

GOVT. MADHAV SCIENCE P.G. COLLEGE UJJAIN M.P.
A GRADE ACCREDITED THROUGH NAAC
DST-FIST COLLEGE



CERTIFICATE

Courses where Experiential Learning is practiced as per Syllabus

Certified that following courses are practicing Experiential Learning as defined by the respective syllabi

Session 2015-16

Sr. No.	Programme	Courses
1.	B.Sc. (UG)	Physics
		CS/ CA
		Zoology
		Biotechnology
		Botany
		Chemistry
		Mathematics
		Bioinformatics
		IT
		Microbiology
		Electronics
		Pharmaceutical Chemistry
		Economics
		Geography
		Geology
2.	BCA	BCA
3.	M.Sc. Chemistry	Chemistry
4.	M.Sc. Botany	Botany
5.	M.Sc. Zoology	Zoology
6.	M.Sc. Mathematics	Mathematics
7.	M.Sc. Pharmaceutical Chemistry	Pharmaceutical Chemistry
8.	M.Sc. Applied Microbiology	Applied Microbiology



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GOVT. MADHAV SCIENCE P.G. COLLEGE UJJAIN M.P.

A GRADE ACCREDITED THROUGH NAAC

DST-FIST COLLEGE



Courses where Experiential Learning is practiced as per Syllabus

Certified that following courses are practicing Experiential Learning as defined by the respective syllabi
Session 2016-17

Sr. No.	Programme	Courses
1.	B.Sc. (UG)	Physics
		CS/ CA
		Zoology
		Biotechnology
		Botany
		Chemistry
		Mathematics
		Bioinformatics
		IT
		Microbiology
		Electronics
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		Economics
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2.	BCA	BCA
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5.	M.Sc. Zoology	Zoology
6.	M.Sc. Mathematics	Mathematics
7.	M.Sc. Pharmaceutical Chemistry	Pharmaceutical Chemistry
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Courses where Experiential Learning is practiced as per Syllabus

Certified that following courses are practicing Experiential Learning as defined by the
respective syllabi
Session 2017-18

Sr. No.	Programme	Courses
1.	B.Sc. (UG)	Physics
		CS/ CA
		Zoology
		Biotechnology
		Botany
		Chemistry
		Mathematics
		Bioinformatics
		IT
		Microbiology
		Electronics
		Pharmaceutical Chemistry
		Economics
		Geography
		Geology
2.	BCA	BCA
3.	M.Sc. Chemistry	Chemistry
4.	M.Sc. Botany	Botany
5.	M.Sc. Zoology	Zoology
6.	M.Sc. Mathematics	Mathematics
7.	M.Sc. Pharmaceutical Chemistry	Pharmaceutical Chemistry
8.	M.Sc. Applied Microbiology	Applied Microbiology

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Principal
Govt. Madhav Science P.G. College
Ujjain (M.P.)

GOVT. MADHAV SCIENCE P.G. COLLEGE UJJAIN M.P.
A GRADE ACCREDITED THROUGH NAAC
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Courses where Experiential Learning is practiced as per Syllabus

Certified that following courses are practicing Experiential Learning as defined by the
respective syllabi
Session 2018-19

Sr. No.	Programme	Courses
1.	B.Sc. (UG)	Physics
		CS/ CA
		Zoology
		Biotechnology
		Botany
		Chemistry
		Mathematics
		Bioinformatics
		IT
		Microbiology
		Electronics
		Pharmaceutical Chemistry
		Economics
		Geography
		Geology
2.	BCA	BCA
3.	M.Sc. Chemistry	Chemistry
4.	M.Sc. Botany	Botany
5.	M.Sc. Zoology	Zoology
6.	M.Sc. Mathematics	Mathematics
7.	M.Sc. Pharmaceutical Chemistry	Pharmaceutical Chemistry
8.	M.Sc. Applied Microbiology	Applied Microbiology

ratio of courses with experiential learning against total no. of courses 23:23
=1:1=100%



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GOVT. MADHAV SCIENCE P.G. COLLEGE UJJAIN M.P.
A GRADE ACCREDITED THROUGH NAAC
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Courses where Experiential Learning is practiced as per Syllabus

Certified that following courses are practicing Experiential Learning as defined by the
respective syllabi
Session 2019-20

Sr. No.	Programme	Courses
1.	B.Sc. (UG)	Bioinformatics
2.	BCA	BCA
3.	M.Sc. Chemistry	Chemistry
4.	M.Sc. Botany	Botany
5.	M.Sc. Zoology	Zoology
6.	M.Sc. Mathematics	Mathematics
7.	M.Sc. Pharmaceutical Chemistry	Pharmaceutical Chemistry
8.	M.Sc. Applied Microbiology	Applied Microbiology



Signature Not Verified
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CERTIFICATE

This is to certify that **Shailesh Jatav** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Online Newspaper Delivery Management System".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


Guided By 
महाविद्यालय, उज्जैन

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

CERTIFICATE

This is to certify that the dissertation entitled “ NXT Digital Cable” is submitted by **Prof. Nitin Tiwari, Prof. Sumanshu Sharma, Prof. Jayant Mishra** fulfillment of the requirement for the award of BCA IIIrd year.

The Project has been prepared by the candidates under my guidance and is the work of their own efforts. The project is forwarded with recommendation of evaluation.

I wish them grand success in their future.

(Signature)
06/03/2020

Project Guide

(Prof. Nitin Tiwari)

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

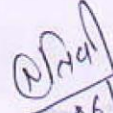
Signature Not Verified
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AJ11@GMAIL.COM,

CERTIFICATE

This is to certify that the dissertation entitled “ E-learning” is submitted by **Prof. Nitin Tiwari, Prof. Sumanshu Sharma, Prof. Jayant Mishra** fulfillment of the requirement for the award of BCA IIIrd year.

The Project has been prepared by the candidates under my guidance and is the work of their own efforts. The project is forwarded with recommendation of evaluation.

I wish them grand success in their future.


06/03/2020
Project Guide

(Prof. Nitin Tiwari)

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CERTIFICATE


This is to certify that **Pratham Barbele** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed his project entitled "Vehicle loan management".

This project is submitted in partial fulfilment for the award of the Graduation In B.C.A.

We would like to appreciate his sincerity, hard work and completion of his project work.

We wish all success in his future endeavours.

Dr. Nitin tiwari.....


शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Prof. Shumanshu Sharma.....

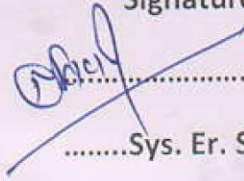
Prof. Jayant Mishra.....

PROJECT COMPLETION CERTIFICATE

This is to certify that the project report entitled **Telephone-Billing-System-Java-Project** being submitted by **Sara Siddiqui** Student of B.C.A 6th semester of **Gov.Madhav Science College, Ujjain (M.P)**, has been completed his project work in this college for the partial fulfillment requirement of the **bachelor of computer applications** degree affiliated to **Vikram University Ujjain**.

We are found his work are satisfactory and we wish him a bright feature.

Signature of Project Guide



.....Dr.Nitin Tiwari

.....Sys. Er. Sumanshu Sharma

.....Sys. Er. Jayant Mishra

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CERTIFICATE

This is to certify that the Project Report entitled **FARMERS BUDDY** is a record work carried out by **Ritik khare (17109396)**, under my guidance and supervision in partial fulfillment of the requirements for award of the degree of Bachelor of computer application degree affiliated to Vikram university Ujjain .

I am found there works are satisfactory and recommended for the award of degree

I wish them a bright future

Signature of projects guide



(Mr. Sumanshu Sharma sir)

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Signature of principal

.....

Reference No - - - -

date

Project Completion Certificate

This is certify that Mr. Abhishek Bagdi Student of BCA Final Semester) of Madhav Science College tas Succesfully Completed the Project Work entitled ujjain Hospitals. com Under the guidance Mr. Dr Nitin Tiwari is a bona - fide piece of work carried out at science college

The Projecti tijain Hospitals. com developed by Mr. Abhishek Bagdi in the college institute and he has put at least 200 hours of laboratory work during the project with the guide to complete this project. All the prescribed certificates are attached after the completion of all the formalities of the project work as per schedule, including internal examination

Signature of Guide

Plase:

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Date:

Signature of Principal

Seal OF THE Institute

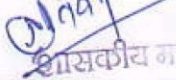
CERTIFICATE

This is to certify that **Nilesh Gothwal** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "**How To Know Army**".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

CERTIFICATE

This is to certify that the dissertation entitled “**Library Management System**” is submitted by **Pradeep Sisodiya** fulfillment of the requirement for the award of BCA Final Year.

The project has been prepared by the candidates under my guidance and is the work of their own efforts. The project is forwarded with recommendation of evaluation.

I wish them grand success in their future.

ACKNOWLEDGEMENT


Project Guide

(Dr. Nitin Tiwari)

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

PROJECT COMPLETION CERTIFICATE

This is certify that Mr. Harshit Gupta student of B.C.A 3 YEAR of govt. Madhav science College Ujjain .(m.p) has been completed his project work entitled "**Ujjain TOURISM**" in this college for the partial fulfillment requirement of the **BACHELOR OF COMPUTER APPLICATION** degree affiliated to **vikram University Ujjain.**

We are found his works are satisfactory and we wish him a bright future.



SIGNATURE OF PROJECT GUIDE

Prof. Nitin Tiwari

Prof. Sumanshu Sharma

Prof. Jayant Mishra

Project completion certificate

This is to certify that MR. ABHISHEK CHOURASIYA student Bachelor of computer Application 3rd year of Govt. Madhav Science College - Ujjain (M.P) have successfully completed the project work entitled.

"ON-LINE TRAVELS BOOKING SYSTEM under the Guidance of Prof. Dr. Nitin Tiwari, Prof. Sumanshu Sharma and prof. Jayant Mishra is a bona fide piece of work carried out at Govt. Madhav Science College - Ujjain (M.P).

The project entitled "ON-LINE TRAVELS BOOKING SYSTEM" develops by Mr. ABHISHEK CHOURASIYA in the Madhav Science College- Ujjain (M.P) and he has put at least 200 hours of laboratory work during the tenure of the project with the guide to complete this project. All the prescribed certificates are attached after the completion of the formalities of the project work as per schedule, including internal examination.

Place:

Sign. of guide

Date:

Seal of the Institute

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Project Completion Certificate

This is certified that Mr. ABDUL HASIM MUNSURI student of BCA (first year) of Govt. Madhav Science College, Ujjain (M.P) has been completed his project work entitled "ONLINE GST INFORMATION" in this college for the partial fulfillment requirement of the bachelor of computer Application degree affiliated to Vikram University Ujjain.

We are found his work are satisfactory and we wish him a bright future.

Guide

06/03/20
राजीव माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Signature of Project

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महाविद्यालय, उज्जैन

Prof. Nitin Tiwari

Prof. Sumanshu Sharma

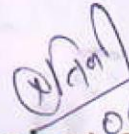
Prof. Jayant Mishra

CERTIFICATE

This is to certify that the dissertation entitled “ Online Shopping” is submitted by **Prof. Nitin Tiwari, Prof. Sumanshu Sharma, Prof. Jayant Mishra** fulfillment of the requirement for the award of BCA IIIrd year.

The Project has been prepared by the candidates under my guidance and is the work of their own efforts. The project is forwarded with recommendation of evaluation.

I wish them grand success in their future.


06/13/2020

Project Guide
(Prof. Nitin Tiwari)

राष्ट्रीय माध्यम विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

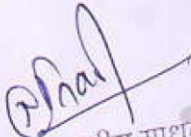
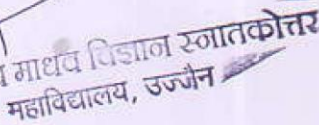
CERTIFICATE

This is to certify that **Chirag amlkar** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Automatic College Timetable Generator".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


Guided By  **महाविद्यालय, उज्जैन**

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

Signature Not Verified
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AJ11@GMAIL.COM,

Govt. Madhav Science P.G. College

Affiliated to Vikram University, Ujjain

Reference No.

Date:

Dissertation Approval Certificate

This is certified that *Shiksha Shukla*, student of B.C.A. 3rd Year of *Govt. Madhav Science P.G. College*, has successfully completed the project work entitled “**Web Based Gym Information System**” under my guidance. I have regularly assessed the progress of the work and suggested the correction whenever required. The student has incorporated all the suggestions provided by me in this dissertation. This dissertation is a bona fide piece of work of the standard of BCA project work carried out by the student under my supervision. Internal examination has been completed in my presence and student's performance was satisfactory and hence this dissertation is approved for the submission and valuation thereof.

Signature of Guide

प्रशासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Place:

Signature of Principal

Date:

College Seal

CERTIFICATE

This is to certify that **Shailesh Jatav** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Online Newspaper Delivery Management System".

This project is submitted in partial fulfilment for the award of the Graduation in B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


Guided By महाविद्यालय, उज्जैन
गुरुजीव माधव विज्ञान स्नातकोत्तर

Dr. Nitin tiwari

Prof. Shumanshu Sharma


Prof. Jayant Mishra

Declaration

I, SHREYANS JAIN of Madhav Science College declare that the project report submitted by under the guidance of Mr. Nitin Tiwari is a bona – fide work for the partial fulfilment of the requirement of the BCA final year project work. I have incorporated all the suggestions provided by my guide time to time.

Further declare that to the best of my knowledge this project contains my original work and does not contain any part of a work which has been submitted for the award of any degree either in this university or in any other university / deemed university / institute etc. without proper citation and I shall be fully responsible for any plagiarism found at any stage.

Name & signature of the guide


Sumant Kumar Sharma
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Name & Signature of the student

CERTIFICATE


This is to certify that **Shashwat Panchal** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed his project entitled "**Online Carrier Guidance and Placement Unit**".

This project is submitted in partial fulfilment for the award of the Graduation In B.C.A.

We would like to appreciate his sincerity, hard work and completion of his project work.

We wish all success in his future endeavours.

Dr. Nitintiwari.....


06/03/2020
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Prof. Shumanshu Sharma.....

Prof. JayantMishra.....

DECLARATION

I Mr. Rakesh karedia of Govt Madhav science college Ujjain, Declare that the dissemination/project report submitted by me under the guidance of Mr. Shumanshu serma is a Bonafide work for the partial fulfillment of the requirement of the BCA Final year project work. I have incorporated all the suggestions provided by my guide time to time.

I further declare that to best of my knowledge this dissemination contains my Original work and does not contain any part of any work which has been submitted for the award of any degree either in this University or in any other University etc. Without proper citation and I shall be fully responsible for any plagiarism found at any stage.

Dr. Nishu Tiwari

Name of the guide:

Name of the Student: Rakesh Karedia

Signature of the guide.

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Signature of the Student

Reference No.

Date: 6/3/2020


CERTIFICATE

This is to certify that the Project Report entitled **WEB SERVER MANAGEMENT** is a record work carried out by **HARSH NAMDEV (17109389)**, under my guidance and supervision in partial fulfillment of the requirements for award of the degree of Bachelor of computer application degree affiliated to Vikram university Ujjain .

I am found there works are satisfactory and recommended for the award of degree

I wish them a bright future

Signature of projects guide


(Mr. Sumanshu Sharma sir)

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन


Signature of principal

.....

DECLARATION

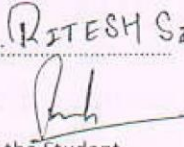
I Mr. Ritessisodiya of Govt Madhav science college Ujjain, Declare that the dissemination/project report submitted by me under the guidance of Mr. Shumanshu serma is a Bonafide work for the partial fulfillment of the requirement of the BCA Final year project work. I have incorporated all the suggestions provided by my guide time to time.

I further declare that to best of my knowledge this dissemination contains my Original work and does not contain any part of any work which has been submitted for the award of any degree either in this University or in any other University etc. Without proper citation and I shall be fully responsible for any plagiarism found at any stage.

Name of the guide: 

Dr. Nimish Tiwari

Signature of the guide.
शास्त्रनिधि माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Name of the Student: 

RITESH S2809IYA

Signature of the Student

Reference No.

Date: .../.../.....


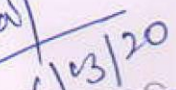
CERTIFICATE

This is to certify that **Ganesh Panwar** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Ncert Books 9 to 12th App".

This project is submitted in partial fulfilment for the award of the Graduation in B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


Guided By 
प्र.स.के.वि. माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

Govt. Madhav Science P.G. College

Affiliated to Vikram University, Ujjain

Reference No.

Date: 01/03/2020

Dissertation Approval Certificate

This is certified that *Nidhi Chouhan*, student of B.C.A. 3rd Year of *Govt. Madhav Science P.G. College*, has successfully completed the project work entitled “**Web Based Hospitals Information System**” under my guidance. I have regularly assessed the progress of the work and suggested the correction whenever required. The student has incorporated all the suggestions provided by me in this dissertation. This dissertation is a bona fide piece of work of the standard of BCA project work carried out by the student under my supervision. Internal examination has been completed in my presence and student's performance was satisfactory and hence this dissertation is approved for the submission and valuation thereof.

Signature of Guide

Dr. Nidhi Bhanu
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Place:

Signature of Principal

Date:

College Seal


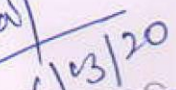
CERTIFICATE

This is to certify that **Ganesh Panwar** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Ncert Books 9 to 12th App".

This project is submitted in partial fulfilment for the award of the Graduation in B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


Guided By 
प्र.स.के.वि. माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

Govt. Madhav Science P.G. College

Affiliated to Vikram University, Ujjain

Reference No.

Date: 01/03/2020

Dissertation Approval Certificate

This is certified that *Nidhi Chouhan*, student of B.C.A. 3rd Year of *Govt. Madhav Science P.G. College*, has successfully completed the project work entitled “**Web Based Hospitals Information System**” under my guidance. I have regularly assessed the progress of the work and suggested the correction whenever required. The student has incorporated all the suggestions provided by me in this dissertation. This dissertation is a bona fide piece of work of the standard of BCA project work carried out by the student under my supervision. Internal examination has been completed in my presence and student's performance was satisfactory and hence this dissertation is approved for the submission and valuation thereof.

Signature of Guide

Dr. Nidhi Bhanu
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Place:

Signature of Principal

Date:

College Seal

PROJECT COMPLETION CERTIFICATE

This is certified that SACHIN NAHAR, student of B.C.A. (final year) of Govt. Madhav Science college, Ujjain, has successfully completed the project work entitled "Two Wheeler Auto Part's shop @Web Based Information System" under the guidance of Mr. Sunashu Sharma is a bona fide piece of work carried out at Govt. Madhav Science College, Ujjain.

The project entitled Two Wheeler Auto Part's Shop @Web Based Information System Developed by SACHIN NAHAR in Govt. Madhav Science College, Ujjain and he/she has put at least 200 hours of laboratory work during the tenure of the project with the guide to complete this project. All the prescribed certificates are attached after the completion of all the formalities of the project work as per schedule, including internal examination.

Date;

Signature of Guide

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CERTIFICATE

The minor project work entitled "**Faculty Appraisal Performance System**" submitted by **Kirti Sharma (17130627)** is approved as partial fulfillment for the award of the degree of **Bachelor of Computer Application** by **GOVT. MADHAV SCIENCE COLLEGE UJJAIN**

Signature of projects guide



(Mr. Sumanshu Sharma Sir)

शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Signature of Principal

.....


CERTIFICATE

This is to certify that **Rishabh Gome** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Online Course and Examination Management System".

This project is submitted in partial fulfilment for the award of the Graduation in B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


गुप्त विद्यालय, उज्जैन
Guided By

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

CERTIFICATE

This is to certify that **Ganesh Panwar** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "NCERT Books 9th to 12th App".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

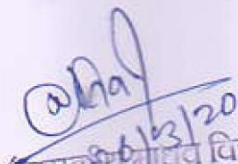
I wish all success in their future endeavours.

Guided By

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra


शासक विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CANDIDATE DECLARATION

I, **Akshata yogi** Of **Govt. Madhav Science College Ujjain** declare that the dissertation/Project report submitted by me under the guidance of **Dr. Nitin Tiwari** is a bona fide work for the partial fulfillment of the requirement of the B.C.A final year project work. I have incorporated all the suggestions provided by my guide time to time.

I further declare that to best of my knowledge this dissertation contains my original work and does not contain any part of work which has been submitted for the award of any degree either in this university or in other university /Deemed University/ Institute etc. without proper citation and I shall be fully responsible for any plagiarism found at any stage.

Name of Student :- **Akshata yogi**

Signature of Student :-

Name of Guide:- **Dr. Nitin Tiwari Sir**

Signature of Guide:-

06/03/2020
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CERTIFICATE

This is to certify that **Ruteksh Mandora** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Web Based Labour Management System".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.

Guided By

06/3/20
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

Govt. Madhav Science College Ujjain (m.p.)

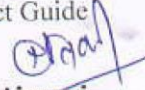
Computer Department

CERTIFICATE

This is to certify that the Project report entitled Online Blood Bank Management being submitted for the Vikram University Ujjain, m.p. by NIDA SHAIKH Reg.No. 17109414, Class B.C.A. FINAL YEAR done for the partial fulfillment for the award of degree of bachelor of computer Application. This is a Bonafide record of work done by him/her under my guidance and supervision during the year 2019-2020.

