments are often based around your workplace issues.

Examinations are run at Brunel University. If you live outside the UK you will be able to take the examinations in your own country. We have an extensive network of organisations (Universities, Colleges and British Council Offices) throughout the world who will provide invigilation services. The cost of invigilation away from Brunel University is your responsibility.

## **Packaging Technology MSc - Entry Requirements**

The course is designed to accommodate students from a broad spectrum of backgrounds.

Applicants should normally possess or expect to obtain:

- A good degree or equivalent qualification, or
- A Higher National Diploma or equivalent non-degree qualification together with suitable experience, or
- The Diploma of the Institute of Packaging together with suitable experience.

We recognise that candidates who do not necessarily fulfil these criteria may wish to apply. All such cases are given individual consideration. If in doubt about the acceptability of your qualifications, the course team will be happy to advise you.

**Visit following page for fees and bursaries.**

<http://www.brunel.ac.uk/courses/ug/fees2006/>

A LIST OF PACKAGING EDUCATION INSTITUTIONS  
List prepared by EPIC (European Packaging Institutes Consortium)

Awarding Organisation	Course Title	Entry Qualifications	Taught Hours	Method of Assessment	Target Group	Comments	Qualification on completion
University of Applied Sciences	Bachelor and Master of Packaging Engineer	Final secondary school examinations and work placement	3 years to 4 years	Examinations Projects Training periods Final thesis and defence			Bachelor/ Master of Engineering (Packaging)
Institute of Packaging	Packaging Professional	Final secondary school examination with work experience or Final degree	370 hours	Examinations Projects	Young professionals who want to take on major responsibilities in the packaging industry	Available in modular form, 2 years in-service training	Private certificate
Institute of Packaging	Principles of Packaging	Final secondary school examination with work experience or Final degree	12 hours	Examination	Those with some packaging responsibilities that require an appreciation of packaging issues	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Packaging Design	Final secondary school examination with work experience or Final degree	12 hours	Project	Those who are packaging sector's employees and need to improve their knowledge	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Market reflections	Final secondary school examination with work experience or Final degree	12 hours	Examination	Those who are packaging sector's employees and need to improve their knowledge	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Protection of packaging goods	Final secondary school examination with work experience or Final degree	12 hours	Examination	Those with some packaging responsibilities that require an appreciation of packaging issues	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Financial knowledge in the packaging sector	Final secondary school examination with work experience or Final degree	12 hours	Examination	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	International subject-related Legislation	Final secondary school examination with work experience or Final degree	12 hours	Examination	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Current innovations	Final secondary school examination with work experience or Final degree	12 hours		Those who are packaging sector's employees and need to improve their knowledge	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Packing costs / charges	Final secondary school examination with work experience or Final degree	12 hours	Project	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate

<b>Awarding Organisation</b>	<b>Course Title</b>	<b>Entry Qualifications</b>	<b>Taught Hours</b>	<b>Method of Assessment</b>	<b>Target Group</b>	<b>Comments</b>	<b>Qualification on completion</b>
Institute of Packaging	Social and communication competences	Final secondary school examination with work experience or Final degree	24 hours	Training	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Packaging development, - optimisation	Final secondary school examination with work experience or Final degree	24 hours	Project	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Packaging Processes an Packaging Machinery	Final secondary school examination with work experience or Final degree	24 hours	Examination	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Project- and Process management	Final secondary school examination with work experience or Final degree	24 hours	Project	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	Supply chain Management	Final secondary school examination with work experience or Final degree	24 hours	Project	Those who are packaging sector's employees and want to become an expert	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	English: Packaging	Final secondary school examination with work experience or Final degree	33 hours	Examination	Those who are packaging sector's employees and want to improve their international communication skills	In-service training, on Fridays and Saturdays	Private certificate
Institute of Packaging	English: Communication	Final secondary school examination with work experience or Final degree	33 hours	Examination	Those who are packaging sector's employees and want to improve their international communication skills	In-service training, on Fridays and Saturdays	Private certificate