



GOVERNMENT OF PUDUCHERRY
Arignar Anna Government Arts and Science College
Karaikal-609605

(Affiliated to Pondicherry University)
NEHRU NAGAR, KARAIKAL (UT OF PUDUCHERRY) - 609 605



Department: B.A. Tamil

Programme Outcome

- PO1: To explain letters, words and grammar in Tamil Language.
- PO2: Learn to write Tamil Sentences without grammar mistakes.
- PO3: To develop the Creative writing.
- PO4: To understand the history and Tamil culture.
- PO5: To learn about the specialty of Modern Literatures.
- PO5: To understand the history and Tamil culture
- PO6: To fully understand the grammar of Nannool & Tholkappiyam
- PO7: Will be able to Translate and Compare the World Literature.

Programme Specific Outcomes

- PSO1: Basic concepts like Agam, Puram, Ilakkiya Varalaru and Ilakkana Varalaru etc.
- PSO2: Introduction on Sangam, Kappiyangal, Thirukkural and Modern Literature.
- PSO3: Acquainted with some basic Modern Literature Theories.
- PSO4: Learners will be involved in creative writings and can develop spoken skill by learning such papers like Pechchukkali & Padaippukkali.
- PSO5: To provide computer knowledge for gaining employment through studying Internet Tamil.
- PSO6: Students will learn about Folk literature and gain knowledge about old Tamil culture.
- PSO7: To create awareness about Mass Media.

Name of the Programme: பொதுத்தமிழ்

(அனைத்து இளங்கலை மற்றும் இளம் அறிவியல் பட்டங்களுக்கான அடித்தளப்படிப்பு)

முதலாண்டு		
வ.எண்	பாடம்	பாட நோக்கம்
1.	பொதுத்தமிழ் 1 (இக்கால இலக்கியம்) MIL - 1	- இக்கால இலக்கிய வகைகளையும் வடிவங்களையும் அறிமுகம் செய்தல் - கவிதை, சிறுகதை, நாடகம், உரைநடை, நாவல் ஆகியவற்றின் தோற்றம் மற்றும் வளர்ச்சி நிலைகளை எடுத்துரைத்தல் - இக்கால இலக்கியப் படைப்புகள் குறித்த விமர்சனப் பார்வை பெறுதல்
2.	பொதுத்தமிழ் 2 (காப்பியங்கள் – அற இலக்கியங்கள்) MIL - 2	- காப்பிய இலக்கியங்களின் இலக்கியச் சுவையைப் பயிற்றுவித்தல் - காப்பிய இலக்கியங்களின் வாயிலாக வாழ்வியல் விழுமியங்களை அறியச் செய்தல் - அற இலக்கியங்களின் தேவையை எடுத்துரைத்தல் - அற இலக்கியங்களின் வாயிலாக வாழ்வியல் அறங்களை அறியச் செய்தல்
இரண்டாமாண்டு		
3.	பொதுத்தமிழ் 3 (சமய இலக்கியங்களும் சிற்றிலக்கியங்களும்) MIL - 3	- சமய இலக்கியத் தோற்றத்திற்கான வரலாற்றுப் பின்புலத்தை எடுத்துரைத்தல் - சைவ, வைணவ இலக்கியங்களை அறிமுகப்படுத்துதல் - சிற்றிலக்கியங்களின் தோற்றப் பின்புலத்தை எடுத்துரைத்தல் - சிற்றிலக்கியங்களின் இலக்கியச் சிறப்பைக் கற்பித்தல்
4.	பொதுத்தமிழ் 4 (சங்க இலக்கியம்) MIL - 4	- சங்க இலக்கியங்களின் சிறப்புகளை எடுத்துரைத்தல் - சங்க இலக்கியங்களின் வாயிலாக அகம் மற்றும் புறப் பண்பாடுகளை எடுத்துரைத்தல்