Head of the Department

project Guide


Dr. nitin tiwari
Mr. sumanshuSharma
Mr. jayant mishra

गणसकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CERTIFICATE

This is to certify that **Ruteksh Mandora** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Web Based Labour Management System".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.


I wish all success in their future endeavours.

Guided By

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra


06/03/2020

गोपबन्दीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

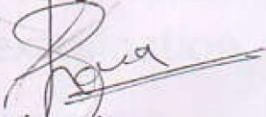
Declaration

I, ABHISHEK SHRIVASTAV of Madhav Science College declare that the project report submitted by under the guidance of sumanshu sharma is a bonfire work for the partial fulfillment of the requirement of the BCA final year project work. I have incorporated all the suggestions provided by my guide time to time.

O further declare that to the best of my knowledge this project contains m original work and does not contain any part of any work which has been submitted for the award of any degree either In this university or In any other university / deemed university / institute etc. without proper citation ad I shall be fully responsible for any plagiarism found at any stage.

Name & Signature of the guide

Name & Signature



Sumanshu sharma

SHRIVASTAV

Of student

ABHISHEK

श्रीसकंद माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

CERTIFICATE


This is to certify that **Shashwat Panchal** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed his project entitled "**Online Carrier Guidance and Placement Unit**".

This project is submitted in partial fulfilment for the award of the Graduation In B.C.A.

We would like to appreciate his sincerity, hard work and completion of his project work.

We wish all success in his future endeavours.

Dr. Nitintiwari.....


06/03/2020
शासकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Prof. Shumanshu Sharma.....

Prof. JayantMishra.....


CERTIFICATE

This is to certify that **Rishabh Gome** who is the regular student of Graduation in B.C.A. in Govt. Madhav Science College, Ujjain affiliated study centre of Vikram University, Ujjain have successfully completed their project entitled "Online Course and Examination Management System".

This project is submitted in partial fulfilment for the award of the Post Graduation Diploma In B.C.A.

I would like to appreciate their sincerity, hard work and completion of their project work.

I wish all success in their future endeavours.


गो.स.के.वि.माधव विज्ञान स्नातकोत्तर
सहाविद्यालय, उज्जैन
Guided By

Dr. Nitin tiwari

Prof. Shumanshu Sharma

Prof. Jayant Mishra

DECLARATION

HimanshuGhorwal of **Madhav Science College Ujjain (M.P.)** declares that the dissertation/project report submitted by me under the guidance of **Mr. Sumansu Sharma** is a bona fide work for the partial fulfillment of the requirement of the **BCA 3Rd Year** project work, I have incorporated all the suggestions provided by my guide time to time

I further declare that to the best of my knowledge this dissertation Contains my original work and does not contain any part of work which has been submitted for the award of any degree either in this university or in any other university/Institute without proper citation and I shall fully responsible for any plagiarism found at any stage.

Signature of guide of the student

Mr. Sumansu Sharma

Signature of Student

Himanshu Ghorwal

DECLARATION

I **Mr. Nilesh** of Govt Madhav science collage Ujjain Declare that the dissemination/project report submitted by me under the guidance of **Mr Shumanshu Sharma** is a Bonafide work for the partial fulfillment of the requirement of the BCA Final year project work I have incorporated all the suggestions provided by my guide time to time.

I further declare tat to best of my knowledge this dissemination contains my Original work and does not contain any part of any work which has been submitted for the award of any degree either in this University of in any other University etc. Without proper citation and I shall bee fully responsible for any plagiarism found at any stage.

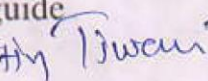
Name of the guide


Dr. Nitya Dwivedi

Name of the Student

Nilesh

Signature of the guide


Dr. Nitya Dwivedi

Signature of the Student




Reference No -----

Date 04 / 11 / 20

DECLARATION

Harshit Gupta of the MADHAV SCIENCE COLLEGE, UJJAIN (MP) declares that the dissertation/ project report submitted by me under the guidance of **Prof. Nitin Tiwari, Prof. Sumanshu Sharma, Prof. Jayant Mishra** is a Bonafide work for the practical fulfillment of the requirement of the BCA 3rd year project work I have incorporated all the suggestions provided bi guide time to time.

I further declare that to the best of the knowledge this dissertation contains my original work and does not contain my part of any work which has been submitted for the award of the any degree either in this University e or in any other University e deemed University institute etc. Without proper citizen and I shall be fully responsible for any plagiarism found at any stage.


28/12/2020
शास्त्रीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन

Name & Signature of the guide/s

Prof. Nitin Tiwari

Prof. Sumanshu Sharma

Prof. Jayant mishra

Name & signature

Harshit Gupta

Dissertation Approval Certificate

This is to certify that **Mr. Hariom Jadam** student of the **Bachelor of the Computer Application IIIrd Year** of **Madhav Science College Ujjain (M.P.)** has successfully completed the project work entitled **"School Management System"** under my Guidance. I have regularly accessed the progress of the work and suggested the correction wherever required.

The student has incorporated all the suggestion provided by me in this dissertation.

This Dissertation is bone fide piece of the work of the standard of BCA project work carried out by the student under my supervision. Internal Examination has been completed in my presence and student's performance was satisfactory and hence this dissertation is approved for the submission and valuation thereof.


04/06/20
शासकीय शिक्षण विभाग, उज्जैन
महाविद्यालय, उज्जैन

Signature of Guide

Signature of Principal/Director

Seal of the institute

Place:

Date:

Dissertation Approval Certificate

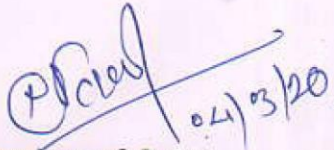
This any to certify that **Mr.Hariom Jadam** student of the **Bachelor of the Computer Application IIIrd Year** of **Madhav Science College Ujjain (M.P.)** has successfully completed the project work entitled **"School Management System"** under my Guidance. I have regularly accessed the progress of the work and suggested the correction wherever required.

The student has incorporated all the suggestion provided by me in this dissertation.

This Dissertation is bone fide piece of the work of the standard of BCA project work carried out by the student under my supervision. Internal Examination has been completed in my presence and student's performance was satisfactory and hence this dissertation is approved for the submission and valuation thereof.

Place:

Date:


Signature of Guide
शासिकीय माधव विज्ञान स्नातकोत्तर
महाविद्यालय, उज्जैन
Signature of Principal/Director
Seal of the institute

CERTIFICATE

This is to certify that the dissertation entitled "**Online Railway Reservation**" is submitted by **Darbar Singh** fulfillment of the award of BCA 3rd Year.

The project has been prepared by the candidates under my guidance and is the work of their own efforts. The project is forwarded with recommendation of evaluation.

I wish them grand success in their future.


Project Guide

Prof. Sumanshu Sharma

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by .kamal...Paxman Roll No. 17109472 Class B.Sc. IIIrd Year under the supervision of .Mr. Ravikant...Yadav and bears the result of his/her original work.

Date May 2020

Place Wizamb

R. Yadav
Signature of Guide

Shouche
Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by Gajraj Singh Chauda. Roll No. 17.169.469 Class B.Sc. IIIrd Year under the supervision of Mrs. Ravikanta Yadav and bears the result of his/her original work.

Date March 2020

Place Ujjain

R. Yadav
Signature of Guide

S. Shouche
Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by Abhay...Betal... Roll No. 17109464 Class B.Sc. IIIrd Year under the supervision of ^{Dr.} MR. Ravikant Yadav and bears the result of his/her original work.

Date March 2020

Place Uttar


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by Jayesh..Pandaya.... Roll No. 17109470 Class B.Sc. IIIrd Year under the supervision of Mr..Ravikant.yadav and bears the result of his/her original work.

Date March 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by Aaditya Singh Chohan Roll No. 17109466.... Class B.Sc. IIIrd Year under the supervision of MP. Ravikant Yadav.... and bears the result of his/her original work.

Date March 2020

Place Ujjain

Arpan Bhardwaj
Signature of Guide

Shobha Shouche
Co-ordinator

Bioinformatics Department

Signature Not Verified
ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by Abhishek..Yadav..Roll No. 17109465.. Class B.Sc. IIIrd Year under the supervision of M.P..Ravikant..Yadav.... and bears the result of his/her original work.

Date March 2020

Place Udaipur

Buradav
Signature of Guide

Shouche
Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report Construction of 3D structure & validation has been prepared by Lakendra Singh....Roll No. 17109473. Class B.Sc. IIIrd Year under the supervision of Mr. Ravikant Yadav.... and bears the result of his/her original work.

Date. March 2020

Place Ujjain

Signature [Signature] of Guide

[Signature]
Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Screening of super natural compound against bacterial disease has been prepared by Akshay. Nayak Roll No. 17131302 Class B.Sc. IIIrd Year under the supervision of Mr. Pradeep. Swini. and bears the result of his/her original work.

Date. Mon 2020

Place Ujjain.


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Screening of super natural compound against bacterial disease has been prepared by Ajay. Pandey Roll No. 17139.02 Class B.Sc. IIIrd Year under the supervision of Mr. Pradeep... and bears the result of his/her original work.

Date 1 May 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Screening of super natural compound against bacterial disease has been prepared by Ziya Uddin Arif Roll No. 17130097 Class B.Sc. IIIrd Year under the supervision of Mr. Ravikant Yadav and bears the result of his/her original work.

Date May 20 20

Place Gurgaon

Ravikant Yadav
Signature of Guide

Shouche
Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Screening of super natural compound against bacterial disease has been prepared by zi Tushar soniya. Roll No. 17B0645 Class B.Sc. IIIrd Year under the supervision of Mr. Ravikant Yadav and bears the result of his/her original work.

Date March 2020

Place Udaipur

B. Yadav
Signature of Guide

Shouche
Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Screening of super natural compound against bacterial disease has been prepared by Sudama..... Roll No. 17130644 Class B.Sc. IIIrd Year under the supervision of MR. Ravikant Yadav and bears the result of his/her original work.

Date March 2020

Place Udaipur


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Screening of super natural compound against bacterial disease has been prepared by ^{Rajpal Singh}~~Rajpal Singh~~ Roll No ¹⁷¹⁰⁹⁴⁸¹~~17109481~~. Class B.Sc. IIIrd Year under the supervision of ^{MR. Ravikant Yadav}~~MR. Ravikant Yadav~~ and bears the result of his/her original work.

Date March 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Molecular docking of medicinal plant compounds has been prepared by Mahesh Kumar Dangi, Roll No. 17103474 Class B.Sc IIIrd Year under the supervision of MR. Pradeep Jain and bears the result of his/her original work.

Date Mar. 2020

Place Ujjain


Signature of Guide


Co-ordinator

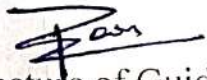
Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Molecular docking of medicinal plant compounds has been prepared by Muskan Ukey, Roll No. 17109477 Class B.Sc IIIrd Year under the supervision of Mr. Pradeep Jain and bears the result of his/her original work.

Date Mar. 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Molecular docking of medicinal plant compounds has been prepared by ..Bhavan Nigam Roll No. 17109478 Class B.Sc IIIrd Year under the supervision of M. Pradeep Saini and bears the result of his/her original work.

Date 1 Mar. 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Molecular docking of medicinal plant compounds has been prepared by Rahul...Trivedi Roll No. 17109479 Class B.Sc IIIrd Year under the supervision of Mh. Pradeep Sam and bears the result of his/her original work.

Date Mar. 2020

Place Ujjain


Signature of Guide


Co-ordinator

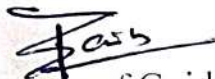
Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Molecular docking of medicinal plant compounds has been prepared by ...Rajesh....., Roll No. 17109480 Class B.Sc IIIrd Year under the supervision of Mr. Pradeep Saini and bears the result of his/her original work.

Date Mar. 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department

Certificate

Dr. Shobha Shouche , Co-ordinator Dept. of Bioinformatics certify that the project report entitled Molecular docking of medicinal plant compounds has been prepared by Mohd. hafeez khsan, Roll No. 17109476. Class B.Sc IIIrd Year under the supervision of MR. Pradeep Saini and bears the result of his/her original work.

Date Mar. 2020

Place Ujjain


Signature of Guide


Co-ordinator

Bioinformatics Department



Declaration of the Guide

Dr. Shakuntala Pandey Professor of Chemistry certify that the project report entitled *Application of organic fertilizer to replace chemical fertilizers* has been prepared by **Arvind Rathore** of M.Sc. IV semester section chemistry under my supervision and bears the result of him original work.

Date

Signature of Guide
Name of Guide
Dr. Shakuntala Pandey
Professor of Chemistry
Govt. Madhav Science
P.G. College M.P.

Signature Not Verified
ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,



Declaration of the Guide

Dr. Shakuntala Pandey Professor of Chemistry certify that the project report entitled *Organic Farming in Borlai village Barwani* has been prepared by **Arvind Rathore** of M.Sc. IV semester section chemistry under my supervision and bears the result of him original work.

Date

Signature of Guide
Name of Guide
Dr. Shakuntala Pandey
Professor of Chemistry
Govt. Madhav Science
P.G.College M.P.



Declaration of the Guide

Dr. Shakuntala Pandey Professor of Chemistry certify that the project report entitled **Scaling Of Organic Fertilizer** has been prepared by **Shree Vallabh Bansiya** of M.Sc. IV semester section **chemistry** under my supervision and bears the result of him original work.

Date:

Signature of Guide

Name of Guide

Dr. Shakuntala Pandey Professor of
Chemistry Govt. Madhav Science
P.G. College Ujjain (M.P.)

Signature Not Verified
ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,



DECLARATION OF THE GUIDE

I **Dr. Manmeet Kuar Makkad** Professor of Chemistry certify that the project report entitled " Importance of medicinal fruits" has been prepared by **Sunil kapadiya** of M.Sc. IV semester under my supervision and bears the result of her original work.

Date 16/09/2020

Dr. Manmeet Kuar Makkad
Professor Chemistry
Govt. Madhav Science P.G.College Ujjain M.P.

Signature Not Verified
ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,



DECLARATION OF THE GUIDE

I Dr Mameet Kaur Makkad Professor of Chemistry certify that the project report entitled “Study on Medicinal Fruits” has been prepared by Damodar Bansiya of M.Sc. IV semester under my supervision and bears the result of her original work.

Date 16/09/2020

Dr. Mameet Kaur Makkad
Professor Chemistry
Govt. Madhav Science P.G.College Ujjain M.P.

Signature Not Verified
ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,

GOVT. MADHAV SCIENCE PG COLLEGE UJAIN

INSTITUTE OF EXCELLENCE IN HIGHER EDUCATION (GOVT.OF M.P.)

A GRADE ACCREDITED THROUGH NAAC

DST-FIST SUPPORTED



DECLARATION BY THE SUPERVISOR

I Dr Kalpana Virendra Singh Professor of Chemistry certify that the project entitled “FLUORIDE CONTAMINATION IN UNDERGROUND WATER OF UJJAIN AND ITS IMPACT FLUOROSIS” was completed and project report has been prepared by the student **Mr. Gopal Sharma** after working for stipulated hours in the laboratory. Student has taken care of optimum green practices during the project and has helped in diminishing the chemical harmful impact thereon. Owing to the COVID 19 Pandemic situation I certify that for the 2 months January and February project work was discussed and carried out in the laboratory and further work was carried out online while student was staying home on online platforms.

Dr. Kalpana Virendra Singh
Professor Chemistry
Govt. Madhav Science P. G. College Ujjain M.P.
Date 16/09/2020

Signature Not Verified
ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,

GOVT. MADHAV SCIENCE PG COLLEGE UJAIN

INSTITUTE OF EXCELLENCE IN HIGHER EDUCATION (GOVT.OF M.P.)

A GRADE ACCREDITED THROUGH NAAC

DST-FIST SUPPORTED



DECLARATION BY THE SUPERVISOR

I Dr Kalpana Virendra Singh Professor of Chemistry certify that the project entitled “FLUORIDE CONTAMINATION IN UNDERGROUND WATER AND ASSOCIATED HEALTH HAZARDS’ was completed and project report has been prepared by the student **Ms. Manisha Katariya** after working for stipulated hours in the laboratory. Student has taken care of optimum green practices during the project and has helped in diminishing the chemical harmful impact thereon. Owing to the COVID 19 Pandemic situation I certify that for the 2 months January and February project work was discussed and carried out in the laboratory and further work was carried out online while student was staying home on online platforms.

Dr. Kalpana Virendra Singh

Professor Chemistry

Govt. Madhav Science P.G.College Ujjain M.P.

Date: 16/09/2020

Signature Not Verified

ARPAN BHARDWAJ
E=ARPANBHARDW
AJ11@GMAIL.COM,



DECLARATION OF THE GUIDE

Dr Brijesh pare Professor of Chemistry certify that the project report entitled “Green chemistry for sustainability” has been prepared by **Shanu tiwari** of M.Sc. IV semester under my supervision and bears the result of her original work.

Date 21/09/2020

Dr. Brijesh pare
Professor of Chemistry
Govt. Madhav Science P.G. College Ujjain M.P.



DECLARATION OF THE GUIDE

I **Dr Brijesh Pare** Professor of Chemistry certify that the project report entitled “medicinal remedies for corona” has been prepared by **Vaidehi Vyas** of M.Sc. IV semester under my supervision and bears the result of her original work.

Date 21/08/2020

Dr. Brijesh pare

Professor Chemistry

Govt. Madhav Science P.G.College Ujjain M.P.



Declaration of Chemistry Certificate

It is certified that is bonafide record of Industrial Tanning carried out of **Rohit Kumawat** students of M.Sc. IV semester Department of Chemistry, Govt. Madhav Science College Ujjain (M.P.), during session 2019-20 at LUPIN Ltd. MANDIDEEP (BHOPAL) M.P, from 29 February to 19 March 2020.

Signature of Guide

Dr. Brajesh Pare, Dr. Pratibha Namdev
Professor & Head of Professor Chemistry
Department of Chemistry
Govt. Madhav Science P.G. College, Ujjain M.P.

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DECLARATION OF THE GUIDE

I Dr Pratibha Namdev of Chemistry certify that the project report entitled "A PROJECT REPORT ON INSTRUMENTATION AND VALIDATION, AS CHEMICAL ANALYSIS" has been prepared by **Mahendra Vishwakarma** M.Sc.IV semester under my supervision and bears the result of her original work.

Date

Dr. Pratibha Namdev
Professor Chemistry
Govt. Madhav Science P.G. College Ujjain M.P.

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DECLARATION OF THE GUIDE

I Dr RekhaNagwanshi of Chemistry certify that the project report entitled “Analysis of Milk and Oil” has been prepared by **preetijat** of M.Sc. IV semester under my supervision and bears the result of her original work.

Date

Dr. RekhaNagwanshi
Professor Chemistry
Govt. Madhav Science P.G.College Ujjain M.P.

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Declaration of the Guide

I **Dr. RekhaNagwanshi** Professor of Chemistry certify that the project report entitled "Industrial training at Lupin Ltd.MandideepRaisen M.P."has been prepared by **Rajat Kumar Dubey** of M.Sc. IV semester section chemistry under my supervision and bears the result of his original work.

Date:16/09/2020

Signature of Guide

Name of Guide

Dr. RekhaNagwanshi

Professor of Chemistry

Govt. Madhav Science P.G. College, Ujjain M.P.

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DECLARATION OF THE GUIDE

I Dr. Jeevan singh solanki , asst. Professor of Chemistry certify that the project report entitled “ Industrial report on LUPIN ltd mandideep” has been prepared **by Alkar Singh** of M.Sc. IV semester under my supervision and bears the result of her original work.

Date :

**Dr. Jeevan singh solanki Asst.
Professor Chemistry**
Govt. Madhav Science P.G.College Ujjain M.P.



DECLARATION OF THE GUIDE

I Dr Jeevan Singh Solanki Professor of Chemistry certify that the project report entitled " Industrial training prepared by **Vijay Parasiya** of M.Sc. IV semester under my supervision and bears the result of her original work.

Date :

Dr. Jeevan Singh
Solanki Professor
Chemistry
Govt. Madhav Science P.G.College Ujjain M.P.



Declaration of the Guide

Dr. Ajay Chaturvedi Professor of Chemistry certify that the project report entitled analysis of soil has been prepared by Mamta Deshmukh of M.Sc. IV semester section chemistry under my supervision and bears the result of him original work.

Date:16/09/2020

Signature of Guide

Name of Guide

Dr. Ajay Chaturvedi

Professor of Chemistry

Govt. Madhav Science P.G. College

Ujjain

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Declaration of the Guide

Dr. Ajay Chaturvedi Professor of Chemistry certify that the project report entitled analysis of soil has been prepared by Varsha Bairagi of M.Sc. IV semester section chemistry under my supervision and bears the result of him original work.

Date:16/09/2020

Signature of Guide

Name of Guide

Dr. Ajay Chaturvedi

Professor of Chemistry

Govt. Madhav Science P.G. College,
Ujjain M.P.

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Department of Mathematics



Session – 2019-20

PROJECT: INTRODUCTION OF THE GAME THEORY

It is certificated that project, report is submitted by Miss Vandana Sharma, M.Sc. IV Sem of Mathematics has been completed by herself under my Supervision.

Guided By
Mrs. Nazida shaikh

Submitted By
Vandana Sharma
M.Sc. IV Sem.

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Govt. Madhav Science P.G. College Ujjain

Department of Mathematics



Session – 2019-20

PROJECT: INTRODUCTION OF THE GAME THEORY

It is certificated that project, report is submitted by Miss Manju Bamniya, M.Sc. IV Sem of Mathematics has been completed by herself under my Supervision.

