



Packaging, BS

Core Curriculum

All packaging majors must complete a core curriculum consisting of 10 packaging courses which accounts for 33 of the 120 credits required for the degree and includes more than 100 hours of practical laboratory experience.

Core courses include studies in the following areas:

- Technical principles for packaging
- Packaging career preparation and skills
- Materials (glass, plastic, paper and metals in packaging)
- Computer applications
- Packaging processes & systems
- Distribution dynamics
- Design and prototyping
- Life Cycle Analysis & Environmental impacts
- Economic Factors of Packaging

Packaging Electives

Six credits in Packaging electives are required and earned through coursework, participation in the internship or overseas study programs. Students in either concentration can take the other's required elective as one of their options.

Students in each concentration must complete ONE of the following:

- Packaging Science concentration
 - Must complete Medical Packaging or Food Packaging course
- Packaging Value Chain Management
 - Must complete Packaging Value Chain course

Admissions Requirements

Admission to the upper division requires that the student has completed the following courses **with a minimum of a 2.0 in each course AND 3.0 cumulative GPA over all coursework completed at MSU.**

- CEM 141
- PHY 231
- MTH 133

Students who have already declared their major preference as Packaging prior to reaching 56 credits will be automatically reviewed for admission; there is no application required. For students outside the packaging major, please contact the Packaging Advisor for admission review.

1. University Requirements: (23)

Writing, Rhetoric and American Cultures (WRA)	4
Integrative Studies in Humanities (IAH)	8
IAH 201-210 and IAH 211 or >	
Integrative Studies in Social Sciences (ISS)	8
ISS 2XX and ISS 3XX	
Bioscience (one of the following):	
FSC 342, MMG 201	3

2. Major Requirements: (61-62)

a. STEM Core Requirement

Complete all the following courses: (22)

CEM 141*	General Chemistry	4
CEM 161	Chemistry Laboratory I	1
CEM 143	Survey of Organic Chemistry	4
MTH 132	Calculus I	3
MTH 133*	Calculus II	4
PHY 231*	Introductory Physics I	3
PHY 232	Introductory Physics II	3

*Upper School Admission Requirement

b. Packaging Core Requirement

Complete all the following courses: (33)

PKG 101	Principles of Packaging	3
PKG 102	Introductory Packaging Seminar	2
PKG 221	Packaging with Glass and Metal	2
PKG 315	Packaging Decision Systems	3
PKG 322	Packaging - Paper & Paperboard	4
PKG 323	Packaging with Plastics	4
PKG 410	Distribution Packaging Dynamic	4
PKG 411	Package Development Technology	3
PKG 432	Packaging Processes	4
PKG 485	Packaging Development (Capstone)	4

c. Statistics Requirement

Select one of the following courses: (3-4)

STT 200	Statistical Methods	3
STT 201	Statistical Methods	4
STT 315	Introduction to Probability and Statistics for Business	3
STT 351	Probability and Statistics for Engineering	3

d. Business Focus Requirement

Select one of the following courses: (3)

MKT 327	Introduction to Marketing	3
SCM 304	Survey of Supply Chain Management	3

d. Economics Requirement

Select one of the following courses: (3)

EC 201	Introduction to Microeconomics	3
EC 202	Introduction to Macroeconomics	3



3. Concentrations: (18-19)

In consultation with their academic advisor, students must select one of the following concentrations: packaging value chain management or packaging science. Completion of 6 credits of electives in packaging. Enrollment in a packaging internship completed under PKG 493 (up to 3 credits) and enrollment in a packaging overseas study program completed under PKG 491 (up to 3 credits) may be used towards this requirement with advisor approval. Each concentration area requires 9 credits outside of packaging coursework, with all classes at least at the 200 level, and at least one course at the 300 level or above. These courses MAY NOT be double counted to meet other requirements of the packaging program, but MAY be used to also complete requirements for a minor (as allowed by the department offering the minor).