Name of the Programme : இளங்கலைத் தமிழ்

முதலாண்டு முதற்பருவம்			
வ.எண்	பாடம்	Course Code	பாட நோக்கம்
முதன்மைப் பாடம்			
1.	இக்கால இலக்கியம் (கவிதையும் உரைநடையும்)	DSC-1 A	○ மரபுக் கவிதை, புதுக்கவிதை – அறிமுகம் செய்தல் ○ கவிதைகளின் உள்ளடக்கம் மற்றும் அவை தோன்றிய காலச்சூழல், சமூகப் பின்னணி ஆகியவற்றை விளக்குதல் ○ புதுக்கவிதை வடிவங்களையும், உத்திகளையும் விளக்குதல் ○ உரைநடை வளர்ச்சி வரலாறு குறித்து அறிமுகம் செய்தல்
2.	நன்னூல்- எழுத்ததிகாரம்	DSC-2 A	○ தமிழ் இலக்கண அறிமுகம் செய்தல் ○ இலக்கியத்திற்குத் தேவையான இலக்கண அறிவு பெறுதல் ○ நன்னூல் இலக்கணத்தை நுட்பமாகக் கற்று நடைமுறையில் பயன்படுத்துதல்
AECC - 1 / PADM 113			
1.	Public Administration	AECC-1	○ நிர்வாகவியல் குறித்த அறிவு பெறுதல் ○ நிர்வாகத்தின் நோக்கங்கள் குறித்து விளக்குதல்
இரண்டாம் பருவம்			
முதன்மைப் பாடம்			
3.	இக்கால இலக்கியம் (கவிதை, புதினம், சிறுகதை, உரைநடை)	DSC -1B	○ இக்கால இலக்கிய வகைகளையும் வடிவங்களையும் அறிமுகம் செய்தல் ○ கவிதை, சிறுகதை, நாடகம், உரைநடை, நாவல் ஆகியவற்றின் தோற்றம் மற்றும் வளர்ச்சி நிலைகளை எடுத்துரைத்தல் ○ இக்கால இலக்கியப் படைப்புகள் குறித்த விமர்சனப் பார்வை பெறுதல்

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4.	நன்னூல் சொல்லதிகாரம்	DSC - 2B	- மொழிக் கல்வியை ஊக்குவித்தல் - பிழையின்றிப் பேசவும் எழுதவும் நன்னூல் வழிக் கற்பித்தல் - மொழியின் அடிப்படைகளைக் கற்றல்
AECC - 2/ENVS 123			
2.	சுற்றுச்சூழலியல் (Environmental Studies)	AECC -2	- சுற்றுச்சூழலியல் கல்வியின் தேவை / அவசியம் குறித்து விழிப்புணர்வு தருதல் - சுற்றுச்சூழல் மாசுகளைத் தடுக்க உதவும் வழிமுறைகளை எடுத்துக்காட்டி அவற்றைப் பின்பற்ற ஊக்குவித்தல் - தமிழிலக்கியங்கள் உணர்த்தும் சுற்றுச்சூழல் பாதுகாப்பு முயற்சிகளை உணர்த்துதல்
இரண்டாமாண்டு			
மூன்றாம் பருவம்			
முதன்மைப் பாடம்			
5.	பக்தி இலக்கியம் & சிற்றிலக்கியம்	DSC-1 C	- சிற்றிலக்கியங்கள், பக்தி இலக்கியங்கள் தோன்றிய காலப் பின்னணி குறித்து விளக்குதல் - அவற்றின் பாடுபொருளை எடுத்துரைத்தல் - பக்தி இலக்கியங்கள் காட்டும் தனிமனித ஒழுக்கம் குறித்து எடுத்துரைத்தல்
6.	யாப்பருங்கலக்காரிகை	DSC - 2C	- செய்யுள் உறுப்புகள் குறித்து விளக்குதல் - பா வகைகள், பாவினங்கள், அவற்றுக்குரிய ஓசை முதலான இலக்கணங்களைக் கூறுதல் - மரபுக் கவிதை எழுதும் ஆற்றலை ஊக்குவித்தல்