Guided By
Mrs. Nazida shaikh

Submitted By
Manju Bamniya
M.Sc. IV Sem.

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the game of theory has been prepared by Priyanka Trivedi, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 13/10/2020

Signature of the guide

Place : Ujjain

Guided By:

Asstt. Prof. Nazida shaikh
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Session – 2019-20

It is certificated that project, report is submitted by Vishakha Vapta, M.Sc.
4th Sem of Mathematics has been completed by herself under my Supervision.


Guided By:
Asstt. Prof. Nazida shaikh

Submitted By:
Vishakha Vapta
M.Sc. IV Sem.

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the Network Analysis has been prepared by Veena Sisodiya, M.Sc. IV Sem. Under my Supervision and bear the result.

Signature of the guide

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Asstt. Prof. Nazida shaikh
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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction of the game of theory has been prepared by Vinisha Rajawat, M.Sc. IV Sem. Under my Supervision and bear the result.

Signature of the guide

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction of the game of theory has been prepared by Vinisha Rajawat, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

Signature of the guide

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Asstt. Prof. Nazida shaikh
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Certificated of the Guide

It is certificated that project, report is submitted by Surbhi Panchal, M.Sc.
IV Sem of Mathematics has been completed by herself under my Supervision.

Signature of the guide

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the Network Analysis has been prepared by Shraddha Kelkar, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the Network Analysis has been prepared by Shubhangini Shirivastav, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

Signature of the guide

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the Network Analysis has been prepared by Shubham Sharma, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place :

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Certificated of the Guide

It is certificated that project, report is submitted by Shivani Lalawat, M.Sc.
4th Sem of Mathematics has been completed by herself under my Supervision.

Signature of the guide

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Certificated of the Guide

It is certificated that project, report is submitted by Miss Sheetal Shukla, M.Sc. IV Sem of Mathematics has been completed by herself under my Supervision.

Date :13/10/2020

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Certificated of the Guide

It is certificated that project, report is submitted by Miss Sharad Singh, M.Sc. IV Sem of Mathematics has been completed by herself under my Supervision.

Date :13/10/2020

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Session – 2020-21

I HOD Vivek Gupta Sir Designation Professor Department of Mathematics certificated that the project, report entitled Role of Mathematics in astronomy has been prepared by Saroj Gujrati Class M.Sc. IV Sem under my Supervision and bears the result of his original work.

Date -12/10/2020

Signature of the Guide

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Asst. Prof. Nazida Shaikh

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the game of theory has been prepared by Saloni Solanki, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the game of theory has been prepared by Rishabh Kumar, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the game of theory has been prepared by Rana Hanotiya, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

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Certificated of the Guide

I, Prof. Nazida Shaikh, Asst. Prof of Department Certify that the project report entitled “Dynamic Programming” has been prepared by Ramprasad Rathore, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Place : Ujjain

Signature of the guide

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Department of Mathematics



Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the Game of theory has been prepared by Priyanka Trivedi, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 13/10/2020

Signature of the guide

Place : Ujjain

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Certificated of the Guide

I, Prof. Nazida Shaikh, Asst. Prof of Department Certify that the project report entitled "Dynamic Programming" has been prepared by Priyanka Soni, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

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Department of Mathematics



Certificated

It is certificated that project, report is submitted by Mr. Pramod Patidar, M.Sc. IV Sem of Mathematics has been completed by herself under my Supervision.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

Guided By:
Asstt. Prof. Nazida shaikh
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Department of Mathematics



Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the game of theory has been prepared by Prabha Yadav, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

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Certificated of the Guide

I, Mrs. Nazida Shaikh, Guest Faculty, Department of Mathematics Certify that the project report entitled as introduction to the game of theory has been prepared by Nilesh Gupta, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 01/10/2020

Signature of the guide

Place : Ujjain

Guided By:

Asstt. Prof. Nazida shaikh
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Department of Mathematics



Certificated of the Guide

I, Prof. Nazida Shaikh, Asst. Prof of Department Certify that the project report entitled “Dynamic Programming” has been prepared by Nilesh Silvaniya, M.Sc. IV Sem. Under my Supervision and bear the result of his/her original work.

DATE : 12/10/2020

Signature of the guide

Place : Ujjain

Guided By:

Asstt. Prof. Nazida shaikh
Govt. Madhav Science
College Ujjain

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Declaration by Guide

I Komal Chelaramani Professor Pharmaceutical Chemistry Govt. Madhav Science College Ujjain certify that the project report on "Medicinal Plant:- Mentha" has been prepared by Harshita Sharma Class M.Sc. IV Sem. under the supervision and bears the result of original work.

Date/Sign:- 21/09/2020

Mrs. Komal Chelaramani

Govt. Madhav Science P.G. College Ujjain



Declaration by Guide

I Komal Chelaramani Professor Pharmaceutical Chemistry Govt. Madhav Science College Ujjain certify that the project report on "Medicinal Plant:- Tulsi" has been prepared by Ayush Sharma Class M.Sc. IV Sem. under the supervision and bears the result of original work.

Date/Sign:- 21/09/2020

Mrs. Komal Chelaramani

Komal

Govt. Madhav Science P.G. College Ujjain



DECLARATION OF THE GUIDE

I komal chelaramani Professor of Pharmaceutical Chemistry certify that the project report entitled gas chromatography" has been prepared by Jaspal Anjana of M.Sc. IV semester under my supervision and bears the result of her original work.

DATE = 21/09/2020

Mrs. Komal chelaramani

Komal

Govt. Madhav science p.g. college Ujjain M.P.

Signature Not Verified

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DECLARATION OF THE GUIDE

I komal chelaramani Professor of Pharmaceutical Chemistry certify that the project report entitled Volumetric Karl Fischer Titration* has been prepared by Sajana Anjana of M.Sc. IV semester under my supervision and bears the result of her original work.

DATE = 21/09/2020

Mrs. Komal chelaramani

Govt. Madhav science p.g. college Ujjain M.P.



DECLARATION OF THE GUIDE

I Komal chelaramani Professor of Pharmaceutical Chemistry certify that the project report entitled " Analysis of Detergent Powder and Cake " has been prepared by ASHOK PATIDAR of M .Sc. IV semester under my supervision and bears the result of her original work .

Date - 21/09/2020

Name - Komal chelaramani Komal

Govt. Madhav science p.g. college Ujjain M.P

Roll No. : 18180254



DECLARATION OF THE GUIDE

I Mrs. Komal Gurudasanani Guest Faculty of Drugs and Pharmaceutical Chemistry certify that the project report entitled "Quassia Amara" has been prepared by Sangram Singh of M.Sc. IV Semester under my supervision and bears the result of his original work.

Date : 21-09-2020

Mrs. Komal Gurudasanani Mam

Komal

Govt. Madhav Science P.G. College, Ujjain (M.P.)

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DECLARATION OF THE GUIDE

I Komal chelaramani Professor of Pharmaceutical Chemistry certify that the project report entitled " Analysis of Detergent Powder and Cake " has been prepared by SHUBHAM PANDEY of M .Sc. IV semester under my supervision and bears the result of her original work .

Date - 21/09/2020

Name - Komal chelaramani Komal

Govt. Madhav science p.g. college Ujjain M.P



DECLARATION OF THE GUIDE

I Komal Chelaramani professor of pharmaceutical chemistry certify that the project report entitled " Analysis of Indian mint (*Mentha spicata*) for essential, trace and toxic elements and its antioxidant behaviour" has been prepared by Sushila Parmar M.Sc. IV semester under my supervision and bears the result of her original work.

Date: 11/12/2020

Mrs. Komal Chelaramani

Komal

Govt. Madhav Science P.G College, Ujjain M.P



DECLARATION OF THE GUIDE-

I am Komal chelaramani Professor of Pharmaceutical Chemistry Certify That the project report entitled "Medicinal Plant Safed Musli" has been prepared by Vishnu Chouhan Of M.sc. 4th Semester Under my supervision and bears the result of her original work.

DATE- 21/09/2020

Mrs. – Komal Chelaramani

Komal

Govt.Madhav Science P.G. College Ujjain M.P.

Declaration Of Guide



I Komal chelaramani Professor of Pharmaceutical chemistry certify that the project report entitled "Medicinal Plant - Aloe Vera" has been prepared by Abhishek Orsiya of Msc 4th sem under my supervision and bears the result of original work.

Date-21/09/2020

Mrs. Komal Chelaramani

Komal

Govt. Madhav Science College Ujjain



DECLARATION OF THE GUIDE

I, Komal Chelaramani, Professor of Pharmaceutical Chemistry, certify that the project report entitled 'Volumetric Karl Fischer Titration' has been prepared by Sharad Sharma of M.Sc. IV semester under my supervision and bears the result of her original work.

DATE = 21/09/2020

Mrs. Komal Chelaramani

Govt. Madhav Science P.G. College Ujjain M.P.

Komal

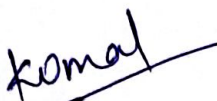
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DECLARATION OF THE GUIDE

I Komal chelaramani Professor of Pharmaceutical Chemistry certify that the project report entitled medicinal Chemistry" has been prepared by Ramnarayan anjana of M.Sa IV semester under my supervision and bears the result of her original work.

DATE= 21/09/2020

Mrs. Komal chelaramani



Govt Madhav science p.g. college Ujjain M.P.



DECLARATION OF THE GUIDE

I Komal Chelaramani Professor of the Pharmaceutical chemistry certify that the project report entitled "Analysis of Ashwagandha (Withania Somnifera DUNAL) for essential, trace and toxic elements and it's antioxidant behavlour" has been prepared by Arpana Biswas M.sc IV Semester under my supervision and bears the result of her original work .

Date- 21/09/2020

Mrs. Komal Chelaramani

Komal

Govt. Madhav science P.G. college, Ujjain (M.P.)



DECLARATION OF THE GUIDE

I Komal Chelaramani Professor of the Pharmaceutical chemistry certify that the project report entitled "Analysis of Ashwagandha (Witharia Somnifera DUNAL) for essential, trace and toxic elements and its antioxidant behaviour" has been prepared by Bharat M.sc IV Semester under my supervision and bears the result of her original work .

Date- 21/09/2020

Mrs. Komal Chelaramani

Govt. Madhav science P.G. college, Ujjain (M.P.)



DECLARATION OF THE GUIDE

I komal chelaramani Professor of Pharmaceutical Chemistry certify that the project report entitled gas chromatography" has been prepared by Chintu Singh Chauhan of M.Sc. IV semester under my supervision and bears the result of her original work.

DATE = 21/ 09/2020

Mrs. ~~Komal~~ chelaramani

Komal

Govt. Madhav science p.g. college Ujjain M.P.

Declaration Of Guide



I Komal chelaramani Professor of Pharmaceutical chemistry certify that the project report entitled "Medicinal Plant - Aloe Vera" has been prepared by Ajaypal singh of Msc 4th sem under my supervision and bears the result of original work.

Date-21/09/2020

Mrs. Komal Chelaramani

Komal

Govt. Madhav Science College Ujjain



DECLARATION OF THE GUIDE

I Mrs. Komal Chelaramani Guest Faculty of Drugs and Pharmaceutical Chemistry certify that the project report entitled ADVANCED CHROMATOGRAPHIC AND SPECTROSCOPIC TECHNIQUES & GREEN CHEMISTRY has been prepared by Mayank Kinshuk of M.Sc. IV Semester under my supervision and bears the result of his original work.

Date : 21/09/2020

Mrs. Komal Chelaramani Mam

Komal

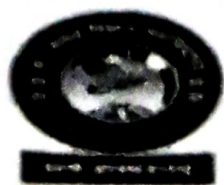
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Signature Not Verified

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DECLARATION OF THE GUIDE

I Mrs. Komal gurudasani Guest Faculty of drugs and pharmaceutical chemistry certify that project report entitled "Quassia Amara "has been prepared by jaydeep singh of M.sc. IV sem. Under my supervision and bears the result of his original work.

DATE -22/09/2020

Mrs. Komal gurudasani mam

Govt. Madhav Science P.G. College, Ujjain (m.p)



DECLARATION OF THE GUIDE

I Mrs. Komal Chelaramani Guest Faculty of Drugs and Pharmaceutical Chemistry certify that the project report entitled MEDICINAL PLANT MENTHA (Mint) has been prepared by Yashwan Singh of M.Sc. IV Semester under my supervision and bears the result of his original work.

Date : 21/09/2020

Mrs. Komal Chelaramani Mam Komal
Govt. Madhav Science P.G. College, Ujjain (M.P.)

Roll No. : 17109555



DECLARATION OF THE GUIDE

I Mrs. Komal Chelaramani Guest Faculty of Drugs and Pharmaceutical Chemistry certify that the project report entitled MEDICINAL PLANT LIQUORICE has been prepared by Rameshwer Dangi of M.Sc. IV Semester under my supervision and bears the result of his original work.

Date : 21/09/2020

Mrs. Komal Chelaramani Mam

Komal

Govt. Madhav Science P.G. College, Ujjain (M.P.)



DECLARATION OF THE GUIDE

I Komal Chelaramani professor of pharmaceutical chemistry certify that the project report entitled " Analysis of Indian mint (*Mentha spicata*) for essential, trace and toxic elements and its antioxidant behaviour" has been prepared by Pankaj Parmar M.Sc. IV semester under my supervision and bears the result of her original work.

Date: 21/9/2020

Mrs. Komal Chelaramani

Komal

Govt. Madhav Science P.G College, Ujjain M.P



DECLARATION OF THE GUIDE

I Mrs. Komal Chelaramani Guest Faculty of Drugs and Pharmaceutical Chemistry certify that the project report entitled MEDICINAL PLANT WITHANIA SOMNIFERA has been prepared by Bhim Gurjar of M.Sc. IV Semester under my supervision and bears the result of his original work.

Date: 21/09/2020

Mrs. Komal Chelaramani Mam

Komal

Govt. Madhav Science P.G. College, Ujjain (M.P.)

Declaration Of Guide



I Komal chelaramani Professor of Pharmaceutical chemistry certify that the project report entitled "Medicinal Plant - Aloe Vera" has been prepared by Deelip dangi of Msc 4th sem under my supervision and bears the result of original work.

Date-21/09/2020

Mrs. Komal Chelaramani Komal

Govt. Madhav Science College Ujjain

Govt. Madhav Science P.G. College Ujjain
Department of Zoology



Session – 2019-20

Project:

EFFECT OF CORONA VIRUS ON HUMAN BODY

Guided By
Prof. Shehla ishaque

Submitted By
Aayushi Gosar MSc.IV Sem. Zoo.
Roll No. 18180331

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Department of Zoology



Session – 2019-20

Project:

“THE EFFECT OF CORONA VIRUS ON HUMAN BODY”

Guided By
Prof. Anil Pandey

Submitted By
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Session – 2019-20

Project:

“THE EFFECT OF CORONA VIRUS ON HUMAN BODY”

Guided By
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Session – 2019-20

Project:

ECONOMIC IMPACT OF THE COVID 19 PANDAMIC IN INDIA

Guided By
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Submitted By
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Session – 2019-20

Project:

PROJECT ON STRUCTURE OF CORONA VIRUS

Guided By
Prof. Shehla ishaque

Submitted By
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Session – 2019-20

Project:

CORONA VIRUS

(COVID 19)

Guided By
Prof. Seema Trivedi

Submitted By
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Session – 2019-20

Project:

IMPACT OF THE COVID 19 PANDAMIC IN INDIA

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Prof. Shailja AAcharya

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सत्र - 2019-20

विषय : COVID 19 के लक्षण एवं बचाव

Submitted By:

जितेन्द्र राजौरिया

M.Sc. IV Sem. Zoo.

Roll No. 18180340

निर्देशक :

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Govt. Madhav Science P.G. College Ujjain
Department of Zoology



Session – 2019-20

Project:

EFFECT ON INDIAN ECONOMY DUE TO CORONAVIRUS PANDEMIC

Guided By
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Session – 2019-20

Project:

COVID-19

Guided By
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Department of Zoology



Session – 2019-20

Project:

COVID-19

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Session – 2019-20

Project:

Consideration in adjusting public health & social measures in the context of
COVID -19

Guided By
Prof. Shehla ishaque

Submitted By
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Session – 2019-20

Project:

EFFECT ON INDIAN ECONOMY DUE TO CORONAVIRUS PANDEMIC

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Prof. Dr. Shehla ishaque

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Session – 2019-20

Project:

COVID -19 PANDEMIC IN INJDIA

Shailja

Guided By
Prof. Shailja Acharya

Submitted By
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Session – 2020-21

Project:

CORONAVIRUS

Shailja

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Session – 2019-20

Project:

COVID-19 PANDEMIC

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Department of Zoology



Session – 2019-20

Project:

EFFECT OF CORONA VIRUS ON HUMAN BODY

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Department of Zoology



Session – 2019-20

Project:

CORONA VIRUS & ITS EFFECT ON INDIAN ECONOMY

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Session – 2019-20

Project:

VIRUS

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Submitted By
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SCIENCE DAYS

&

YEARS

**DEDICATED TO PROMOTE
SCIENCE AWARENESS AMONG
STUDENTS**

2015-16 TO 2019-20



Sh. Manu Shrivastava (IAS) is Principal Secretary and commissioner, Department of new and renewable energy with additional charge of MD, Energy Development Corporation, Officer of 1991 batch Mr. Manu Shrivastava is M.Tech (Computer Engg.)



Dr. B.N. Jagtap is Distinguished Scientist and Director of Chemistry Group, BARC. He is a well known expert in the field of lasers and their applications, has been cited as a game changer in a recent feature article in Livemint and the Wall street Journal



Dr. P. K. Gupta is Associate Director and Head Laser Biomedical Applications and Instrumentation Division RRCAT Indore. The division is engaged in developing laser-based instrumentation for supporting Related activities and meeting other requirements of the Department of Atomic Energy.



Dr. Deepak Chopra is Associate Professor of Chemistry, IISER Bhopal. Did his Ph.D. in Chemical Crystallography, from Indian Institute of Science, Bangalore under the supervision of Prof. T. N. Guru Row. He has published many papers in journals of high impact factor.

Patron

Dr. Usha Shrivastava
Additional Director H.E.Ujjain Division
Principal of the College

Coordinator

Dr. Kalpana V. Singh
Asstt. Professor Chemistry
Govt. Madhav Science
P.G. College, Ujjain
Mob. 9713389538

Technical Committee

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2. Dr. Brijesh Pare
3. Dr. Arpan Bhardwaj
4. Dr. Shakuntala Pandey
5. Dr. Manmeet Kaur Makkad
6. Smt. Pratibha Namdeo
7. Dr. Deependra S. Raghuvanshi
8. Dr. Rekha Nagvanshi
9. Dr. Jeevan Singh Solanki

Advisory Board

1. Dr. A. K. Parihar
2. Dr. K. S. Vishwakarma
3. Dr. I. K. Mangal
4. Dr. Shehla Ishaque
5. Dr. V. K. Gupta

Organizing Committee

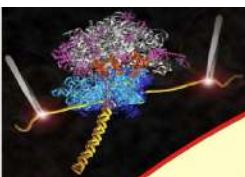
1. Dr. R.K. Tiwari
2. Dr. Ajay Saxena
3. Dr. Dilip Soni
4. Dr. Anurag Singh Titov
5. Dr. Shobha Shouche

Patron

Sh. Kavindra Kiyawal (IAS)
Collector Ujjain
Chairperson Janabhadri

Organizing Secretary

Dr. Ajay Chaturvedi
Professor and Head Chemistry
Govt. Madhav Science
P.G. College, Ujjain
Mob. 9424079179



International Year of Light and Light Based Technologies Science Fest

"From Photonics to Economic Impact of Light"


and
National Consortium of Academicians & Scientists

03rd and 04th February 2016

Organized by

P.G. Department of Chemistry & Pharmaceutical Chemistry
Govt. Madhav Science P.G. College, Ujjain
DST- FIST College
'A' Grade accredited through NAAC
www.madhavsciencecollegeujjain.ac.in
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Sponsored by
M.P. Council of Science & Technology
Bhopal



Science Fest "From Photonics to Economic Impact of Light"

The International year of light and Light based Technologies is a global Initiative of UN General Assembly to highlight the importance of light and optical technologies in the lives of citizens of world and for the development of society. Year 2015 is also observed as the centenary year of Einstein's theory of Relativity. P.G. department of Chemistry and Pharmaceutical Chemistry of Govt. Madhav Science P.G. College Ujjain is organizing Science fest on 03rd and 04th of February 2016 to commemorate IYL. The science fest will address to the academic needs of all sections of science fraternity viz. Faculty, Research Scholars, P.G. Students, U.G. Students and Junior Students of 10+2 level through plethora of activities and events. Following competitive events will be organized for junior and senior category students

1. Theme based Short Film making
2. Theme based Power Point presentations
3. Poster Competition
4. Quiz competition

Lecture Series One of the major attractions of the science fest is Lecture series organized on 03rd and 04th February. The series will witness eminent scientists related to the field addressing the humble gathering. We the organizers invite and welcome you all to be the participants of these proud moments.

National Consortium of Academicians & Scientists

Faculty/Industry representatives/Research Scholar contributions

Individual contributions from Faculty/Industry representatives and research scholars related to the major theme of Lasers, Photonics, Economic Impact of Light and theory of relativity are also invited in the form of Posters/Articles/communications and research notes. After the analysis by the technical committee the selected contributions will be allowed to be presented in the parallel sessions during science fest. Contributors have to register for this event as follows.