Note: some classes may have prerequisites not listed here, so

Packaging Value Chain Management: (18)

a. The following course: (3)

PKG 465	Packaging Value Chain	3
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b. Completion of electives in packaging: (6)

PKG 421	Virtual Design and Prototyping	3
PKG 430	Packaging for Fast-Moving Consumer Goods	3
PKG 444	Radio Frequency Identification (RFID) for Packaging	3
PKG 452	Medical Packaging	4
PKG 455	Food Packaging	4
PKG 456	Packaging and Shelf Life of Perishable Food	3
PKG 470	Packaging Sustainability	3
PKG 477	Hazardous Materials Packaging	3
PKG 480	Packaging Laws and Regulations	3
PKG 490	Directed Studies in Packaging Problems	3
PKG 491	Special Topics	1-4
PKG 493	Professional Internship in Packaging	3
PKG 499	Undergraduate Research	1-4

c. Completion of Value Chain electives: (9)

Must complete at least one course at 300-level or above:

EC 301	Intermediate Microeconomics	3
EC 302	Intermediate Macroeconomics	3
EC 360	Private Enterprise and Public Policy	3
FI 320	Introduction to Finance	3
GBL 323	Introduction to Business Law	3
MGT 325	Management Skills and Processes	3
MKT 327	Introduction to Marketing	3
SCM 304	Survey of Supply Chain Management	3

**Other courses with department approval*

***Courses used to fulfill a concentration requirement may not be used to fulfill requirement 2.d*

discuss with your advisor.

Packaging Science: (18-19)

a. Choose one of the following courses: (4)

PKG 452	Medical Packaging	4
PKG 455	Food Packaging	4

b. Completion of electives in packaging: (6)

PKG 421	Virtual Design and Prototyping	3
PKG 430	Packaging for Fast-Moving Consumer Goods	3
PKG 444	Radio Frequency Identification (RFID) for Packaging	3
PKG 452	Medical Packaging	4
PKG 455	Food Packaging	4
PKG 456	Packaging and Shelf Life of Perishable Food	3
PKG 465	Packaging Value Chain	3
PKG 470	Packaging Sustainability	3
PKG 477	Hazardous Materials Packaging	3
PKG 480	Packaging Laws and Regulations	3
PKG 490	Directed Studies in Packaging Problems	3
PKG 491	Special Topics	1-4
PKG 493	Professional Internship in Packaging	3
PKG 499	Undergraduate Research	1-4

c. Completion of Science electives: (9)

Must complete at least one course at 300-level or above:

BMB 200	Introduction to Biochemistry	4
CE 221	Statics	3
FSC 211	Principles of Food Science	3
FSC 325	Food Processing: Unit Operations	3
FSC 342	Food Safety and Hazard Analysis Critical Control Point Program	3
FSC 401	Food Chemistry	3
FSC 421	Food Laws and Regulations	3
FSC 440	Food Microbiology	3
MMG 201	Fundamental of Microbiology	3
MMG 301	Introductory Microbiology	3
MMG 302	Introductory for General and Allied Health Microbiology	1
STT 464	Statistics for Biologists	3
STT 465	Bayesian Statistical Methods	3

**Other courses with department approval*

***Courses used to fulfill a concentration requirement may not be used to fulfill requirement 2.d*

The requirements listed above apply to students majoring in Packaging, BS beginning Fall 2020. The School of Packaging constantly reviews requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with their advisor to obtain assistance in planning and appropriate schedule of courses. Students who have questions about the MSU School of Packaging, the undergraduate program, and upper school admissions should contact the School of Packaging.



Packaging—Value Chain Management Sample Plan

FRESHMAN					
FALL		SPRING		SUMMER	
CEM 141	4	PHY 231	3	ISS 2XX or IAH 201-210	4
CEM 161	1	MTH 133	4		
MTH 132	3	PKG 102	2		
PKG 101	3	ISS 2XX or IAH 201-210	4		
WRA 101	4	EC 201 or 202	3		
TOTAL CREDITS	15	TOTAL CREDITS	16	TOTAL CREDITS	4

SOPHOMORE					
FALL		SPRING		SUMMER	
CEM 143	4	PKG 322	4	PKG 465	3
STT 200	3	PKG 323	4		
PKG 221	2	PHY 232	3		
PKG 315	3	ISS 3xx OR IAH 211 or higher	4		
Free Elective	3				
TOTAL CREDITS	15	TOTAL CREDITS	15	TOTAL CREDITS	3