சார்புப்பாடம்			
1.	படைப்பிலக்கியம்	SEC -1	மாணவர்களுக்குப் படைப்புகளை உருவாக்கும் வகையில் பயிற்சி அளித்தல்
நான்காம் பருவம்			
முதன்மைப் பாடம்			
7.	காப்பியங்கள்	DSC - 1 D	- காப்பிய மரபை அறிதல் - தமிழில் தோன்றியுள்ள பெருங்காப்பியங்கள், சிறுகாப்பியங்கள் வழி வாழ்வியல் விழுமியங்களை உணரச் செய்தல் - காப்பிய மாந்தர்களை மதிப்பீடு செய்தல்
8.	தண்டியலங்காரம்	DSC - 2D	- அணிகள் குறித்து அறிமுகம் செய்தல் - கவிதை இன்பம் பெற அணிகள் பயன்படும் விதம் குறித்து எடுத்துரைத்தல் - அணிகளைப் பயன்படுத்தி எழுதும் ஆற்றலை ஊக்குவித்தல்
சார்புப் பாடம்			
2.	பயன்பாட்டுத் தமிழ்	SEC -2	- கடிதங்கள், கட்டுரைகள் எழுதப்பயிற்றுவித்தல் - மரபுச்சொற்களையும், கலைச்சொற்களையும் கற்பித்தல் - பணி வாய்ப்புப் பெறும் வகையில் மொழித்திறன்மேம்பாட்டுப் பயிற்சி அளித்தல்
மூன்றாமாண்டு ஐந்தாம் பருவம்			
சார்புப் பாடம்			
9.	மொழிபெயர்ப்பு	SEC - 3	- மொழிபெயர்ப்பின் நோக்கங்கள், பயன்கள் குறித்து அறிதல் - பிற மொழி நூல்கள் குறித்து அறிதல் - தமிழில் இருந்து ஆங்கிலத்திற்கும், ஆங்கிலத்தில் இருந்து தமிழுக்கும் கடிதங்கள், கட்டுரைகள் போன்றவற்றை மொழிபெயர்த்துப் பயிற்சி பெறுதல்

முதன்மைப் பாடம்			
10.	சங்க இலக்கியங்கள் (புறம்)	DSE - 1A	- சங்ககால மக்களின் வாழ்வியலை விளக்குதல் - சங்க காலம் காட்டும் நெறிகளைப் போற்றி, அவற்றை மாணவர்தம் வாழ்க்கைக்கு வழிகாட்டியாகக் கொள்ள அறிவுறுத்தல்
11.	புறப்பொருள் வெண்பாமாலை	DSE - 2A	- தமிழுக்கே உரிய பொருளிலக்கணம் குறித்து எடுத்துரைத்தல் - அகம், புறம் – கூறுகளை அறிதல் - பழந்தமிழ்நாட்டின் மரபுகள், பண்பாட்டுக் கூறுகள் ஆகியவற்றை அறிதல்
12.	திருக்குறள்		- அறநூல்கள் - அறிமுகம் - திருக்குறளின் மேன்மை குறித்து மாணவர்கள் அறியச் செய்தல் - திருக்குறளைப் பிற அறநூல்களோடு ஒப்பிட்டு நோக்குதல் - பழந்தமிழ் இலக்கியங்களின் செவ்வியல் தன்மையைப் பல்வேறு புலவர்களின் பாடல்வழி அறியச் செய்தல்
13.	மொழியியல் ஓர் அறிமுகம்	DSE - 3A	- மொழியிலுள்ள அறிவியல்சார் கூறுகளை விளக்குதல் - பேச்சுத் தமிழின் முக்கியத்துவம் குறித்து எடுத்துரைத்தல் - மொழியியல் கோட்பாடுகள் மொழி வளர்ச்சிக்கு உதவும் தன்மையை விளக்குதல்
14.	தமிழக வரலாறும் பண்பாடும்		- பழந்தமிழகத்தின் புவியியல் அமைப்பை அறிதல் - தமிழரின் வரலாறு, பண்பாடு குறித்துத் தெரிந்து கொள்ளுதல் - வரலாற்றுப் பின்புலம் இலக்கியங்களில் ஏற்படுத்திய தாக்கங்கள் குறித்து விளக்குதல்