Representatives from Industry	Rs. 700/-
Faculty	Rs. 700/-
Research scholars	Rs. 500/-

Registration fees can be paid either by personal appearance in the college or through demand draft drawn in favor of Principal Govt. Madhav Science P.G. College Ujjain payable at Ujjain.

Last date for registration is 28th January

Last date for receiving individual contributions is 25th of January 2016

Word limit for contribution is maximum 1500 words including tables, pictures and graphs, typed in MS Word font Times new Roman 12 point with single margins and single space between lines.

Please send your contributions on email id
coordinatorsciencefest@gmail.com

About the College

Govt. Madhav Science P. G. College Ujjain is DST- FIST college and is accredited at 'A' grade (September 2015) through NAAC. This college was a part of the then Madhav College established in 1892 till it shifted to its present campus in 1969. Catering to the needs of science students coming from diverse academic and social backgrounds, college has excelled in the field of teaching and learning through its state of art infrastructure in the form of modern laboratories, e-library, smart class rooms and lush green eco friendly campus. College is producing meritorious students with their presence felt in cultural activities at national level. College has a rich heritage of extension activities and out reach programs through its efficient N.C.C. and N.S.S. units. Looking at the contributions of the college, Department of Higher Education M.P. has selected Institute as college with potential for excellence to sign MOU's with other institutes of National and International repute.

P.G. Department of Chemistry and Pharmaceutical Chemistry is running U.G. and P.G. courses in Chemistry and Pharmaceutical Chemistry and a P.G. Diploma course in Pharmaceutical Quality Control and Quality Assurance Management and is recognized as the research center by Vikram University Ujjain. Faculty are engaged in research and have sizeable and notable contributions in scientific journals with high impact factor.

Program

Day 01

Inauguration - February 03, 2016 11 00 hrs.

Chairperson- Dr. Mrs. Usha Shrivastava (Additional Director, Higher Education, Ujjain Division)

Chief Guest- Sh. Manu Shrivastava (IAS) (Principal Secretary Department of New and Renewable Energy Resources, Govt. of M.P. Bhopal)

Key Note address- Dr. B.N. Jagtap (BARC Mumbai)

Dr. P. K. Gupta (RRCAT Indore)

Competitions

Short film, Power point Presentations, Quiz Round 1

National Consortium of Academicians & Scientists

Day 02

Expert Lecture by : Dr. Deepak Chopra (IISER Bhopal)

Quiz Round 02, Poster competition

National Consortium of Academicians & Scientists

Valedictory-

February 04th 2016

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OFFICE OF THE PRINCIPAL GOVT. MADHAV SCIENCE P. G. COLLEGE

UJJAIN

DST-FIST College

'A' Grade accredited through NAAC



International year of Light and Light based Technologies 2015

SCIENCE FEST “ FROM PHOTONICS TO ECONOMIC IMPACT OF LIGHT”

03rd and 04th February 2016.

Govt. Madhav Science P.G. College Ujjain celebrated two days Science Fest with focal theme “From Photonics to Economic Impact of Light” on 3rd and 4th of February 2016 to commemorate the *International Year of Light and Light Based Technologies*, under the joint organization of P.G. Department of Chemistry and Pharmaceutical Chemistry, Janabhadari Samiti and Internal Quality Assurance cell of the college. Dr. Kalpana V. Singh was the Coordinator of the programme, Dr. Ajay Chaturvedi acted as organizing secretary. Science Fest catered to the needs of all stakeholders of scientific fraternity and ensured participation of 505 participants through cocktail of events which included

- Competitions for students(P.G.,U.G. and 10+2 level) Total participation 319 college students 10+2 not included in the number. 20 students from 10+2 level participated
- National Consortium of Academicians and Scientists on “From Photonics to Economic Impact of Light” for Academia, Industry representatives and Research Scholars total participation excluding students 186
- Lecture Series on “ Photonics and Economic Impact of Light and Light Based Technologies”

Inaugural Session

Science fest was inaugurated on 3rd February 2016. Chief Guest of the ceremony was Mr. Manu Srivastava Principal Secretary Department of New and Renewable Energy Govt. of Madhya Pradesh. The session was chaired by Sh. Mohan Yadav M.L.A. Ujjain south, Dr. Usha Shreevastava Additional Director Higher Education Ujjain division Co-chaired the session. Dr. B.N. Jagtap Head Chemistry group BARC Mumbai and Dr. H.S. Patel from RRCAT Indore were the Keynote speakers.

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Competitions for Students

Four types of events were organized under senior and junior category. Senior category dealt with Post Graduate and Under Graduate students, junior category included students from 10+2 level

Quiz Competition : Major theme of Photonics, Light and Light Based Technologies

Topics covered: Theory of relativity, Lasers, Photochemistry, Spectroscopy, Light based Technologies, Economic Impact of Light based Technology

Participants in Junior Category: Total no. 20 from different schools of Ujjain

Participants in senior Category: Total no. 38 from different colleges affiliated to Vikram University Ujjain, Barkatullah University Bhopal and Gujrat.

Power Point Preparation and Presentation : Theme- Applications of Lasers in Industry, Material Science, Bio Medical applications of Lasers and Light Based Technologies

Power point presentation was a team event where Institutes participated as team comprising of 02 students each. On the first day of Science Fest 90 minutes duration is given to the students for the preparation of power point. All the infrastructural needs for the competition which included high speed internet connection fully equipped high configuration computer systems and e library facility were provided to participants. Participants were instructed to save their presentations on the system and were allowed to take a copy back home for the preparation. Next day in the opening session students from junior and senior category presented their prepared power points. First, second and third prizes were declared as per the judgement.

Participants in Junior Category: Total no. 10 from different schools of Ujjain

Participants in senior Category: Total no. 26 from different colleges affiliated to Vikram University Ujjain, Barkatullah University Bhopal and Gujrat.

Short film competition: Theme : Changing colors of Natural Light from dawn to dusk, Impact of Light on Physical objects.

Individual event in senior category

Participants had to prepare a short film of 03 minutes duration from any of their device they prepared even with their mobile phones. The focus moved around Ujjain. The entries prepared between 10th of January and 25th of January were accepted for competition. The originality and authenticity of the entry was certified by the participant itself. First, second and third prizes were declared as per the judgement

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The panel of Judges included noted artists and professors of Zoology and Chemistry from School of studies Vikram University Ujjain

Total entries received: 14 from different colleges of Ujjain

Poster Competition: Theme: Lasers, Effects of Light, Light based Technologies, Dark Sky Awareness

Individual event in senior category

Participants prepared posters on full drawing sheet .

Total no of participants 42 from different colleges.

Participation certificates are given to all participants, Where as participants securing winner as well as Runner up positions were bestowed with awards.

National Consortium of academicians and scientists on “ From Photonics to Economic Impact of Light”

Consortium attracted participants from different parts of M.P. and different states. Total of 189 participants (Faculty and research scholars) attended the consortium. Out of 173 communications received, 92 could be presented and discussed in 4 parallel panel discussion sessions due to lack of time. Communications are received in the field of Spectroscopy, Photochemistry, Lasers, Biomedical and general applications of lasers, Lasers in nanotechnology , Impact of photonics and Light based technologies on society, Economic Impact of Light based technologies. Sessions were chaired by Dr. Shubha Jain Professor of Chemistry School of studies in Chemistry and Biochemistry, Dr. Uma Sharma Professor of Chemistry School of studies in Chemistry and Biochemistry ,Dr. B.K.Mehta Professor and Head of Chemistry School of studies in Chemistry and Biochemistry Vikram University Ujjain and Prof. B.S. Makkad principal Govt. Madhav Science Arts and Commerce College Ujjain.

Lecture Series

Lecture Series was inaugurated with key note addresses by Dr. B.N. Jagtap from BARC Mumbai and Dr. H.S .Patel from RRCAT Indore. The other eminent speakers were

Dr.B.N.Jagtap..Focused his address on the Introduction of Lasers and photonics and cited very interesting examples from literature also. He introduced audience with the innovative and latest research going on in the field of Lasers in India and across the globe.

Dr.H.S.Patel ..discussed the studies carried out by him and his team at RRCAT Indore on optical spectroscopy of the resected and in-vivo tissue sample for real time discrimination between normal and malignant sites.

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Dr. Deepak Chopra.. Crystallography and Lasers Indian Institute of Science Education and Research Bhopal (IISER Bhopal)

Dr. Brijesh Pare ...Photo Chemical Reactions Govt. College Shujalpur affiliated to Vikram University Ujjain

Dr.Snjay Singh Parihar... Fluorescent molecules from Mehsana Univ. Gujarat

Dr Neeraj Sharma....Effect of Lasers on Liposomes Nirma University Ahmedabad

Dr. Y.K. Mishra..... NMR Spectroscopy Govt. Science College Ratlam affiliated to Vikram University Ujjain

Dr.Kishore Arora.....Computational processes in Spectroscopy and in Chemistry, Govt. Science College Datia affiliated to Jiwaji University Gwalior.

Dr.S.K. Verma.....Photonics and reaction mechanism, Govt. College Sikar Rajasthan.

Acknowledgements : Our Sponsors Madhya Pradesh Council for Science and Technology

Dr. Kalpana Virendra Singh

Asstt. Professor Chemistry

Coordinator Science Fest

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Inaugural Function



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Valedictory Function



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GOVT MADHAV SCIENCE COLLEGE UJJAIN

Pulse carnival 2016

Details of the activity



About the International Year of Pulses

The 68th UN General Assembly declared 2016 the International Year of Pulses (IYP) (A/RES/68/231)

The Food and Agriculture Organization of the United Nations (FAO) has been nominated to facilitate the implementation of the Year in collaboration with Governments, relevant organizations, non-governmental organizations and all other relevant stakeholders.

The IYP 2016 aims to heighten public awareness of the nutritional benefits of pulses as part of sustainable food production aimed towards food security and nutrition. The Year will create a unique opportunity to encourage connections throughout the food chain that would better utilize pulse-based proteins, further global production of pulses, better utilize crop rotations and address the challenges in the trade of pulses.

The specific objectives of the IYP 2016 are to:

- Raise awareness about the important role of pulses in sustainable food production and healthy diets and their contribution to food security and nutrition;
- Promote the value and utilization of pulses throughout the food system, their benefits for soil fertility and climate change and for combating malnutrition;
- Encourage connections throughout the food chain to further global production of pulses, foster enhanced research, better utilize crop rotations and address the challenges in the trade of pulses.

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College organized activities to celebrate IYP 2016. Following programmes are organized sponsored by Janabhadari. Total 248 students participated in the activity. date 28/2/2016

1. Lecture series

Lecture series was organized on the focal theme of Pulses and proteins which covered areas from Proteins to production of Pulses in India to Nutritional benefits of pulses. Experts from the relevant areas were invited to deliver lecture.

- **Nutritional benefits of pulses** **Dr. Harish Vyas Professor Botany**
- **Chemistry of pulses and proteins ,** **Dr. Darshana Mehta Professor Chemistry**

2. Recipe Competition (Grandma to Google)

Level Students

To popularize Pulses as the main ingredient of food a recipe competition was organized On the focal theme **Grandma to Google** . The competition encouraged traditional as well as modern internet based recipes.

Level Parents

- Sticking up with the main purpose of IYP 2016 of spreading awareness about this fabulous food option recipe competition was organized for parents, as parents are the one who can influence their wards most and can bring change into the dietary habits of their children.

After the completion of the programme an online recipe book on pulses published by American pulse association, pulse Canada & USA dry Pea and Lentil society was shared with all the participants.
Credits to the organizations for keeping the book in free space

3. Protein Quiz.

- Protein Quizz was organized to assess the knowledge of students about the proteins in general and pulses in specific.

4. Nutritional Survey

- Questionnaire was developed and students of P.G. Classes undertook a survey in the selected colonies of Ujjain, this will help in assessing the health status of residents in terms of nutritional perspective.
- The results obtained thus will be forwarded to health department for further action

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IMPACT OF ACTIVITY

The activity created awareness among not only students but society at large about the core IYP 2016 values which aims to heighten public awareness of the nutritional benefits of pulses as part of sustainable food production aimed towards food security and nutrition. The celebrations created a unique opportunity to encourage connections throughout the food chain that would better utilize pulse-based proteins, further global production of pulses, better utilize crop rotations and address the challenges in the trade of pulses.

The specific objectives of the programme are to:

- Raise awareness about the important role of pulses in sustainable food production and healthy diets and their contribution to food security and nutrition;
- Promote the value and utilization of pulses throughout the food system, their benefits for soil fertility and climate change and for combating malnutrition;
- Encourage connections throughout the food chain to further global production of pulses, foster enhanced research, better utilize crop rotations and address the challenges in the trade of pulses.



PULSES

The Heart of Every Meal



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03 About Pulses

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The image shows two glass jars filled with yellow pulses, likely chickpeas, and green chilies. The jars are on a wooden surface. The background is slightly blurred, showing a white cloth with red and yellow stripes. The text "About Pulses" is written in a black, serif font, underlined with a grey brushstroke.

About Pulses

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What Are Pulses?

DRY PEAS



SPLIT GREEN



SPLIT YELLOW



WHOLE GREEN



WHOLE YELLOW

BEANS



ADZUKI



BLACK



BLACKEYE
PEAS



DARK RED
KIDNEY



LIGHT RED
KIDNEY



GREAT
NORTHERN



NAVY



PINTO



FAVA



SMALL RED



MUNG



BABY
LIMA



LARGE
LIMA



CRANBERRY



PINK

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Pulses are the nutritionally dense, dry, edible seeds of legumes, including:

DRY PEAS, BEANS, LENTILS and CHICKPEAS

LENTILS



REGULAR



RED CHIEF



PARDINA



RICHLEA



BLACK



FRENCH
GREEN

CHICKPEAS



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Why Pulses



Nutrition

Pulses Are:

- ✓ **Good source of protein**
Lentils deliver **double the protein per serving of quinoa**
- ✓ **Excellent source of fiber**
All pulses have **4x more fiber than brown rice**
- ✓ **High in antioxidants**
Per serving, red kidney beans have **higher antioxidant content than blueberries and pomegranate juice**
- ✓ **Gluten-free, sodium-free and cholesterol-free**
- ✓ **Iron-rich**
One serving of black beans contains **1.5 times as much iron as one 3 oz. serving of flank steak**
- ✓ **Good source of potassium**
One serving of dry peas contains as much potassium as a banana
- ✓ **Excellent source of folate**
Chickpeas contain **3x more folate per serving than kale**

Nutritional information sourced from the USDA Nutrient Database, antioxidant data as published in Journal of Agricultural and Food Chemistry, June 9, 2004; All nutritional figures based on ½ cup serving of cooked pulses

Versatility

The Many Ways to Love Pulses:



Swap half the meat in nearly any recipe with lentils



Add cooked white beans or pea protein to smoothies, or try pulse flours to make gluten-free baked goods



Add chickpeas to pasta, or select one of the many pastas made with pulses



*It takes the same time to prepare lentils and split peas as it takes to prepare pasta, quinoa or rice (15-30 minutes)
No time? Try canned or flash frozen pulses*

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Affordability and Food Security



The world's growing population will require a 70% increase in agricultural production by 2050



Over half of all global pulse production occurs in developing countries

- *Pulses are a staple food around the world, playing a key role in many traditional cuisines*
- *Pulses enhance crop diversity, decreasing the risks farmers face from environmental and market fluctuations*

U.S. cost per serving of lentils is \$0.10 vs.:



\$1.49
for beef



\$0.73
for pork



\$0.63
for chicken

Cost per serving data sourced from ERS calculations, based on average prices from The Bureau of Labor Statistics and USDA Agricultural Marketing Service Data, as reported by the USDA, July 2015



Sustainability



Natural fertilizers.
Pulses enrich the soil where they grow, reducing the need for chemical fertilizers



Drought-tolerant and frost-hardy.
Pulse crops can grow in harsh environments



Low carbon footprint.
Pulse crops have one of the lowest carbon footprints of any food group

Water-efficient source of protein

Pulse crops require little or no irrigation



It takes **43 gallons** of water to produce 1 lb. of pulses



It takes roughly **800-1,800 gallons** of water to produce 1 lb. of meat



Water footprint figures sourced from Arjen Y. Hoekstra and Ashok Chapagain, Globalization of Water, U. of Twente, Waterfootprint.org as reported by National Geographic, April 2010

Carbon footprint data sourced from: Nijdam, D. Rood, T., Westhoek, H. The price of protein. Food Policy 2012, vol 37, issue 6, pages 760-770

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How To Prepare Pulses

Split Peas

1. Rinse split peas with water—no need to soak!
2. Combine split peas and water, bring to a boil.
3. Simmer for 30 minutes.

COOKING TIPS



For every cup of split peas, use 2 cups of water.



Split peas get softer the longer they cook. Vary cooking time accordingly.



Beans

1. Soak your beans.
HOT SOAK: Place 1 cup of beans in a pot with 5 cups of water. Bring to a boil for 3 minutes then remove from heat and let stand for 4 to 24 hours. Drain and rinse beans in cool water.
TRADITIONAL SOAK: Pour enough cool water over beans to cover completely. Soak for 8 hours or overnight. Drain soaking water and rinse beans with cool water.
QUICK SOAK: Place 1 cup of beans in a large pot with 3 cups of water. Bring to a boil for 3 minutes then remove from heat and let stand for 1 hour. Drain soaking water and rinse beans in cool water.
2. Combine 1 cup beans with 2 cups water and bring to a boil.
3. Simmer on low for 45 minutes – 2 hours.

COOKING TIPS



For every cup of beans, use 2 cups of water.



Bean cooking time varies by type. When a bean is fully cooked the skin is still intact but the bean can easily be smashed between two fingers.



Beans expand as they cook. Add warm water as needed during the cooking process to keep the beans covered.



Increase flavor by adding chopped onion to the beans at any time during the cooking process.



During hot weather, soak beans in the refrigerator to prevent fermentation.

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Lentils

1. Rinse lentils with water—no need to soak!
2. Combine lentils and water, bring to a boil.
3. Simmer for 5-20 minutes until tender.

COOKING TIPS



For every cup of lentils, use 2.5 cups of water.



Different lentils require different cooking times. Softer red (decorticated) lentils require shorter cooking times and are great for soups. Firmer lentils (e.g., black) take a bit longer to cook and are ideal for salads.

Chickpeas

1. Soak your chickpeas.
OVERNIGHT SOAK: Use three cups of cold water for each cup of chickpeas. Let stand for 8-24 hours and drain.
QUICK SOAK: Use three cups of cold water for each cup of chickpeas. Boil 2 minutes, remove from heat. Cover and let stand for one hour. Drain soaking water and rinse chickpeas in cool water.
2. Combine chickpeas and water, bring to a boil.
3. Simmer for 1.5-2 hours.

COOKING TIPS



For every cup of chickpeas, use 2 cups of water.



Start the soaking process when you make your morning coffee. When you get ready to make dinner, your chickpeas will be ready to cook.



Once cooked, chickpeas can be refrigerated in their liquid for up to a week. Just drain and add to salads, soups or sides for a quick protein punch.

COOKING TIPS FOR ALL PULSES



1 cup dry =
2 ½ cups cooked



Use unsalted water—salt toughens pulses during cooking.



Acidic ingredients like tomatoes slow cooking. Add them late in the cooking process.



Add a pinch (about 1/8 teaspoon) of baking soda to beans or chickpeas as they simmer to help them cook faster. (Too much will make your pulses taste soapy.)

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Recipes

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Breakfast & Brunch

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Pinto Bean Skillet Bake with Spicy Sunflower Oat Crumble Topping

Ingredients

For the Skillet Bake:

¾ pound pinto beans, soaked overnight (or for 8-10 hours) and rinsed (substitute 3 cans cooked pinto beans)

2 bay leaves

2 large garlic cloves, peeled

1 tablespoon olive oil

1 large white or yellow onion, thinly sliced

2 teaspoons organic sugar

1 green bell pepper, chopped

1 red bell pepper, chopped

1 poblano pepper, finely chopped

Salt and pepper

1 teaspoon chili powder

½ teaspoon ground cumin

1 tablespoon lime juice

For the Spicy Sunflower Oat Crumble Topping:

¾ cup rolled oats

½ cup sunflower seeds

½ teaspoon salt

½ teaspoon chili powder

½ teaspoon smoked paprika

¼ cup nutritional yeast

Dash cayenne pepper

1 tablespoon lemon juice

1 tablespoon olive oil

Instructions

1. Place the soaked beans in a large pot with enough water to cover them by 2-3 inches. Bring to a boil. Reduce to a simmer, cover, and simmer for 60-75 minutes, or until the beans are tender but still hold their shape and chew (check for doneness at 45 minutes, just to be safe). Discard the bay leaves and garlic, drain beans, and set aside. ***If you'd like to skip this step, simply drain and rinse 3 cans of cooked pinto beans and add them to the recipe in step 3.***
2. While the beans cook, make the crumble topping by putting all ingredients into a food processor fitted with the "S" blade. Pulse continually for a minute or so, or until the mixture is forming nice crumbs and sticking together a bit. If it's too dry, add a tablespoon of water.
3. Preheat your oven to 350°F. Heat the olive oil in a 12-inch cast iron skillet. Add the onions, as well as a pinch of salt to get them sweating. Sauté the onions for 5 minutes, or until soft and clear. Add the sugar and sauté for another 5-8 minutes, or until the onions are becoming caramelized. Add the peppers, chili powder, cumin, ½ teaspoon salt, and a pinch of pepper. Cook for another 2-3 minutes, or until peppers are just soft. Stir in the cooked beans and the lime juice. Mix everything together thoroughly, and season to taste.
4. Sprinkle the crumble topping over the skillet ingredients. Transfer the cast iron skillet to the oven and bake for 20-30 minutes, or until the topping is golden. Serve with your favorite cornbread, stuff into taco shells, enjoy with a side of cooked rice or quinoa, or simply enjoy as is!