JUNIOR					
FALL		SPRING		SUMMER	
PKG 493	3	PKG 410	4	PKG elective	3
(INTERNSHIP)		ISS 3xx OR IAH 211 or higher	4		
		PKG 432	4		
		MKT 327/SCM 304	3		
TOTAL CREDITS	3	TOTAL CREDITS	15	TOTAL CREDITS	3

SENIOR			
FALL		SPRING	
Free Elective/ Minor	3	PKG 485	4
Value Chain Track	3	Value Chain Track	3
FSC 342	3	Value Chain Track	3
PKG 411	3	Free Elective/ Minor	3
Free Elective/ Minor	3	Free Elective/ Minor	3
TOTAL CREDITS	15	TOTAL CREDITS	16

TOTAL CREDITS TO GRADUATE: 120



Packaging—Science Sample Plan

FRESHMAN					
FALL		SPRING		SUMMER	
CEM 141	4	PHY 231	3	ISS 2XX or IAH 201-210	4
CEM 161	1	MTH 133	4		
MTH 132	3	PKG 102	2		
PKG 101	3	ISS 2XX or IAH 201-210	4		
WRA 101	4	EC 201 or 202	3		
TOTAL CREDITS	15	TOTAL CREDITS	16	TOTAL CREDITS	4

SOPHOMORE					
FALL		SPRING		SUMMER	
CEM 143	4	PKG 322	4	PKG elective	3
STT 200	3	PKG 323	4		
PKG 221	2	PHY 232	3		
PKG 315	3	ISS 3xx OR IAH 211 or higher	4		
Free Elective	3				
TOTAL CREDITS	15	TOTAL CREDITS	15	TOTAL CREDITS	3

JUNIOR					
FALL		SPRING		SUMMER	
PKG 493 (INTERNSHIP)	3	PKG 410	4	Free Elective	2
		PKG 455	4		
		PKG 432	4		
		MKT 327/SCM 304	3		
TOTAL CREDITS	3	TOTAL CREDITS	15	TOTAL CREDITS	2

SENIOR			
FALL		SPRING	
Free Elective/ Minor	3	PKG 485	4
PKG 411	3	Science Track	3
FSC 342	3	Science Track	3
Science Track	3	Free Elective/ Minor	3
ISS 3xx OR IAH 211 or higher	4	Free Elective/ Minor	3
TOTAL CREDITS	16	TOTAL CREDITS	16

TOTAL CREDITS TO GRADUATE: 120



Competency Programmatic Learning Outcomes

The Packaging (PKG) major is a hands-on undergraduate BS degree program in the School of Packaging withing the MSU College of Agriculture and Natural Resources. The program is a based-on competency-based programmatic learning outcomes (CPLOs) and the MSU learning goals (MSU-LGs) mapped to each individual class learning outcomes (CLOs). CLOs, CPLOs, and MSU-LG are assessed in each core and elective PKG courses.

1. Evaluate packaging systems

Evaluate and choose materials, packaging systems, and components by applying and interpreting scientific tests, writing and interpreting specifications, and using and recommending appropriate test protocols.

2. Analyze tradeoffs in packaging systems

Analyze and prioritize product, packaging line, distribution system, environmental footprint, marketing, financial implications, user needs and additional tradeoffs to create and/or to provide innovative, efficient, sustainable, legally compliant and cost-effective packaging systems.

3. Design innovative and sustainable packaging systems

Design innovative and sustainable solutions to package and packaging systems related problems and future needs.

4. Manage projects in diverse teams

Formulate and manage projects with the ability to work in diverse teams to achieve common and successful outcomes.

5. Communicate effectively considering diverse audiences

Communicate effectively considering diverse audiences in a variety of situations with a variety of media.

6. Professional and ethical manner

Conduct oneself in a professional and ethical manner, exhibiting values such as civility and respect for others, honesty, integrity, accountability, maintenance of confidentiality, etc.

Students in the PKG Science concentration should be able to:

7. Design legal and efficacious packaging systems

Design, analyze and prioritize the legality and efficacy of packaging systems while considering the nuances imposed by stakeholders such as industry, government, NGOs and end-users.

Students in the PKG Value Chain Management concentration should be able to:

8. Decision making in packaging

Design supply chains using different packaging systems considering various constraints that may be encountered by suppliers, manufacturers, distributors and consumers.