

Govt. T. R. S. (Autonomous) College Rewa (M.P.)
(Affiliated to A.P.S. University Rewa)
Department of Chemistry
Syllabus for B.Sc. (Hons.) Chemistry on CBCS
Session 2021-22

Part A - Introduction			
Program-CERTIFICATE	Class- UG	Semester- First	Session: 2021-2022
Subject : Chemistry (Honours)			
1	Course code	CHGT-01B	
2	Course title	FOOD PROCESSING & TECHNOLOGY	
3	Course type	Generic Elective (GE)	
4	Pre-requisite (if any)	This course is Open for all	
5	Course Objective		
6	Course Learning Outcomes (CLO)	By the end of the this paper Students will be able to: <ul style="list-style-type: none"> • Learn historical perspective of Food processing in India • Understand the fundamentals of Government Regulations • Learn about various nutrients present in the food. • Have an basic understanding of food processing Techniques • Know about various additives used in the food industry • Have an overview of food related hazards and safety assurance 	
7	Credit Value	4	
8	Total Marks	Maximum Marks: Total - 100 University Exam (UE)- 50, CCE-50	Min. Passing Marks: 33
Part B – Content of the Course			
Total No. of Lectures-Tutorials-Practical (04 hours per week):			
L-T-P: 60-0-0 (Total hours)			
Unit	Topic	No. of Lectures	
1	Historical Perspective: History and evolution of Food Processing in India. Governmental regulation: Introduction, Food laws and standards: Indian food safety laws and standards; Quality and safety assurance in food industry; BIS Laboratory Services and Certification	12	
2	Constituents of foods & their nutritive aspects: Carbohydrates, Proteins,	12	

	Fats and oils, Vitamins and Minerals	
3	Food processing techniques: Common unit operations, Food deterioration and their control; Heat preservation and processing, Cold preservation and processing Food dehydration, Food concentration & food packaging	12
4	Food additives: Preservatives, Antioxidants, Chelating agents, Surface active agents, Stabilizing and Thickening agents, Buffering agents, Colouring agents, Sweetening agents & Flavoring agents	12
5	Food Safety, Risks and Hazards: Food related Hazards, Microbiological Considerations in food safety, Effects of processing and storage on microbial safety, Chemical hazards associated with foods, Prevention methods from food born disease	12

Part C – Learning Resource

Text Books, Reference Books, Other Resources

Suggested Reading:

Text & Reference Books:

1. Belitz, H.D., Grosch W., “Food Chemistry”, Springer – Verlag Bertin Heiderberg, 2nd Edition, 1999
2. Eastwood, M., “Principles of Human Nutrition, Chapman and Hall, London, I Edition, 1997.
3. Coultate, T.P., “Food – The Chemistry of its Components”, Royal Soc. Chemistry, 4th Edition, 2002.
4. Branam, A. L., Davidson, P. M., “Food additives, Food Science and Technology series”, (35), Marcel Dekker, Inc, 1990.
5. Parker, R., “Introduction to Food Science”, Delmar Learning, U.S.A, I Edition, 2003.
6. Smolin, L.A., “Nutrition Science and application”, Saunders College Publishing, 3rd Edition.
7. Barrow, J.S., James, W.P.T, “Human Nutrition and dietetics”, Churchill Livingstone, 9th Edition, 1993

Suggested equivalent online courses:

(all URLs accessed in May 2021)

MOOCs

- <https://www.classcentral.com/course/swayam-food-science-processing-14065>

- <https://www.mooc-list.com/tags/food-processing>
- <https://www.coursera.org/courses?query=food%20science>

NPTEL:

- https://onlinecourses.nptel.ac.in/noc20_ag02/preview
- <https://nptel.ac.in/content/storage2/courses/103103029/pdf/mod6.pdf>

MIT

- <https://ocw.mit.edu/courses/science-technology-and-society/sts-429-food-and-power-in-the-twentieth-century-spring-2005/syllabus/>
- <https://ocw.mit.edu/courses/nuclear-engineering/22-01-introduction-to-nuclear-engineering-and-ionizing-radiation-fall-2016/lecture-videos/food-irradiation-and-its-safety/>:

Web resources:

(all URLs accessed in May 2021)

- <http://www.caaa.in/Image/food%20processing%20book.pdf>
- <https://www.civilserviceindia.com/subject/General-Studies/notes/food-processing-and-related-industries-in-india.html>
- <https://fssai.gov.in/cms/food-safety-and-standards-act-2006.php>
- <https://foodsafetyhelpline.com/introduction-to-food-safety-and-standards-act-2006/>
- <https://www.yourarticlelibrary.com/flood/constituents/constituents-of-food-and-its-functions/64425>
- https://link.springer.com/chapter/10.1007%2F978-94-015-7262-0_3
- <http://www.fao.org/3/s4314e/s4314e04.htm>

Keywords: Carbohydrates, Proteins, Fats and oils, Vitamins, minerals food safety, Quality, safety assurance, BIS Food deterioration, Heat preservation, Food dehydration, Preservatives, Antioxidants, Chelating agents, Safety, Risks, Hazards, microbial safety, food born disease.

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Session 2021-22

Part A - Introduction			
Program-CERTIFICATE		Class- UG	Semester- I
Session: 2022-2023			
Subject : Chemistry (Honours)			
1	Course code	CHGT 01 B (Practical)	
2	Course title	FOOD PROCESSING & TECHNOLOGY	
3	Course type	Generic Elective (GE)	
4	Pre-requisite (if any)	This course is Open for all	
5	Course Objective		
6	Course Learning Outcomes (CLO)	<p>By the end of the this paper Students will be able to:</p> <ul style="list-style-type: none"> • Learn historical perspective of Food processing in India • Understand the fundamentals of Government Regulations • Learn about various nutrients present in the food. • Have an basic understanding of food processing Techniques • Know about various additives used in the food industry • Have an overview of food related hazards and safety assurance 	
7	Credit Value	02	
8	Total Marks	Maximum Marks: Total - 100 University Exam (UE)- 60, CCE-40	Min. Passing Marks:
Part B – Content of the Course			
Total No. of Lectures-Tutorials-Practical (04 hours per week):			
L-T-P: 60-0-0 (Total hours)			
Unit	Topic		No. of Lectures
1	<ol style="list-style-type: none"> 1. To determine anti-bacterial properties of turmeric that can preserve milk. 2. To identify salt or sugar preservatives keep fruit from turning brown the longest. 3. Testing of adulterant in: <ul style="list-style-type: none"> • <i>food,</i> • <i>oil</i> • <i>vegetable</i> 4. To determine the saponification value of an oil/fat. 5. To determine the iodine value of an oil/fat 		12

	<p>6. Qualitative tests for carbohydrates- (Only these tests are to be done in class)</p> <ul style="list-style-type: none"> • Molisch test • Barfoed's reagent test, • Rapid furfural test • Tollen's test • Fehling solution test <p>7. Qualitative tests for proteins</p>	
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Part C – Learning Resource

Text Books, Reference Books, Other Resources

Suggested Reading:

Text & Reference Books:

1. 1. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. (2012), **Vogel's Textbook of Practical Organic Chemistry**, Pearson.
2. **Manual of Biochemistry Workshop**, 2012, Department of Chemistry, University of Delhi.

**Suggested equivalent online courses:
(all URLs accessed in May 2021)**

MOOCs

- <https://www.classcentral.com/course/swayam-food-science-processing-14065>
- <https://fssai.gov.in/cms/manuals-of-methods-of-analysis-for-various-food-products.php>