Leftovers will keep in an airtight container in the fridge for up to five days, and can be frozen for up to one month.

Note: If you don't have a cast iron skillet, you can sauté the ingredients in a large pan and bake in a 9 x 13 baking dish.

RECIPE DEVELOPED BY

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Chickpea Quiche

Ingredients

For the Filling

½ cup dried chickpeas (or a little over 1 cup cooked)

1 tablespoon olive oil

½ large onion (about 2 cups), thinly sliced

3 cups finely chopped kale

3 eggs

1 cup milk

½ teaspoon salt, plus additional as needed

¼ teaspoon pepper

¼ cup feta cheese

For the Crust

2 ½ cups chickpea flour

½ teaspoon salt

1 teaspoon baking powder

6 tablespoons olive oil

6 tablespoons water

Instructions

1. Soak chickpeas for 8 hours, or overnight. Drain the soaking liquid and add fresh water to a saucepan along with chickpeas and a pinch of salt. Bring to a boil, then simmer for about an hour, or until chickpeas are tender.
2. Meanwhile, heat 1 tablespoon of olive oil in a pan over medium heat. Add the onion along with a pinch of salt and cook over medium-low heat for 25 minutes, stirring occasionally, until caramelized.
3. While the onion is caramelizing, make the crust.
4. Preheat the oven to 350°F and lightly grease a 9 or 10-inch tart pan.
5. Whisk together the chickpea flour, salt and baking powder. Add the oil and water and stir until the dough comes together. If dough is too crumbly and dry, add additional water, a tablespoon at a time, until it comes together.
6. With damp hands, press the dough evenly into the prepared pan. Bake for 15-20 minutes or until crust is firm and dry to the touch and is just starting to brown. Remove from the oven.
7. Once the onion is caramelized, add kale and increase heat to medium. Once kale is wilted, add the chickpeas. Cook for another minute, then remove from heat. Add salt to taste.
8. Whisk together the eggs, milk, salt and pepper in a separate bowl.
9. Spread the onion mixture evenly into the warm, pre-baked crust, then pour in the egg mixture. Sprinkle the feta on top.
10. Bake for 30 minutes, or until the top is set and browned slightly.

Serving size: ⅘ quiche

RECIPE DEVELOPED BY
The Pancake Princess

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Chickpea Banana Berry Smoothie Bowl

Ingredients

Blended

2 frozen bananas
½ cup chickpeas
½ cup coconut milk
3 medjool dates (pitted)
¼ cup pineapple
1 cup blackberries or marionberries

Toppings

Your choice!

Sprouted buckwheat granola
Coconut chips
Marionberries
Hemp seeds
Chia seeds
Almonds
Blueberries
Pepitas
Puffed quinoa
Goji berries
Sesame seeds
Mulberries
Cacao nibs

RECIPE DEVELOPED BY
Lee From America

Instructions

To Prepare Chickpeas

1. Add 2 cups* of dry chickpeas to filtered, cool water and let them soak 8-12 hours (or overnight). Rinse them in a colander under cold running water. Put rinsed chickpeas in a big pot and cover with 3 inches of water, then bring them to a boil. Turn down heat and let chickpeas simmer until they are tender/cooked through.

*This makes extra chickpeas. Use them for multiple smoothies, or add them to your lunch as a salad topper!

To Make Smoothie Bowl

1. Blend ingredients in a high power blender or food processor until smooth, soft-serve like consistency is achieved. Add the toppings of your choice and enjoy!



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Lemon Poppy Seed Pancakes

(Gluten-Free, Vegan)

Ingredients

- 1 cup chickpea flour
- ½ cup almond milk, or milk of choice
- 2 tablespoons pure cane sugar or coconut sugar
- 2 tablespoons baking powder
- 1 tablespoon poppy seeds
- 1 teaspoon vanilla extract
- 1 large lemon or two small, zest and juice

RECIPE DEVELOPED BY
The Simple Veganista

Instructions

1. Preheat your griddle to the manufacturer's instruction for pancakes. If using a skillet, heat over medium-medium high heat.
2. In a medium to large mixing bowl, combine the flour, sugar and baking powder, set aside.
3. Add milk, vanilla and lemon juice to the dry mixture, mix just enough to combine. Add in poppy seeds and lemon zest, and give a final quick mix (don't over mix). Batter will foam up looking light and airy. Let the batter rest for about 7 minutes. This step is important and will result in fuller looking pancakes. Give batter a quick stir before scooping.
4. You may or may not want to grease your griddle lightly with coconut oil, or other oil of choice, depending on whether your griddle is non-stick.
5. Using a ¼ cup scoop, pour batter on the griddle, cook for about 2-2 ½ minutes, or until underside is golden. Flip and cook another 2-2 ½ minutes.
6. Serve with pure maple syrup. Fresh strawberries are a perfect accompaniment and will add some freshness.



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Orange French Toast

(Vegan)

Ingredients

1 cup orange juice
¾ cup chickpea flour
2 tablespoons pure cane sugar
or coconut sugar
½ teaspoon cinnamon
8 slices of bread (sourdough,
French bread or bread of choice)
Coconut oil or other neutral oil,
for greasing
Pure maple syrup, for serving
Organic powdered sugar,
for serving

RECIPE DEVELOPED BY
The Simple Veganista

Instructions

1. Preheat griddle according to manufacturer's instructions. If using stovetop skillet, set aside and heat over medium to medium-high when ready to dip bread.
2. In a shallow, flat bottom dish, combine flour and orange juice using a whisk or fork. Add sugar and cinnamon, blend again. It's ok if there are a few little lumps of flour. Let mixture sit for about five minutes.
3. Grease your griddle or skillet lightly. Give your flour mixture a quick stir. Dip both sides of bread in mixture, place on griddle/skillet and cook about 2–2 ½ minutes. Flip and cook the other side the same, 2–2 ½ minutes. This first flip may not look too appealing, but be patient. Once the first flip is complete, flip once more to finish up the other side, cooking for about 1 minute.*
4. Serve with a sprinkle of powdered sugar and drizzle of pure maple syrup. Pairs well with fresh orange slices.

**A quick cleaning or scraping in between each batch to remove any batter that sticks to the griddle can result in a prettier French toast!*



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Dips, Salads & Sides

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Baby Lima Bean Succotash Salad with Garlic-Rosemary Dressing

Ingredients

1 tablespoon olive oil
1 garlic clove, minced
2 cups chopped tomatoes
2 cups cooked baby lima beans
1 cup frozen corn, thawed
1 green bell pepper, chopped
1 yellow bell pepper, chopped
2 scallions, thinly sliced
¼ cup white balsamic vinegar
2 tablespoons honey
1 garlic clove, roughly chopped
2 tablespoons chopped fresh rosemary leaves
1 teaspoon Dijon mustard
½ teaspoon salt
Freshly ground pepper to taste
⅓ cup extra virgin olive oil

Instructions

1. Heat olive oil in a large skillet over medium heat. Add the garlic and cook, stirring often, for 1 minute. Add the tomatoes, lima beans, corn, and bell pepper and cook for 3-5 minutes until tomatoes soften and beans are just tender.
2. Remove from heat and place in a serving bowl. Stir in the chopped scallions.
3. Place the white balsamic vinegar, honey, garlic, rosemary, onion, mustard, salt and pepper in a food processor or blender and pulse to combine. With the blade running, gradually add in the extra virgin olive oil in a slow, steady stream until smooth. Toss with the succotash and serve.

Serves 6-8 as a side dish

RECIPE DEVELOPED BY
Delish Knowledge

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Yellow Split Pea Millet Cakes with Carrot-Miso Sauce

Ingredients

For the Yellow Split Pea and Millet Cakes

- ½ cup yellow split peas
- ½ cup millet
- ½ cup cashews (walnuts and pecans will also work nicely)
- 2 teaspoons olive oil
- 1 white or yellow onion, diced
- 3 garlic cloves, minced
- 1 tablespoon grated ginger
- ½ teaspoon turmeric powder
- ½ teaspoon salt
- Pinch black pepper
- ½ cup whole grain or gluten-free bread crumbs

For the Carrot Miso Sauce

- 2 cups steamed carrots
- ½ - ¾ cup water
- 2 teaspoons low sodium tamari
- 1 tablespoon rice vinegar
- 1 tablespoon miso paste (I like to use mellow white miso, but brown or red would be fine)
- 1 pitted medjool date (or 2 teaspoons maple syrup)
- 1 teaspoon sesame oil

RECIPE DEVELOPED BY
The Full Helping

Instructions

1. To make the carrot miso sauce, steam or boil carrots until tender (about 15 minutes). Drain and transfer to a blender. Add water, tamari, vinegar, miso, the date, and sesame oil and blend until smooth. Add water as needed, depending on how thick you'd like the sauce to be. Dressing makes about 1 ¾-2 cups, and will keep in a sealed container for up to five days in the fridge.
2. Rinse split peas and add to a small pot with enough water to cover them by a few inches. Rinse the millet and add it to a separate small pot, along with 1 ¼ cups water. Bring both pots to a boil.
3. Simmer millet for 20 minutes, or until it has absorbed the liquid. Fluff the millet with a fork, cover it, and allow it to sit for a few minutes. Check the peas by fishing out a few and tasting them; they should be tender but firm, and hold their shape. If they're not done, give them an extra 5-10 minutes.
4. When the peas are ready, drain and transfer to a large bowl. Add the cooked millet.
5. Heat a small or medium frying pan over medium-low heat. Add the cashews and toast until fragrant and golden. Transfer them to a food processor and process into a fine meal.
6. Preheat oven to 350°F. Add two teaspoons of olive oil to the frying pan and sauté the onion for 5-8 minutes, or until very tender and clear. Add the garlic and grated ginger and sauté for another 2-3 minutes, or until mixture is fragrant, adding a few tablespoons of water to prevent sticking if needed. Stir in turmeric powder and salt.
7. Add onion mixture into the millet and split peas. Transfer ¾ of the mixture to your food processor, adding it to the ground cashews. Pulse continuously for about 30 seconds. Add this mix to the remaining, whole split peas, millet, and onions in your mixing bowl, and mix well. Shape the mixture into 12 small cakes. (If the mixture seems overly dry, you can add a few tablespoons of water.)
8. If using bread crumbs, press each cake into crumbs to cover both sides. Transfer cakes to a lightly oiled or parchment-lined baking sheet. Bake for 25-30 minutes, flipping once halfway through. Serve with carrot miso sauce and some chopped parsley, if desired. Leftover cakes will keep in an airtight container in the fridge for up to four days.

To streamline the process, you can prep the split peas, the millet and the sauce a day or two in advance. If you happen to have other cooking staples handy, such as lentils, navy beans or green split peas, you can use those in place of the yellow split peas.

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Mason Jar Mediterranean Chicken Salad

Ingredients

For the Mediterranean Lentil Mixture

½ cup lentils, uncooked
2 cups water
1 cup red onion, diced
1 cup cherry tomatoes, quartered
1 cup cucumber, diced
½ cup kalamata olives, sliced
½ cup feta cheese, crumbled

For the Chicken

3 medium chicken breasts
(~3 oz each)
½ teaspoon dried basil
½ teaspoon dried parsley
½ teaspoon garlic powder
Salt and pepper, to taste
Olive oil, for the pan

For the Dressing

½ cup lemon juice (juice from
1 large lemon)
1 teaspoon garlic powder
½ tablespoon rice vinegar
¼ cup extra virgin olive oil
1 tablespoon honey

Additional Ingredients

4 large handfuls of spinach

Instructions

For the Mediterranean Lentil Mixture

1. First, prep lentils by placing ½ cup lentils and 2 cups of water in a medium-size pot. Bring to a boil and then reduce heat to low and let simmer for an additional 15 minutes. Remove from heat and drain remaining water. Place in the fridge to cool.
2. Next, prep veggies by dicing red onion, quartering cherry tomatoes, dicing cucumber, and slicing olives.
3. Once the lentils have cooled, mix all ingredients together and set aside.

For the Chicken

4. Preheat oven to 375°F and rub a baking sheet with olive oil.
5. Next, place chicken breast on baking sheet and generously season each side with spices.
6. Bake at 375°F for 25-30 minutes depending on how thick the chicken breasts are.
7. Place in the fridge to cool. Once cooled, slice into bite-size pieces.

For the Dressing

8. Place all ingredients in a small bowl and whisk with a fork until combined.

For the Mason Jar Salad

9. Create your mason jar salad by placing ¼ of the dressing at the bottom of 4 jars. Then, place ¼ of the diced chicken on top of the dressing. Add in a handful of spinach to each jar, and top with lentil mixture.

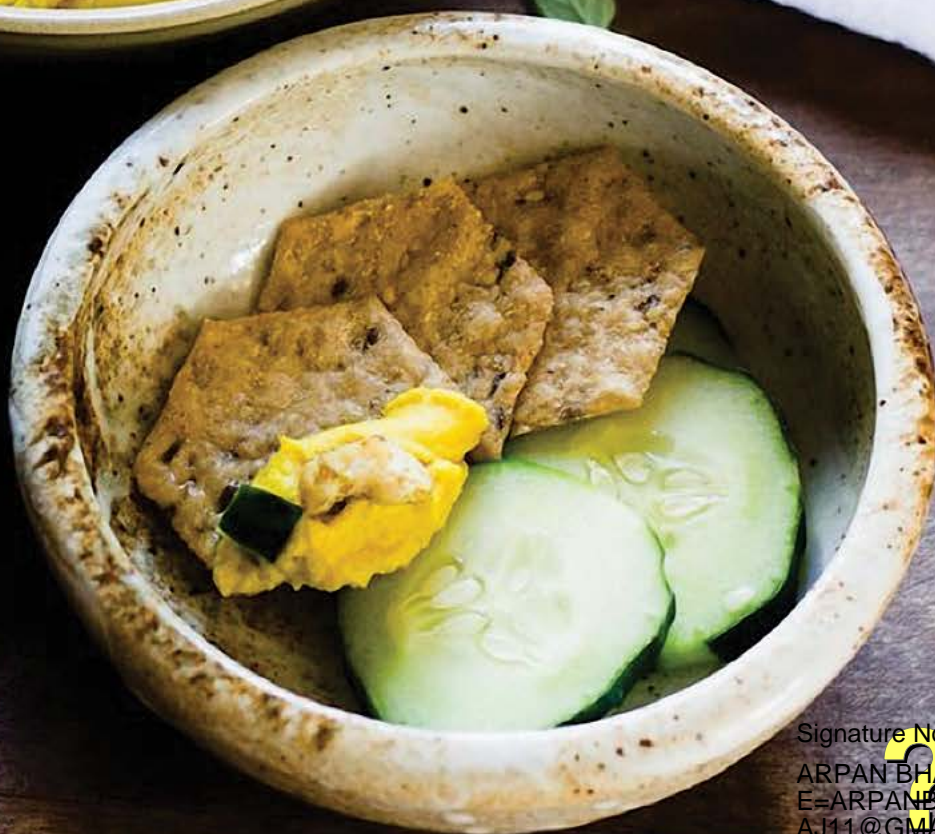
Makes 4 mason jar salads.

RECIPE DEVELOPED BY
Fit Foodie Finds

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Chicken Shawarma Lentil Dip

Ingredients

For Chicken

- 1 tablespoon olive oil
- ¼ teaspoon salt
- ½ pound boneless, skinless chicken breasts (about 2 pieces), cut into bite-sized pieces
- 2 teaspoons za'atar seasoning

For Lentil Dip

- 1 cup dry red lentils
- 2 cups water
- ¾ teaspoon salt, divided
- 2 tablespoons tahini
- 2 tablespoons olive oil
- 2 cloves minced garlic
- Juice of one lemon
- ¼ teaspoon turmeric
- ½ teaspoon ground cumin
- 2 tablespoons minced fresh cilantro

RECIPE DEVELOPED BY

Heartbeet Kitchen

Instructions

1. To make chicken, bring oil to medium-high heat in a medium skillet. Toss chicken with salt, then add to pan. Cook for 4-5 minutes, then stir in za'atar seasoning. Continue cooking for 3-4 minutes until juices run clear and chicken is no longer pink. Remove pan from heat and set aside.
2. For lentil dip, bring water to a boil in a medium-sized sauce pan. Add lentils and cook for about 12-15 minutes, until lentils are soft. Stir in ¼ teaspoon salt until dissolved. Then drain lentils thoroughly, and add to a food processor with the tahini, olive oil and garlic. Blend for 20 seconds, then add lemon juice, turmeric, cumin and remaining ½ teaspoon salt. Blend for about 45 seconds, until mixture is completely smooth. Taste and adjust salt or lemon juice as needed.
3. To serve, place dip in a bowl and add chicken to the top, then sprinkle with fresh cilantro and extra za'atar if desired. (Chicken and lentils can be made one day ahead of time, then finish making on day you are ready to serve.)

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Roasted Chickpea Bowl with Feta, Arugula and Olive Tapenade

Ingredients

2 15-ounce cans chickpeas, drained & rinsed or ¾ cup dry chickpeas, soaked, simmered and drained.

2 teaspoons red harissa seasoning

½ cup + 3 tablespoons olive oil, divided

8 oz. castelvetrano olives (+ 1 tablespoon olive brine)

2 lemons, divided

2 white anchovy filets (or 4 regular anchovy filets)

3 garlic cloves, roughly chopped

1 tablespoons capers

1 small handful fresh basil

1 teaspoon flaky sea salt

2 large handfuls baby arugula

6 oz. cherry tomatoes, halved

1 small red onion, shaved

3 oz. feta, crumbled

Freshly ground pepper, to taste

Sea salt, to taste

Instructions

1. Preheat oven to 400°F. Make sure to dry chickpeas well, then add them to a baking sheet. Drizzle with olive oil (about 2 tablespoons) and sprinkle harissa spice over top. Season with sea salt and freshly ground pepper to taste, then mix to ensure chickpeas are well-coated.
2. Roast chickpeas for 40-50 minutes or until browned and crispy.
3. In the meantime, pit your olives. Using a shot glass or the palm of your hand, press firmly down on each olive to crush in half. The pit should be easily removed after this. Continue pitting until all olives are done.
4. Add olives to a food processor with the olive brine, juice & zest of one lemon, anchovy, garlic, capers, basil, flaky sea salt, cracked black pepper (to taste) and ½ cup extra virgin olive oil. Pulse until well combined & your desired consistency. Set aside.
5. In a large serving bowl, add baby arugula, cherry tomatoes, and red onion. Toss with the juice of one lemon & a drizzle of olive oil. Add the roasted chickpeas and toss well to combine. Top with a few dollops of olive tapenade and crumbled feta. Enjoy immediately.

RECIPE DEVELOPED BY

Sassy Kitchen

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Za'atar-Spiced Crispy Chickpeas

Ingredients

3 cups chickpeas
1 ½ teaspoons salt
1 teaspoon olive oil
Za'atar to taste
Additional salt to taste

RECIPE DEVELOPED BY
Chef Robin Leventhal

Instructions

1. Pour about 6 cups of water into a large, heavy pot.
2. Dissolve the salt, add the chickpeas and cover. Let sit overnight.
Skip steps 1 & 2 if using canned chickpeas.
3. The next day, drain the chickpeas and return them to the pot, adding fresh water to cover the beans.
4. Set the pot over medium-high heat and bring to a boil. Cook until chickpeas are tender and creamy, about 1 hour.
5. When the chickpeas are cooked, preheat the oven to 350°F.
6. Drain the chickpeas and spread them on a sheet pan in a single layer.
7. Cook until golden brown, about 40 minutes. Gently shake the pan occasionally for more even cooking.
8. Drizzle the olive oil over the chickpeas and shake or stir until they are fairly evenly coated.
9. Season generously with za'atar and additional kosher salt to taste.
10. Serve immediately, or store in an airtight container for up to 3 weeks.



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Orange and Cucumber Navy Bean Salad

Ingredients

For the Navy Bean Salad

- 2 cans or 2.5 cups of navy beans, drained and rinsed
- 1 cup chopped red pepper (about ½ pepper)
- 1 cup chopped English cucumber (about ⅓ of a big one)
- 1 tablespoon chopped fresh dill
- 1 cara cara orange, segmented
- ¼ teaspoon kosher salt
- ¼ cup ricotta salata

For the dressing

- 3 tablespoons olive oil
- 1 tablespoon orange juice
- ½ tablespoon Dijon mustard
- 1 small garlic clove, crushed

Instructions

1. Combine all salad ingredients in a bowl. Toss.
2. Combine dressing ingredients, pour over salad.
3. Top with cheese.
4. Serve at room temperature or chilled. Flavors will develop over time!

RECIPE DEVELOPED BY
Kath Eats Real Food



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Salmon Caprese Lentil Salad

Ingredients

12 ounces salmon
Salt and pepper to taste
1 tablespoon freshly squeezed lemon juice
4 cups tossed spring greens
1 cup cooked lentils
1 cup cherry tomatoes, quartered
½ cup mozzarella balls
2 cups balsamic vinegar
Freshly cracked black pepper

RECIPE DEVELOPED BY
Crème de la Crumb

Instructions

1. Preheat oven to 400°F and lightly grease a baking dish. Season both sides of salmon with salt and pepper, then drizzle with lemon juice. Place salmon in prepared dish and bake for 10-15 minutes until pink and flakey.
2. While salmon is baking, prepare the balsamic reduction. In a small saucepan bring balsamic vinegar to a boil, then reduce heat and allow to simmer for about 15 minutes until slightly thickened. Remove from heat and transfer to a bowl to cool.
3. Chop salmon into strips or cubes. In a large bowl toss together the salmon, spring greens, lentils, cherry tomatoes, and mozzarella. Just before serving, drizzle with balsamic reduction and sprinkle with black pepper. Serve immediately.

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Trio of Dips

Ingredients

Spinach Artichoke Chickpea Hummus

- 1 ½ cups cooked chickpeas
- 1 cup artichokes
- 3 cups fresh spinach
- 2 garlic cloves
- 2 tablespoons lemon juice
- 1 tablespoon tahini paste (sesame seed paste)
- 3 tablespoons extra virgin olive oil
- ½ teaspoon salt

Mediterranean Split Pea Dip

For the cooked split peas:

- 1 cup split peas (green or yellow), cooked
- 2 cups water (to cook the split peas)
- ½ cup onion, chopped
- 4 garlic cloves, minced

Additional Ingredients

- 1 garlic clove, whole
- ½ cup crumbled feta cheese
- 2 cups diced tomatoes, drained
- 4 tablespoons lemon juice
- 1 teaspoon paprika (or smoked paprika)
- ½ teaspoon salt (more or less to taste)

Instructions

For the Spinach Artichoke Chickpea Hummus

1. In a food processor add cooked chickpeas, artichokes, fresh spinach, garlic cloves, lemon juice, tahini, extra virgin olive oil and salt.
2. Pulse until smooth, stopping to scrape down the sides occasionally.
3. Garnish with fresh chopped spinach and artichokes and serve with warm pita bread. Store leftovers in the refrigerator.

For the Mediterranean Split Pea Dip

1. Rinse 1 cup of dry split peas and place in a saucepan along with 2 cups of water, the onion and 4 minced garlic cloves. Bring to a boil, reduce heat, cover with a lid and simmer 25-35 minutes, or until tender.
2. In a food processor put the cooked split peas, whole garlic clove, feta cheese, diced tomatoes, lemon juice, paprika and salt.
3. Pulse until smooth, stopping to scrape down the sides occasionally.
4. Put the Mediterranean Split Pea Dip in a serving dish. The dip can be served warm or you can refrigerate for two hours before serving. Serve with warm pita bread.
5. Cover and store the leftovers in the refrigerator.

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Ingredients

Creamy Red Lentil and Herb Dip

- 1 cup rinsed red lentils, cooked
- 3 cups water (to cook the lentils)
- 1 tablespoon extra virgin olive oil
- 2 tablespoons lemon juice
- ½ teaspoon cayenne red pepper
- 1 teaspoon cumin
- 1 teaspoon coriander
- ½ teaspoon paprika
- ½ cup freshly chopped cilantro
- 2 garlic cloves
- 1 cup diced tomatoes, drained
- ½ teaspoon salt

Garnish

- Freshly chopped cilantro
- Sprinkling of crushed red pepper

Instructions

For the Creamy Red Lentil and Herb Dip

1. Rinse the red lentils and set aside.
2. In a large pot heat up the 3 cups of water over medium-high heat. Once boiling, add the red lentils and turn down heat to medium and let simmer for 15-20 minutes, or until the lentils are tender, but not falling apart.
3. In a food processor put the cooked red lentils, extra virgin olive oil, lemon juice, cayenne red pepper, cumin, coriander, paprika, cilantro, garlic, diced tomatoes and salt.
4. Pulse until smooth, stopping to scrape down the sides occasionally.
5. Put the red lentil dip in a serving dish and garnish with freshly chopped cilantro and sprinkle with crushed red pepper. The dip can be served warm or you can refrigerate for two hours before serving. Serve with warm pita bread.
6. Store the leftovers in the refrigerator.

RECIPES DEVELOPED BY

A Cedar Spoon

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Beet Chickpea Cakes with Dill Yogurt Sauce

Ingredients

Beet Chickpea Cakes

3 ¼ cup dry chickpeas
(or 2 15-ounce cans)

4 tablespoons olive oil

2 red onions, diced

2 garlic cloves, diced

2 medium red beets,
trimmed, peeled and shredded

1 egg

3 tablespoons balsamic vinegar

½ cup dill

freshly ground pepper

sea salt

**To make these heartier, you can add in ½ cup cooked quinoa before cooking.*

Dill Yogurt

¼ cup dill

¾ cup greek whole yogurt

1 garlic clove minced

Freshly ground pepper

Flaky sea salt

RECIPE DEVELOPED BY
Local Haven

Instructions

Dill Yogurt

1. Mix together all of the ingredients, and season to taste. Place in the refrigerator while you cook the beet chickpea cakes to let the flavors intensify.

To Prepare Beet Chickpea Cakes

2. Preheat the oven to 375°F.
3. Starting with cooked and cooled (or canned) chickpeas, smash them into a paste in a large bowl, leaving some chunks. Once the chickpeas are mashed, mix in 1 egg and set aside.
4. In a large cast iron skillet, heat 2 tablespoons olive oil over medium heat. Add the onions and cook for 5 minutes, stirring occasionally. Mix in the garlic and salt, and cook for another minute. Add in grated beets and cook for another 5-7 minutes until the beets are cooked. Stir in the balsamic vinegar and remove the skillet from the heat. Add in salt and pepper to taste.
5. Add the beet mixture to the chickpea egg mixture, tossing in the dill and fully incorporate.
6. Wipe out the cast iron skillet with a paper towel and place back on the stove, set at medium-high.
7. Begin forming cakes using a ⅓ cup to measure. Simply scoop in the measuring cup and form cakes with your hands.
8. Add 1 tablespoon of olive oil to the skillet. Once hot, place 2-4 cakes into the skillet and cook for 2-3 minutes per side, until golden. When the cakes are golden on both sides, transfer them to a baking sheet that has been greased with 1 tablespoon of olive oil.
9. Once all beet chickpea cakes have been browned on both sides in the skillet and placed on the baking sheet, transfer the baking sheet to the oven. Cook for 25-30 minutes.
10. Remove from the oven and allow to cool on the baking sheet for 5 minutes. Serve with dill yogurt.

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Entrées

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Olive Oil Braised Great Northern Beans with Rosemary, Thyme & Parmesan

Ingredients

½ cup + 3 tablespoons olive oil, divided

3 garlic cloves, minced

1 medium fennel bulb, cut into thick slices *reserve ¼ cup chopped fennel fronds

1 small bunch of fresh rosemary (tied in kitchen twine)

1 small bunch of fresh thyme (tied in kitchen twine)

2 15-ounce cans Great Northern Beans or about 3 cups of cooked beans (1 cup dried)

½ cup chicken broth

1 lemon, zest + juice

Sea salt to taste

Freshly ground pepper

Instructions

1. In a wide saucepan or skillet over medium heat, add 3 tablespoons of olive oil, garlic, and fennel. Sauté for about 5-7 minutes, then add lemon peel (zested or peeled) and sprigs of rosemary & thyme.
2. Add the beans and stir in ½ cup olive oil & chicken broth. Bring to a boil, then simmer and cover, stirring occasionally, for about 20 minutes (or until fennel is tender, but not soft). Season with sea salt, freshly ground pepper, and the juice of ½ a lemon. Top with fennel fronds and serve immediately.

Serves 4-6

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Honey Sesame Chickpeas

Ingredients

1 small onion, finely diced
2 garlic cloves, minced
½ cup honey
⅓ cup soy sauce
2 tablespoons toasted sesame oil
1 tablespoon rice wine vinegar
2 tablespoons vegetable oil
¼ cup water
¼ teaspoon crushed red pepper flakes
1 teaspoon fresh grated ginger
1 can chickpeas or 1 ½ cups cooked dried chickpeas, drained and rinsed
Cooked rice, for serving

RECIPE DEVELOPED BY
Delish Knowledge

Instructions

1. Place the finely diced onion, minced garlic, honey, soy sauce, sesame oil, vinegar, vegetable oil, water, red pepper flakes and ginger in a medium saucepan. Bring to a boil, then reduce to a simmer and cook for 5-10 minutes until slightly thick.
2. Add the chickpeas and bring back to a boil. Reduce heat again to medium-low and simmer for 10 minutes until chickpeas are coated and sauce is thick.
3. Top cooked rice with honey sesame chickpeas and serve immediately.
4. Garnish with sesame seeds and sliced scallions (optional).



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Stuffed Roasted Peppers with Lentils, Beef & Mushrooms

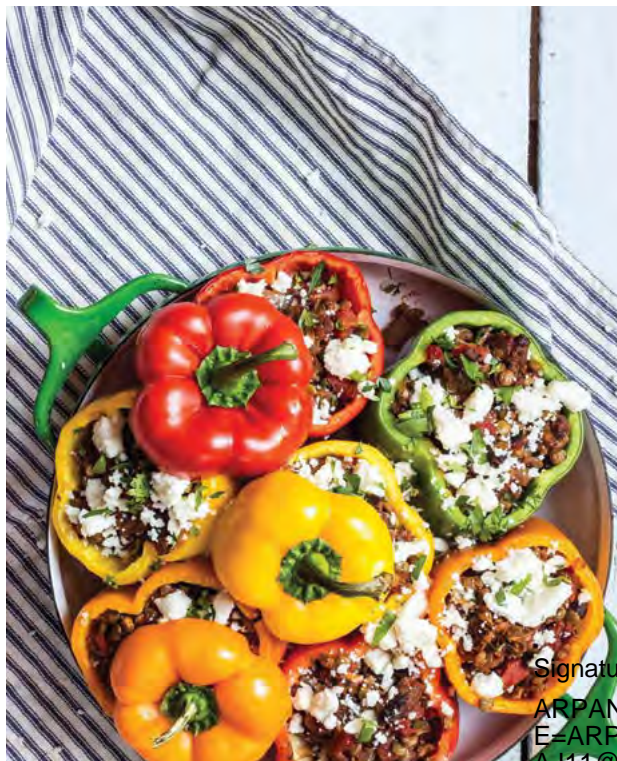
Ingredients

- 1 cup dry lentils
- 1 pound ground beef
- 2 tablespoons olive oil
- 8 mushrooms (cremini or white button), chopped
- ½ onion, chopped
- 2 garlic cloves, minced
- 2 14.5-ounce cans diced tomatoes with juice
- 2 tablespoons tomato paste
- ½-1 teaspoon red pepper flakes (add more for heat)
- Sea salt & freshly ground pepper
- 6 bell peppers, tops removed and scooped out
- 1 cup queso fresco (or cheese of choice)
- ½ cup cilantro, chopped

RECIPE DEVELOPED BY
Local Haven

Instructions

1. Preheat oven to 350°F.
2. In a medium pot, add rinsed dry lentils and 3 cups hot water. Simmer for 20 minutes. Drain and set aside to cool.
3. In a large skillet, heat olive oil. Add onions, garlic and a pinch of salt and cook for 3-4 minutes until beginning to soften, add mushrooms and continue to cook for another 5-7 minutes until soft. Remove the onion mushroom mix from the skillet and place in a bowl.
4. Using the same skillet add the ground beef, a pinch of salt and cook until browned. Stir in the red pepper flakes, diced tomatoes with juice and tomato paste. Mix together and cook for 5 minutes. Add the onion mushroom mixture and the cooked lentils. Season with salt and pepper, taste, and adjust seasonings.
5. Place bell peppers in a large baking dish. Scoop the filling into the bell peppers until full. Place in the oven and roast for 25 minutes. Remove the peppers from the oven and top with queso fresco and fresh cilantro.



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Chickpea Sloppy Joe Casserole

Ingredients

1 8-ounce package mushrooms
3 garlic cloves, peeled
2 carrots, cut into chunks
1 medium onion, cut into chunks
1 ¼ pound lean ground turkey
1 ½ cup ketchup
2 teaspoons prepared mustard
1 ½ tablespoons light brown sugar
1 teaspoon salt
½ teaspoon pepper
1 ½ cup cooked chickpeas
1 cup baking mix
1 egg
½ cup milk

RECIPE DEVELOPED BY
Yummy Healthy Easy

Instructions

1. Preheat oven to 400°F. Spray a 2.5 quart casserole dish with cooking spray.
2. In a food processor, blend together mushrooms, garlic, carrots and onion until smooth.
3. Break up ground turkey in a large saucepan over medium heat until no longer pink. Add in the puréed vegetables, stirring to combine. Mix in the ketchup, mustard, brown sugar, salt and pepper. Cook until warmed through. Stir in cooked chickpeas.
4. In a small mixing bowl, mix together baking mix, egg and milk until smooth.
5. Pour turkey mixture into an even layer on the bottom of prepared casserole dish. Pour baking mix over turkey and smooth out to create a flat top. Place in preheated oven and bake for 15-20 minutes, until top layer is cooked through and golden brown.
6. Cut into squares and scoop out onto plates. Serve and enjoy!



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Lentil Barbecue Burgers with Chickpea Fries

Ingredients

1 ½ cups dry brown lentils
4 ½ cups water
1 tablespoon olive oil
¾ cup chopped white or yellow onion
½ cup sun dried tomatoes, hydrated in hot water for at least 10 minutes and finely chopped
3 cloves garlic, minced
½ teaspoon smoked paprika
1 teaspoon chili powder
½ teaspoon dried thyme
½ teaspoon dried oregano
¾ cup raw walnuts
½ cup rolled oats
½ teaspoon salt
½ cup breadcrumbs
Black pepper

Tamarind Barbecue Sauce

¼ cup tomato paste
2 tablespoons maple syrup
½ tablespoon blackstrap molasses
2 tablespoons tamari
1 ½ tablespoons tamarind concentrate
1 ½ tablespoons apple cider vinegar
½ teaspoon chili powder
½ teaspoon ground coriander
1 clove minced garlic
2 teaspoons minced ginger (or ½ teaspoon ginger powder)

Instructions

For Burgers:

1. Rinse the lentils under cold, running water. Add them to a medium pot with water. Bring the lentils to a boil and reduce to a simmer. Simmer for 20 minutes, or until they're tender but not mushy (check them at the 15 minute mark for consistency). Drain the lentils, set aside, and allow them to cool to room temperature. Alternately, you can use 2 cans of lentils (about 3 cups total) in this recipe.
2. Heat the olive oil in a large skillet over medium heat. Add the onion. Season and cook 4-5 minutes, or until the onion is soft and clear. Add the sun dried tomatoes and garlic. Sauté for another minute, or until the garlic is quite fragrant. Add a few splashes of broth as needed to prevent sticking.
3. Add the paprika, chili powder, thyme, oregano, and 2 cups of the cooked lentils. Stir all of the ingredients together until the lentils are warm and the spices are evenly incorporated. Remove the ingredients from heat.
4. Preheat the oven to 350°F. Place the walnuts and oats in a food processor fitted with the "S" blade along with the ½ teaspoon salt. Pulse until both the oats and nuts have been ground into a course meal. Add the hot lentil mixture and pulse a few times, just enough to break the lentils and mushrooms down, but not enough to create purée.
5. Turn the lentil mixture out into a mixing bowl. Using your hands, mix in the breadcrumbs and the remaining cup of cooked lentils. Check the mixture for seasoning and add salt and black pepper to taste. The mixture should have a thick consistency, similar to conventional uncooked burgers. If it's too sticky, add a few tablespoons of water.
6. Shape the mixture into 8 burgers. Place the burgers on a lightly oiled baking sheet. Brush the tops with a layer of tamarind barbecue sauce. Bake the burgers for 15 minutes. Flip the burgers and brush the bottom side with barbecue sauce. Continue baking for another 10 minutes, or until each side of the burger is crispy. Serve on a whole grain or sprouted burger bun or English muffin or between a few crisp lettuce leaves, topped with additional tamarind barbecue sauce.

For the Sauce:

1. Whisk all ingredients for sauce together. Store in an airtight container in the fridge for up to 5 days.

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Ingredients

Chickpea Fries

2 cups chickpea flour

4 cups water

1 ½ teaspoons salt

1 teaspoon cumin

1 garlic clove,
roughly chopped

½ cup finely chopped
parsley leaves

Olive oil

RECIPE DEVELOPED BY
The Full Helping

Instructions

For the Chickpea Fries:

1. Place the chickpea flour, water, salt, cumin, and garlic into a blender. Blend until smooth.
2. Add the chickpea mixture into a medium or large pot. Heat over a medium flame, stirring constantly. The mixture will quickly begin to thicken, so watch it carefully and whisk constantly. After about 10 minutes, the mixture will be very thick. Trade your whisk for a spoon and beat continuously as you stir in the parsley.
3. Quickly transfer the mixture to a parchment-lined baking sheet. Use an inverted spatula to smooth it over evenly. Transfer the baking sheet to the fridge for one hour to chill.
4. Preheat the oven to 375°F. Cut the sheet of chickpea dough into strips that are approximately ¾ inch wide and 3 inches long. (If the parchment tears as you cut them, replace the parchment beneath the fries.) Brush the fries with oil.
5. Bake the fries for 15 minutes. Flip them gently and brush the underside with oil. Transfer them back to the oven and bake for another 12-15 minutes, or until both sides are golden. Serve.

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Lentil Rainbow Bowls with Citrus Shredded Pork



Ingredients

Citrus Shredded Pork

- 1 teaspoon cumin seeds
- 3-4 garlic cloves, cut in half
- 1 tablespoon minced fresh oregano
- 1 ½ teaspoons fine sea salt
- 1 tablespoon + 2 teaspoons olive oil, divided
- ¾ cup fresh squeezed citrus juice, half from oranges and half from limes
- 3 to 3 ½ pounds pork shoulder or uncured ham steak

Lentils & Rainbow Vegetables

- 2 large sweet potatoes, cut into ¼ inch rounds
- 3 tablespoons olive oil, divided
- 1 teaspoon salt, divided
- 1 bunch of beets, leaves and stems removed, then trimmed
- 1 cup French green lentils, rinsed and dried
- 2 cups water
- 1 small bunch of kale, rinsed and leaves removed from stems, then cut into thin strips
- Fresh cilantro, lime wedges and sliced radishes for garnish

RECIPE DEVELOPED BY
Heartbeet Kitchen

Instructions

1. Using a mortar and pestle, crush cumin seeds until finely ground. Add garlic to the mortar and pestle, then pound until the garlic and cumin have made a paste. Alternatively you could use ¾ teaspoon ground cumin and 3 minced cloves garlic if you do not have access to mortar and pestle. The flavor will not be as strong, but still very good. Stir in the oregano, sea salt and 2 teaspoons olive oil. Rub this into the pork shoulder really well using your hands. Place pork into a large ziploc bag and pour in citrus juice. Seal, then massage a bit to work the juice throughout the pork. Place bag in the refrigerator and let marinate for at least 6 hours, best if overnight.
2. After marinating, preheat oven to 225°F or turn on slow-cooker to low. Then heat remaining 1 tablespoon olive oil in a large Dutch oven to medium-high. Sear pork shoulder on both sides for 4 minutes, until slightly browned. Add leftover citrus juice from the bag to the Dutch oven, place in oven, cover, and roast for 6-8 hours, basting with its own juices every 2 hours. OR you can add the seared pork and remaining citrus juice from bag into the slow-cooker and roast on low for 6-8 hours, basting with its own juices every 2 hours. When done roasting, shred the pork in its own juices and transfer to a container.

The lentils and vegetables can be made ahead of time if you are cooking the roast in the oven, or while the roast is in the slow-cooker if you are using that method.

3. Preheat oven to 400°F. Rub 2 tablespoons olive oil and ¼ teaspoon salt into the sliced sweet potato rounds, then spread evenly onto a sheet pan so they are not touching. Place trimmed beets into a large piece of aluminum foil and enclose, making a packet for them. Place sweet potatoes and beets into the oven. Roast potatoes for 25 minutes or until browned, turning them over halfway through so both sides are evenly cooked. Leave beets in the oven for another 40 minutes, until they are easily pierced with a fork. Remove from oven, let cool, then peel away skins under cold running water. Cut peeled beets into small cubes and toss with ¼ teaspoon salt.
4. While the vegetables are roasting, make the lentils and kale. For lentils, add water to a medium saucepan and bring to a boil. Add lentils and cook for 22-25 minutes while just simmering, until lentils are soft, but not mushy. Drain lentils and stir in remaining 1 tablespoon olive oil and ¼ teaspoon salt. Set aside.
5. For kale, add the thin strips to a large saute pan and add 1 tablespoon water and ¼ teaspoon salt. Cook on medium, stirring throughout, until leaves are wilted, about 5 minutes. Set aside.
6. To assemble each bowl, distribute pork, sweet potatoes, beets, kale and lentils among each, then top with minced cilantro, sliced radish and big squeezes of lime (key for flavor). Enjoy!

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Green Pea Falafel Patties with Hummus Sauce

Ingredients

- ½ cup dry green split peas
- ¼ cup dry brown lentils
- ½ cup chopped red onion
- 3 cloves garlic, roughly chopped
- ½ cup parsley, chopped
- 1 lemon, juiced (~2 tbsp. lemon juice)
- 1 ¼ teaspoon ground cumin
- ½ teaspoon smoked paprika
- ¼ teaspoon cayenne pepper (optional for spice)
- ¼-½ cup bread crumbs (gluten-free if desired)

Hummus Dipping Sauce

- ½ cup prepared or homemade hummus
- 1 large lemon, juiced (~2 ½ tablespoons)
- Salt/ground pepper
- ½ teaspoon dried dill
- 1 garlic clove, minced
- ⅛-¼ cup water

RECIPE DEVELOPED BY
Delish Knowledge

Instructions

For Falafel Patties

1. Place the split peas and lentils in a medium sauce pan and cover with 2 cups water. Bring to a boil, reduce heat and simmer until lentils are tender, about 20-25 minute. Drain, and let cool.
2. Place the cooled lentil and pea mixture, red onion, garlic, parsley, lemon juice, cumin, cayenne, paprika, and generous pinch salt/pepper into a food processor and pulse 6-8 times to combine. You want the mixture to be wet enough to stick together but there should still be a little texture left.
3. Remove the mixture and place into a large bowl and add in ¼ cup bread crumbs. Stir to combine. You may need to add more breadcrumbs, up to ½ cup in total.
4. Heat a large, non-stick skillet over medium-high heat and add 1 teaspoon oil. For sandwich-size patties, use ¼ cup scoop. For stackable patties, use ½ cup scoop. Scoop out the mixture depending on size needed and form into a flat, falafel shaped patty. Place in the skillet and lightly fry on both sides until golden brown and crispy, about 2-4 minutes per side. Remove from skillet and repeat with remaining patties. You should get 7-10 patties depending on size.
5. Serve patties with hummus dipping sauce on a bed of greens or inside pita bread.

For Hummus Dipping Sauce

1. Place the hummus, lemon juice, salt/pepper, dill and minced garlic clove in a small bowl. Whisk in the water to form a pourable dressing. Serve with patties.



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Chickpea Pizza with Pistachio Nettle Pesto

Ingredients

Pizza

1 cup chickpea flour
½ teaspoon sea salt
½ teaspoon freshly ground pepper
¼ teaspoon celery seed
1 teaspoon fresh parsley, chopped
1 teaspoon fennel fronds, roughly chopped
1 cup lukewarm water
4-6 tablespoons olive oil, divided
1 garlic clove, minced
1 lemon, zest
4oz. burrata, broken into knobs
Large handful baby arugula, to top
Pea shoots, to top
Flaky sea salt
Cracked black pepper

Toasted Pistachio Nettle Pesto

2 large "tongfuls" of stinging nettle leaves, de-stemmed*
2 garlic cloves, roughly chopped
½ cup pistachios, toasted
1 lemon, juice & zest
½ cup Parmigiano Reggiano, freshly grated & packed
½ teaspoon sea salt
Freshly cracked pepper, to taste
Olive oil (about ⅓-½ cup)

Instructions

1. Heat oven to 450°F. In a large mixing bowl, whisk together chickpea flour, salt, pepper, celery seed, fennel fronds and parsley. Slowly whisk in lukewarm water, making sure to eliminate all lumps. Stir in 2 tablespoons of olive oil. Fold in garlic and lemon zest. Let mixture sit and thicken for about 15 minutes (or up to 12 hours).
2. While the dough mixture (socca) thickens, make pesto: Bring a large pot of water to a boil. Blanch your nettles*: add leaves to a boiling pot of water for 1-2 minutes. Remove with tongs or a slotted spoon, and add to an ice bath to cool. Once greens are cool to the touch, strain and squeeze all water from the leaves.
3. Roughly chop the blanched greens. Add to a food processor with garlic, pistachios, lemon juice and zest, Parmigiano, salt and pepper. Pulse into a coarse paste. Then stream olive oil to desired consistency or about ⅓-½ cup. Set aside.
4. Drizzle about 2 tablespoons of olive oil evenly into a cast iron (10-12 inches) or 9 x 11-inch baking dish to preheat for about 5-6 minutes (or until pan is very hot). Carefully remove hot pan and pour in batter evenly.
5. Top with sea salt and fresh pepper and bake for 12-15 minutes or until edges are browned and firm. If socca appears dry while baking or after, drizzle more olive oil over top. Let cool for 15-20 minutes. Then spread a thick layer of pesto over chickpea crust and dollop with burrata. Top with baby arugula, a sprinkling of pea shoots, flaky sea salt and freshly cracked pepper. Serve warm!

**To de-stem your nettle leaves, hold onto stem with tongs, and use your other hand to carefully snip the leaves using kitchen scissors.*

RECIPE DEVELOPED BY

Sassy Kitchen

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30-Minute Chicken and Chickpea Skillet Pasta

Ingredients

3 cups bow tie pasta
(or pasta of your choice)

2 tablespoons olive oil

1 pound boneless, skinless
chicken breasts, chopped

1 teaspoon dried oregano

1 teaspoon dried basil

½ teaspoon dried thyme

¼ teaspoon cayenne red pepper
(optional)

½ sweet onion, chopped

3 garlic cloves, minced

1 medium zucchini, chopped

¼ teaspoon salt

Dash of pepper

1 ½ cups cooked chickpeas

2 14.5-ounce cans of
diced tomatoes

1 cup chicken broth

4 cups fresh spinach
(loosely packed)

2 tablespoons tomato paste

¼ cup pine nuts, toasted

¼ cup fresh parsley, chopped

Garnish

Parmesan cheese

Freshly chopped parsley

Instructions

1. Heat a large pot of water over medium-high heat until boiling. Add the pasta and cook according to the package. Drain and keep warm.
2. While the pasta cooks heat the 2 tablespoons olive oil in a large skillet over medium-high heat. Add the chicken, oregano, basil, thyme and cayenne red pepper and sauté for 4 minutes, stirring occasionally. Add the onion, garlic, zucchini, salt and pepper and continue to cook until chicken is cooked through, 4 more minutes.
3. Add the cooked chickpeas, diced tomatoes, chicken broth, spinach and tomato paste and let simmer for 4 minutes, until the spinach is wilted.
4. Heat a dry small skillet over medium-low heat and toast pine nuts, stirring frequently, until pine nuts are golden in spots, about 3 minutes. Remove and set aside.
5. In a large serving bowl, add the pasta to the chicken mixture and stir until combine. Stir in the freshly chopped parsley and garnish with the toasted pine nuts.
6. Serve warm with extra fresh parsley and parmesan cheese.

RECIPE DEVELOPED BY

A Cedar Spoon

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Roasted Cauliflower and Seasoned Lentil Tacos

Ingredients

Cauliflower

1 large head of cauliflower, sliced into bite-sized florets

2-3 tablespoons olive oil

Salt and freshly ground black pepper, to taste

Lentils

1 tablespoon olive oil

1 cup chopped yellow or white onion

2 large garlic cloves, pressed or minced

2 tablespoons tomato paste

½ teaspoon ground cumin

½ teaspoon chili powder

¾ cup brown lentils, picked over for debris and rinsed

2 cups vegetable broth or water

Chipotle sauce

⅓ cup mayonnaise

2 tablespoons lime juice

2-3 tablespoons adobo sauce (from a can of chipotle peppers) or chipotle hot sauce to taste

Salt and freshly ground black pepper, to taste

Additional Ingredients

8 small, round corn tortillas

½ cup packed fresh cilantro leaves

Instructions

1. To roast the cauliflower: Preheat oven to 425°F. Toss cauliflower florets with enough olive oil to cover them in a light, even layer of oil. Season with salt and pepper and arrange the florets in a single layer on a large, rimmed baking sheet. Roast for 30-35 minutes, tossing halfway, until the florets are deeply golden on the edges.
2. Warm the olive oil in a medium-sized pot over medium heat. Sauté the onion and garlic with a dash of salt for about 5 minutes, until the onions are softened and turning translucent. Add the tomato paste, cumin and chili powder and sauté for another minute, stirring constantly. Add the lentils and the vegetable broth or water. Raise heat and bring the mixture to a gentle simmer. Cook, uncovered, for 20-35 minutes, until the lentils are tender and cooked through. Reduce heat as necessary to maintain a gentle simmer.
3. To prepare the chipotle sauce, just whisk together the ingredients and set aside (if you have no choice but to use whole chipotle peppers from the can, use a blender to purée it all). Once the lentils are done cooking, drain off any excess liquid, then cover and set aside. Warm tortillas individually in a pan over medium heat. Stack the warm tortillas and cover them with a tea towel if you won't be serving the tacos immediately.
4. Once all of your components are ready, you can assemble your tacos! Top each tortilla with the lentil mixture, cauliflower, a drizzle of chipotle sauce and a generous sprinkle of chopped cilantro.



RECIPE DEVELOPED BY
Cookie and Kate

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Lentil Meatballs with Burst Tomatoes and Pasta

Ingredients

½ cup brown or green lentils
1 ¼ cup water
1 tablespoon olive oil, plus more for brushing
½ cup diced red onion
1 clove garlic, minced
½ cup shredded carrots
¼ cup crushed pecans
¼ cup crushed walnuts
¼ cup whole wheat panko
½ teaspoon dried oregano
½ teaspoon dried basil
½ teaspoon salt
¼ teaspoon black pepper
1 large egg
1 pound cherry tomatoes
2 teaspoons olive oil
2 cloves garlic, chopped
8 ounces whole wheat pasta
1 ounce shredded Asiago cheese
2 tablespoons minced fresh basil
Olive oil, to serve

RECIPE DEVELOPED BY
Naturally Ella

Instructions

1. Combine lentils and water in a medium pot. Bring to a boil, reduce to a simmer, and cook until lentils are tender, 23-25 minutes. If lentils are not tender and water has been absorbed, add more water and continue to cook. Drain off any excess water.
2. Heat olive oil in a skillet over medium-low heat and add the red onion. Cook until onion is translucent and fragrant, 6-8 minutes. Stir in the garlic and carrots, cooking for another 2-3 minutes.
3. In a food processor, combine the cooked lentils, onion mixture, nuts, panko, herbs, salt, and pepper. Pulse a few times to start combining the mixture. Add the egg and pulse a few more times until the mixture is combined but the lentils are still holding shape. Set aside and let rest while the oven preheats to 425°F.
4. Combine cherry tomatoes with 2 teaspoons olive oil and chopped garlic. Place in the oven and let cook until tomatoes have released their juices and "burst," 30-35 minutes. Remove from oven and set aside.
5. Once tomatoes are in the oven, take the lentil mixture and roll into 12 balls, roughly the size of a golf ball. Place on a baking tray covered with parchment paper and brush with olive oil. Bake meatballs until browning and crisp, 25-30 minutes.
6. Cook pasta according to package and drain. When ready to assemble, combine the pasta with the burst tomatoes, meatballs, shredded cheese, and basil. Drizzle with olive oil and toss everything together to serve.



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Lentil Hand Pies with Basil Walnut Pesto

Ingredients

½ cup green lentils
1 bay leaf
1 garlic clove, smashed
3 tablespoons olive oil, reserved
2 carrots, finely chopped
½ red onion, finely chopped
Salt/pepper to taste
1 cup packed basil leaves
¼ cup walnuts
1 garlic clove, minced

Olive Oil Pie Crust:

¾ cup whole wheat pastry flour
1 ½ cups all-purpose flour
1 tsp. salt
¾ cup olive oil
½ cup unsweetened almond milk
(or other type milk)

RECIPE DEVELOPED BY
Delish Knowledge

Instructions

1. Place lentils, bay leaf and smashed garlic clove in a sauce pan and cover with 4 cups water. Bring to a boil, reduce heat to medium low and simmer for 15-20 minutes until soft. Drain, remove garlic clove and bay leaf.
2. Heat 1 teaspoon olive oil in a non-stick pan over medium heat. Add the carrots and onion along with a pinch of salt and pepper. Cook, until onions are translucent and carrots are tender, about 10 minutes.
3. Remove and combine with lentils, set aside.
4. Make the walnut pesto: Place the basil leaves, walnuts and garlic clove in a food processor and pulse until well combined. Slowly drizzle in olive oil until combined. Toss with lentil mixture. Set aside.

Pie Crust Instructions

5. In a large bowl or stand mixer combine oil with flour and salt. Drizzle with milk and stir until crust forms.
6. Turn out dough onto a lightly floured surface and knead until smooth, 30 seconds-1 minute.
7. Use a rolling pin and roll dough out until thin, about ¼-inch thick.
8. Use a 5-6-inch round cookie cutter to cut out circles.
9. Add 1 heaping tablespoon of filling to the dough circle. Place another circle on top and press to seal with a fork. Pierce the top of the pies 2-3 times with a fork.
10. Continue with the rest of the pies and place on a non-stick baking sheet or a pan lined with parchment paper.
11. Bake for 25-30 minutes. Remove and let cool slightly. Serve warm or at room temperature.

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Shrimp & Asparagus Parsnip Risotto with Chickpea Alfredo Sauce & Split Peas

Ingredients

Chickpea Alfredo Sauce

- 1 cup dry chickpeas
(2 cups cooked)
- 1 garlic clove, minced
- 1 tablespoon white miso paste
- 3 tablespoons nutritional yeast
- 2 tablespoons lemon juice
- ¼ teaspoon nutmeg
- ¼ teaspoon sea salt, or to taste
- 1 ½ cups water*

Parsnip Risotto

- 2 tablespoons olive oil
- 2 pounds parsnips, peeled and spiralized
- 2 large garlic cloves, minced
- ½ bunch asparagus, trimmed and chopped
- ½ pound raw shrimp, peeled and deveined
- 1 ¼ cups chickpea Alfredo sauce (see recipe above)
- ¼ teaspoon sea salt, to taste

For Serving

- ½ cup cooked split peas (see note)
- Fresh lemon wedges

RECIPE DEVELOPED BY
The Roasted Root

Instructions

Chickpea Alfredo Sauce

1. Cook 1 cup dry chickpeas.
2. Add cooked chickpeas, along with the remaining ingredients to a high-powered blender. Blend 90 seconds-2 minutes, until sauce is completely smooth. Transfer to a jar and refrigerate until ready to use. Note: you will end up with about 2 cups of chickpea Alfredo sauce. You only need 1 ¼ cups of the sauce for this risotto – save remaining sauce for future recipes for up to 1-week in a sealed container.

Parsnip Risotto

1. Cook ½ cup of dry split peas.
2. Peel the parsnips and spiralize them into noodles. Place parsnip noodles in a food processor and pulse until small rice-sized pieces form. Alternatively, place parsnip noodles on a cutting board and chop into rice.
3. Heat the olive oil over medium and add the chopped asparagus. Cook 3 minutes, stirring frequently.
4. Add the parsnip “rice,” garlic, and shrimp. Cook for 5 minutes, stirring occasionally, until shrimp is cooked through and parsnip rice has softened.
5. Add 1 ¼ cups of the chickpea Alfredo sauce and stir to combine. Cook another 3 minutes, until risotto reaches desired texture.
6. Taste risotto for flavor and add sea salt as desired. Add the cooked split peas and stir well. Serve with fresh slices of lemon for drizzling.

**For a thinner sauce, add a small amount more water until sauce reaches desired consistency. The sauce will thicken up in the refrigerator when saved and will also thicken when introduced to heat.*

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Sweets

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Healthy & Delicious Salted Pumpkin & Pink Bean Fudge

(Gluten-Free, Vegan)

Ingredients

½ cup pumpkin purée
⅓ cup + 1 tablespoon cooked pink beans, drained and rinsed
3 tablespoons pure maple syrup
1 teaspoon vanilla extract
¼ teaspoon salt
3 teaspoons pumpkin pie spice
2 tablespoons creamy almond butter
½ cup coconut butter in pourable, liquid state*
½ cup chopped, roasted pecans

Instructions

1. Add pumpkin, beans, maple syrup, vanilla extract, salt, pumpkin pie spice, and almond butter to food processor or high-powered blender. Purée for 20 seconds, then stop and scrape down sides. Purée for another 40 seconds, then scrape down sides. Add coconut butter, and purée for 20 seconds to bring everything together until completely smooth.
2. Scrape into a 8 x 4 x 2 ½-inch loaf pan (a little smaller or bigger will work too, it will just affect the thickness of your fudge) and smooth top with a spoon. Sprinkle pecans on top, then lightly press down on them so they attach to fudge. Freeze for 1 hour, then cut into small squares and serve.

You can store leftovers in covered container in the refrigerator, or in the freezer for 2-weeks. Storing in refrigerator will result in a little softer fudge.

Makes 14-18 pieces of fudge

**At room temperature, coconut butter (not to be confused with coconut oil) is solid. To get it into pourable, liquid state, set the tightly closed jar in a bath of hot water (not fully submerged just in case it would leak through the cap). Let sit for 10 minutes, then stir. Close jar and set back in water for 5 minutes. Stir until completely smooth. If a few clumps remain, microwave jar for 10 seconds, then stir, and repeat until no clumps remain.*

RECIPE DEVELOPED BY

Heartbeat Kitchen

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Lentil Oatmeal Cookies

Ingredients

1 cup butter, softened
1 cup brown sugar
½ cup white sugar
1 egg
½ cup lentil purée
1 teaspoon vanilla
1 cup all purpose flour
½ cup lentil flour
½ teaspoon cinnamon
1 teaspoon baking soda
½ teaspoon salt
3 cups oats
1 cup chocolate chips

Instructions

1. Prepare the lentil purée by adding the water and lentils into a small pot. Bring to a boil, reduce heat, cover and simmer for 45 minutes. Stir frequently. Cool and do not drain. Purée lentils with a blender or food processor. Purée should be the consistency of canned pumpkin.
2. Preheat oven to 350°F. Cream together butter and sugars. Add egg. Beat in vanilla. Mix in lentil purée.
3. In a separate bowl combine flour, baking soda, cinnamon and salt. Gradually mix dry mixture into butter mixture. Once completely mixed, fold in oats and chocolate chips.
4. Put cookie dough on greased cookie sheet, in 1 tablespoon mounds.
5. Bake for 10-12 minutes until slightly brown.

RECIPE DEVELOPED BY

USA Dry Pea & Lentil Council



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Peanut Butter Chickpea Energy Balls

Ingredients

- 1 ½ cups chickpeas, cooked
- ½ cup all-natural peanut butter, smooth
- ½ cup honey
- ¼ teaspoon cinnamon
- 1 teaspoon vanilla extract
- Pinch of salt
- 1 ¼ cup ground oat flour
- ½ cup mini chocolate chips

Instructions

1. Place cooked chickpeas, peanut butter, and honey in a food processor and blend for about a minute on high or until the mixture is smooth.
2. Add in cinnamon, vanilla extract, salt, and oat flour, and pulse until combined. At this point your dough should be similar to cookie dough consistency. If things are too dry, add more peanut butter, if things are too wet, add more ground oat flour.
3. Add in chocolate chips and pulse until combined.
4. Finally, using a 1 tablespoon cookie scoop, scoop out a heaping tablespoon of dough and roll between your palms to form a ball. Repeat. Store in the fridge or freezer!

RECIPE DEVELOPED BY
Fit Foodie Finds

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Lemony Chickpea Cake

Ingredients

1 15-ounce can chickpeas,
drained and rinsed (about
2 cups cooked)

4 tablespoons lemon juice

¼ cup vegetable oil

2 teaspoons grated lemon zest

2 egg yolks

¾ cup all-purpose flour

1 cup sugar

2 teaspoons baking powder

½ teaspoon salt

2 egg whites

¼ teaspoon cream of tartar

2 tablespoons freshly squeezed
lemon juice

Powdered sugar

RECIPE DEVELOPED BY

**USA Dry Pea &
Lentil Council**

Instructions

1. Preheat oven to 350°F. Grease and lightly flour two 8-inch round cake pans.
2. In a blender or food processor, purée chickpeas with lemon juice, oil and lemon zest. Add egg yolks and blend well. Turn mixture into a large bowl.
3. In a medium bowl, combine flour, ½ cup sugar, baking powder, and salt. Mix well. Add to puréed chickpea mixture and mix well.
4. In another medium bowl, beat egg whites and cream of tartar until foamy. Gradually add remaining ½ cup sugar in a slow, thin stream, beating until whites form peaks that are stiff but not dry.
5. Fold beaten egg whites into chickpea purée. Pour batter into the prepared pans and bake 30-35 minutes, or until a toothpick inserted into center of cake comes out clean. Cool 10 minutes on a rack, then turn cake out of pans and onto racks. Cool completely.
6. Pour one tablespoon lemon juice over each round, and sprinkle tops with powdered sugar.

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Lentil Chocolate Chip Banana Bread

Ingredients

½ cup dry lentils, cooked and puréed

1 ¾ cups water

½ cup unsalted butter, softened

1 cup granulated sugar

2 large eggs

1 cup mashed bananas (3 medium bananas)

4 tablespoons buttermilk

½ teaspoon vanilla extract

1 ¾ cups all-purpose flour

1 teaspoon baking powder

¼ teaspoon salt

⅛ teaspoon baking soda

1 cup chocolate chips

Instructions

1. Prepare the lentil purée by adding the water and lentils into a small pot. Bring to a boil, reduce heat, cover and simmer for 45 minutes. Stir frequently. Cool and do not drain. Purée lentils with a blender or food processor. Purée should be the consistency of canned pumpkin.
2. Grease and flour 1 large loaf pan (9 ¼ x 5 ¼-inch). Set aside.
3. In the bowl of a stand mixer, cream butter and sugar together. Add eggs, mashed bananas, lentil purée, buttermilk, and vanilla until the batter is well mixed.
4. Add in the flour, baking powder, salt and baking soda. Mix until well combined. Stir in the chocolate chips. Place batter into greased and floured pan and bake at 350°F for 55-60 minutes or until a toothpick comes out clean.
5. Let bread cool on a wire rack for 20 minutes. Loosen the bread with a knife and carefully remove from pan. Finish cooling on rack. Slice and serve once cooled.

RECIPE DEVELOPED BY

Two Peas & Their Pod

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Chickpea Gingersnaps

Ingredients

2 cups chickpea flour
2 ½ teaspoons ground ginger
1 teaspoon cinnamon
¼ teaspoon ground cloves
¼ teaspoon ground nutmeg
½ teaspoon fine sea salt
½ teaspoon baking powder
½ teaspoon baking soda
6 tablespoons butter, at room temperature
¾ cup brown sugar
1 egg
¼ cup molasses
½ teaspoon vanilla extract
3-4 tablespoons granulated sugar

Instructions

1. In a large bowl, whisk together all dry ingredients (flour through baking soda).
2. In a separate bowl, cream together the butter and brown sugar until smooth. Add the egg, molasses and vanilla and mix until thoroughly combined.
3. Gently stir the dry ingredients into the wet ingredients, mixing only until just combined.
4. Refrigerate the dough, tightly covered with plastic wrap, for at least one hour, or up to a few days.
5. Before you start forming the cookies, preheat oven to 350°F. Roll level tablespoons of dough into balls.
6. Pour granulated sugar into a bowl and coat each ball evenly with sugar before placing on an ungreased baking sheet.
7. Bake for 10 minutes, or until set around the edges, but still slightly soft in the middle. Let cookies cool for 5-10 minutes before transferring to a cooling rack.

RECIPE DEVELOPED BY
The Pancake Princess

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Apple Peanut Butter Cake

Ingredients

1 cup split pea purée, preferably yellow (½ cup dry)
½ cup peanut butter, either crunchy or creamy
½ cup honey
¾ cup firmly packed brown sugar
2 eggs
1 egg white
1 teaspoon vanilla extract
2 teaspoons ground cinnamon
½ teaspoon baking soda
¾ teaspoon salt
½ cup all-purpose flour
½ cup whole wheat flour
½ cup chopped dry-roasted peanuts
½ cup currants or raisins
1 cup Golden Delicious apple, peeled and chopped

RECIPE DEVELOPED BY

**USA Dry Peas &
Lentil Council**

Instructions

1. Prepare the split pea purée by adding 2 ½ times the amount of water as split peas. Bring to a boil, reduce heat, cover and simmer for 45 minutes. Stir frequently. Cool slightly and do not drain. In small batches, mash or purée split peas with a sieve, food mill, blender, food processor or potato masher. Purée should be the consistency of canned pumpkin. Add water to thin if needed.
2. Preheat oven to 350°F.
3. In a large mixing bowl, beat purée, peanut butter, honey, and brown sugar until blended. Beat in eggs and egg white. Stir in vanilla extract.
4. In a separate bowl, stir together cinnamon, baking soda, salt and flours.
5. Add flour mixture to peanut butter mixture along with peanuts, currants and apple. Mix well.
6. Turn into a greased 13 x 9-inch baking pan. Bake until a knife inserted in center of cake comes out clean, about 25 minutes.
7. Let cake cool before cutting into squares. Serve warm with vanilla ice cream.

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GOVT MADHAV SCIENCE COLLEGE UJJAIN

National Science Day 28TH February 2018

Under the banner of PURE EEHSaS & ViSTAR (Flagship Programmes)



National Science Day was celebrated by the institution on Wednesday. A Science exhibition at Government Madhav Science College was specially organised to mark the Science Day. The exhibition was inaugurated by the principal of the college and additional director higher education Dr Usha Srivastava. MPCST senior scientist Dr Anita Silvere was chief guest while Dr SS Asthana was the special guest of the programme.

Students made many models on the theme 'Earth and Environment' at the exhibition. A static model and dynamic model, hydrolic breeze, smart city, smart village, DNA Test, fighting Stars AI based robots and a model of the Bio Diversity Park drew attention of the audience. Dr SS Asthana inspired students to head for research in his address.

Anita Silvere also addressed students. Principal Shrivastava also appreciated students for their efforts.

The programme was conducted by Dr Kalpana Singh. The concluding ceremony of the exhibition coupled with a prize distribution programme was held on March 1 and the programme was headed by MLA Mohan Yadav.

Unique Selling Proposition of the exhibition was awareness campaign against superstitions, launched by the college on this day of 28/2/2018. Students demonstrated tricks adopted by the impostors to befool innocent villagers, Ujjain being a religious place welcomes many religious tourists coming across the country from far off as well as from neighbourhood places and they fall in the trap of these imposters. In all 8 campaigns were designed for 4 months starting from February 2018 to June 2018. The methodology adopted is through Nukkad natak clubbed with society workshops.

In all 240 students participated in the exhibition which was open for two days for viewing. 850 students viewed the exhibition

26 Dynamic Models were presented

59 Static Models were presented

36 Charts were presented

A scientist's meet was also organized with the name coffee with CV Raman, where students played the role of famous scientists. As the day was about celebrating sir CV Raman, Sir CV Raman hosted the coffee meet. It was an enriching experience for students playing Role models, faculty, and viewers as well as for guests. The event was much appreciated 12 students participated in the scientific meet.

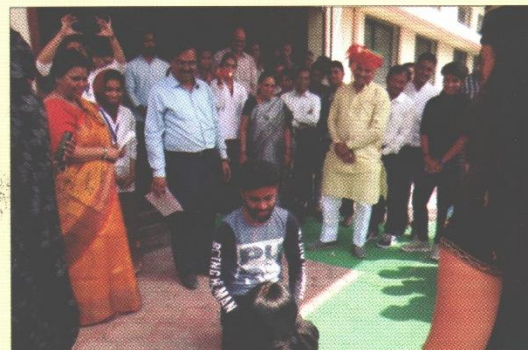
Organizing committee:

- ❖ Dr. Kalpana Singh Coordinator
- ❖ Dr. Shobha Shouche member
- ❖ Dr. Jeevan Singh Solanki member
- ❖ Dr. Pradeep Lakhre
- ❖ Ms. Komal Chelaramani (Research Scholar)
- ❖ Sh. Satish Piplod (Research Scholar)
- ❖ Ms. Shivangi Vyas (Student)
- ❖ Mr. Yashwant Bairagi (Student)

Pictures



विज्ञान प्रदर्शनी



Sample certificate

GOVT. MADHAV SCIENCE POST GRADUATE COLLEGE, UJJAIN



DST-FIST COLLEGE
'A' Grade Accredited through NAAC

National Science Day Celebrations
28th February 2018

Certificate

Certified that Dr./Mr./Mrs./Km. Shirangi Vyas
of M.Sc. II sem Chemistry
participated in Dynamic Model (Life Sc./Chem. Sc. Category) and
won Third prize (Energy eff prize) mentored in the National Science
Day sponsored by Janabhagidari Samiti.


Dr. Kalpana V. Singh
Coordinator
Science Exhibition


Dr. Arpan Bhardwaj
Coordinator
Janabhagidari Samiti


Dr. Usha Shrivastava
Principal
Secretary, Janabhagidari Samiti



INTERNATIONAL YEAR OF PERIODIC TABLE IYPT 2019

**SPONSORED BY MPCST BHOPAL
& JANABHAGIDARI SAMITI**

IYPT Programme Coordinator : Dr. Kalpana Virendra Singh

UNESCO declared year 2019 as International Year of Periodic table 2019. PG Department of Chemistry and Pharmaceutical Chemistry opened the celebrations from April 2019 with International Earth day

APRIL 2019 .. International Earth day: Theme “ Water : the green resource of Periodic table” Field surveys and visits are organized to the nearby places like PIngleshwar Chintaman Jawasiya, Barnagar Road, Udyogpuri Maksi Road 68 students Participated in these events. Students Collected water samples from these area and prepared health chart for water. Lectures on Water resource management and collection were organized in these areas.

JULY 2019.....Seminar on The great Contributors of Periodic Table: 124 students participated in the event

Students prepared Power Point Presentation on various contributors of Periodic Table starting from Dimitri MENDELEEV TO Bohr to Madam Curie.

AUGUST 2019..... Periodic Table making Competition theme “Periodicity of the Life New Dimensions of Periodic Tble” 132 Students from UG and PG classes participated in the program. A New form of periodic table was designed and painted by students where element symbols have meaning for life like HOPE for Ho, INTELLECT for In, HAPPY for H, PITY for Pt, COMPASSION for Co etc. This was an Innovative approach where hard core Chemical Chart of elements could be related to life

SEPTEMBER 2019: Students celebrated Teachers day by greeting their teachers with Periodic Table cake

SEPTEMBER 2019: Invited talk on elements of periodic table and environment and Sciencetons for Periodic Table by Dr. Prabodh Choube BASF Mumbai and Dr. Pradeep SHREEVASTAV CDRI Lucknow 89 Students Participated

OCTOBER 2019: poster Competition on periodic table “Theme My element” 119 students participated students prepared charts on different elements of the periodic table

NOVEMBER 2019 Seminar on structure elucidation of Radioactive elements of Periodic Table by NMR and Mass experts Dr. Sanjeev Shukla CDRI Lucknow, Dr. B.K. Mishra

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Dean Science Faculty Vikram University Ujjain , Dr. Uma Sharma Prof. Vikram University Ujjain.

DECEMBER 2019: 30/01/2019 and 31/01/2019 Closing Ceremony of IYPT 2019

Student Lecture: 06 Students gave lectures Vallabh Bansiya , Arvind H Rathore Arvind D Rathore Rohit Yogi, Aafreen Ali, Kratika Upadhyay

Periodic Table Quiz : 42 Students Participated

Periodic Table Game: Periodic table Bingo: 54 Students Participated

Exhibition On Periodic Table : 168 Participated

Certificates were distributed to all participants

1st, 2nd and 3rd Prizes were given to all winners.

Key note Speaker of the ceremony: Dr. Suman Mukhopadhyay from IIT Indore

Chief Guest: Dr. Shubha Jain Dean Science Faculty Vikram University Ujjain

Special Guest: Sh. Aslam Lala Chairperson Janabhagidari

Total Participants: 375

SC: 185

ST:12

OBC: 68

All the activities are performed under the Chair Dr. Arpan Bhardwaj Principal of the college and under the Guidance of HOD Chemistry Dr. Brijesh Pare, Faculty Dr. Ajay Chaturvedi, Dr. Shakuntala Pandey, Dr. Manmeet Kaur Makkad, Dr. Deependra Singh Raghuvanshi, Smt. Pratibha Namdeo , Dr. Jeeven Singh Solanki and Dr. Rekha Nagwanshi Cooperated in The capacity of Coordinators of the individual events.



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Dr. Suman Mukhopadhyaya IIT Indore Speaking on Closing Day



Students Playing Bingo(Periodic Table)



Dr. Shubha Jain Dean Science Faculty Vikram University Ujjain And Sh. Aslam Lala In the closing Ceremony



Poster Release IYPT in closing Ceremony

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Periodic Table Painted on the wall by students with expert help

OFFICE OF THE PRINCIPAL GOVT. MADHAV SCIENCE P.G. COLLEGE M.P.
A GRADE ACCREDITED THROUGH NAAC
DST-FIST COLLEGE



NATIONAL SCIENCE DAY CELEBRATIONS FEBRUARY 28TH 2020

SPONSORED BY: NATIONAL ACADEMY OF SCIENCE BHOPAL CHAPTER
SUPPORTED BY: JANABHAGIDARI SAMITI
INTERNAL QUALITY ASSURANCE CELL

SCIENCE EXHIBITION ON THE THEME OF
“PLANT HEALTH A DECISIVE FACTOR FOR HUMAN HEALTH”
AND
WOMEN IN SCIENCE

Govt. Madhav Science P.G.College Ujjain celebrated National Science day on 28/02/2020 different competitions were organized in the science exhibition 2020 based upon the themes. The inaugural session was presided over by the principal of the college Sh. Aslam Lala Chairperson Janabhagidari was the Chief Guest of the function and Dr. Sudha mall veteran plant biologist was the key note speaker. The inaugural welcome speech was given by the Head of the Department of Chemistry Dr. Brijesh Pare. Vote of thanks to the dignitaries was extended by the coordinator of the event Dr. Kalpana V. Singh

THEMES OF SCIENCE EXHIBITION

- “PLANT HEALTH A DECISIVE FACTOR FOR HUMAN HEALTH”
- WOMEN IN SCIENCE

Themes were selected as year 2020 is declared as International Year of plant health by FPO and women in science is the theme for National Science Day 2020. SARS COV 2 has also started to tap India. The Corona Virus outbreak is declared a Public Health Emergency of International Concern on 30 January 2020. On 11 February 2020, WHO announced a name for the new coronavirus disease: COVID-19. Students voluntarily included COVID 19 awareness in their schedule of Science Day. Total 228 students participated in this event. Following competitions were organized

- **POSTER COMPETITION ON THEMES (84 POSTERS PRESENTED)**

PLANT HEALTH A DECISIVE FACTOR FOR HUMAN HEALTH
WOMEN IN SCIENCE
COVID 19

- **DOCUMENTARY AND SHORT PRESENTATIONS COMPETITION ON THEMES (06 ENTRIES)**

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PLANT HEALTH A DECISIVE FACTOR FOR HUMAN HEALTH (03entries)
WOMEN IN SCIENCE (02 entries SHEROES OF INDIA)
COVID 19 (01 entry)

➤ **STUDENT LECTURES ON THEMES (TOTAL 09 ENTRIES)**

PLANT HEALTH A DECISIVE FACTOR FOR HUMAN HEALTH
WOMEN IN SCIENCE
COVID 19

- EXPERT LECTURE BY DR. SUDHA MALL EMINENT PLANT BIOLOGIST AND RESEARCHER DOING HER ORGANIC FARMING TOO.

Certificates and Prizes were distributed to achievers in every segment.

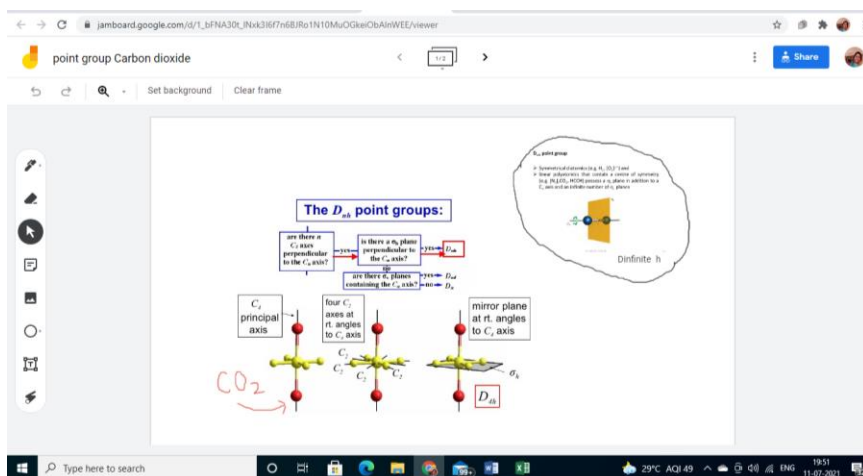
Department of Bioinformatics and Department of Chemistry theoretically pledged to start an interdisciplinary project on anti-carcinogenic activities and properties of plants which should include in silico and in vitro studies on anti-carcinogenic properties of plants.

Dr. Kalpana V.Singh
Coordinator Event

Dr. Arpan Bhardwaj
Principal

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SOME GOOGLE JAM BOARDS BY PG CHEMISTRY (Participative learning)



non equilibrium thermodynamics

I'm Bhawana Porwal

In thermodynamic equilibrium there are no net macroscopic flows of matter or of energy, either within a system or between systems.

Yash Gurjar

In a chemical reaction, chemical equilibrium is the state in which the forward reaction rate and the reverse reaction rate are equal.

Deepta Prasad

equilibrium is a state of rest or balance due to the equal action of opposing forces. The point equilibrium is used in the context of reversible reaction.

name - neha Rawal

non equilibrium thermodynamics deals with the concepts of heat and temperature and the inter conversion of heat and other form of energy.

Mahima Upadhyay

Non-equilibrium thermodynamics is a branch of thermodynamics that deals with physical systems that are not in thermodynamic equilibrium.

Thomson in this named the laws of thermodynamics other than the

great Bhawana and Deepta, so now you know how to write on Jam board

non equilibrium thermodynamics

I am anushka pandya

Equilibrium has both forward and backward reaction.

Equilibrium is the condition which occurs when the concentration of reactant and product participating in a chemical reaction exhibit no net change over time.

steady state is an unvarying condition in a physical process where the system is maintained by the constant creation of matter

gallon milk is taken out of a cold fridge and placed on the counter the counter and the milk thermal equilibrium when they reach the same temperature example with steady state

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Equilibrium is a state of rest or balance due to the equal action of opposing forces.

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equilibrium vs time invariant Steady State
submit your response here by editing the jam board

It would have been better if you people have written on the this Jam. Every body should try to write on this jam only.

*For an equilibrium, all concentrations are constant over time. For a steady-state, there is a net reaction, so some amounts change (the amount of source and sink), while at least one species - the one at steady state - has a constant concentration as long as the conditions of steady state prevail. [I am Kratika Upadhyay]

answer equilibrium is there without any external gradient Steady state requires Gradient Dr. Kalpana Singh

write answers in single line

the term Steady state is used in enzymetic kinetics where the concentration of enzymatic complex no longer changes.

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I am Rupali Sharma.
Equilibrium is a state of rest or balance due to the equal action of opposing forces, the time invariant system has a time dependent system function is

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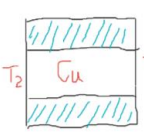
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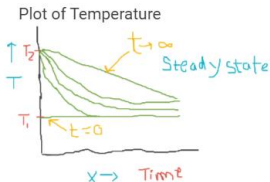
I am Kratika Upadhyay

Equilibrium Vs time invariant Steady state
Equilibrium and steady state can both be defined as being time invariant, so they both describes system which are not changing with time.
But both are different phenomenon
First, steady state
Let consider a bar of Cu and this is thermally insulated on the top and bottom

Let T₂ is carrying higher temperature than T₁



Plot of Temperature



To be continued...

In this, the system appears to be unchanging but it is not in the eqib. because for this to keep the system in steady state, temp. difference must be maintained, so there essentially has to be an external heat flow into the system to make the T₂ temperature higher than T₁.

non equilibrium thermodynamics

For Equilibrium :

Surround the system with a boundary as it is applicable on closed system.

1. There is no change in volume ($dv=0$)
2. The boundary must be impermeable i.e, ($dn=0$) so there is no change in matter.
3. Thermally insulated means no change in internal energy of the system ($du=0$).

Overall- No work, no heat, no mass crossing the boundary of the system.
If the system doesn't change then the system is in equilibrium.

Hence, the steady state is different from the equilibrium as to maintain the steady state we have to give system the external heat flow but in equilibrium no heat is required.

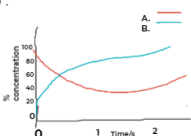
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I am Neha Chouhan

At equilibrium the concentration of reactants does not change with time. At equilibrium the concentration of products does not change with time. Catalysts increase the rate of both the forward and reverse reactions. An open system in which either reactants or products are being removed cannot reach equilibrium.

the concentrations of A and B are no longer changing. This is the point at which the system has reached chemical equilibrium. While there are various factors that can increase or decrease the amount of time it takes for a given system to reach equilibrium, the equilibrium position itself is unaffected by these factors. For instance, if a catalyst is added to the system, the reaction will proceed more quickly, and equilibrium will be reached faster, but the concentrations of both A and B will be the same at equilibrium for both the catalyzed and the uncatalyzed reaction.

The Equilibrium Constant The thermodynamic equilibrium constant is defined as:

$$K_{eq} = \frac{[C]^m [D]^n}{[A]^a [B]^b}$$


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Next frame

Name - Manisha Jadon

Equilibrium and steady state :- A equilibrium state is reached when the concentration of reactants and product are constant over time. this often occure when the forward and backward reaction occur at the same rate.

in contrast steady state is when the state variable are constant over time while there is a flow through the system. The state variable parameters that depends on the state current state of a system not on how the system got to that state. ex. an example of steady state can be found a bathtub with the drain open and water being added if water is leaving the tub at the same rate that water is being added the state variable volume will be constant over time.

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A state of chemical equilibrium is reached when the concentration of reaction and product are constant over time . This often occurs when the forward and s occur

In contrast steady state is when the state variables are constant over time while there is a flow through the system. The state variables parameters that depend on the t of .

vishal gehlot

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Teacher's using flipped classroom pedagogy

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2	<i>Dr. Kalpana Singh</i>	<i>Chemistry</i>	<i>2018-19& 2019-20</i>
3	<i>Dr. Rekha Nagwanshi</i>	<i>Chemistry</i>	<i>2018-19& 2019-20</i>
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