15.	தமிழ்வழிக்கணினி	GE - 1	○ நவீன ஊடகமாகிய கணினியைப் பயன்படுத்தும் திறனை மேம்படுத்துதல் ○ தமிழ் மொழி வளர்ச்சியில் இணையத்தின் பங்கு குறித்து விளக்குதல் ○ பணி வாய்ப்புப் பெறும் வகையில் திறன்மேம்பாட்டுப் பயிற்சி அளித்தல்
ஆறாம் பருவம்			
சார்புப் பாடம்			
16.	பேச்சுக்கலை	SEC - 4	○ பேச்சுக்கலையின் சிறப்பு மற்றும் தனித்தனமை குறித்து எடுத்துரைத்தல் ○ பேச்சுக்கலையின் தேவையை உணர்த்தி மாணவர்தம் கருத்துக்களைத் தெளிவாக எடுத்துரைக்கப் பயிற்றுவித்தல் ○ ஊடகங்கள் மற்றும் மேடைகளில் பேசும் முறை குறித்துக் கற்பித்தல்
முதன்மைப்பாடம்			
17.	சங்க இலக்கியங்கள் (அகம்)	DSE - 1B	○ சங்க இலக்கியங்களின் சிறப்புகளை எடுத்துரைத்தல் ○ சங்க இலக்கியங்களின் வாயிலாக அகப் பண்பாடுகளை எடுத்துரைத்தல்
18.	நம்பியகப்பொருள்	DSE - 2B	○ அகத்திணையியல் குறித்து விளக்குதல் ○ புறத்திணையியல் குறித்து விளக்குதல் ○ களவியல் - கற்பியல் குறித்து விளக்குதல்
19.	இலக்கியத் திறனாய்வு	DSE - 3B	○ திறனாய்வுக் கொள்கைகளை அறிமுகம் செய்தல் ○ இலக்கியங்களில் திறனாய்வுப் பார்வையை மேம்படுத்துதல் ○ இலக்கிய மதிப்பீட்டுத் திறனை ஊக்குவித்தல் ○
20.	புலம்பெயர் தமிழர்களின்		● புலம்பெயர்வதற்கான

	வாழ்வும் இலக்கியமும்		சமூக, பொருளாதார, அரசியல் காரணங்களை விளக்குதல் • புலம்பெயர் இலக்கியங்களை அறிமுகம் செய்தல் • புலம்பெயர் தமிழர்களின் வாழ்க்கை நிலை குறித்து விவாதித்தல்
21.	புதுச்சேரி விடுதலைப் போராட்ட வரலாறு		○ புதுச்சேரியில் பிரெஞ்சியர் ஆட்சி குறித்து விளக்குதல் ○ பிரெஞ்சிந்திய விடுதலைப் போராட்டங்கள் குறித்து எடுத்துரைத்தல்
22.	பெரியாரியம்		○ பெரியாரின் வாழ்க்கை குறித்து அறிதல் ○ திராவிட இயக்கம் குறித்து அறிதல் ○ பெரியாரின் சிந்தனைகள் குறித்து விளக்குதல்
23.	ஊடகவியல்	GE - 2	○ தகவல் தொடர்பு ஊடகங்கள் குறித்த அறிமுகம் ○ பணிவாய்ப்புப் பெறும் வகையில் ஊடகங்களுக்கு செய்திகள், நிகழ்ச்சிகள் தயாரிக்கப் பயிற்றுவித்தல் ○ திரைப்பட நுணுக்கங்களைக் கற்றுத்தருதல்
முதலாண்டு முதற்பருவம்			
வ.எண்	பாடம்	Course Code	பாட நோக்கம்
முதன்மைப் பாடம்			
1.	இக்கால இலக்கியம் (கவிதையும் உரைநடையும்)	DSC-1 A	○ மரபுக் கவிதை, புதுக்கவிதை – அறிமுகம் செய்தல் ○ கவிதைகளின் உள்ளடக்கம் மற்றும் அவை தோன்றிய காலச்சூழல், சமூகப் பின்னணி ஆகியவற்றை விளக்குதல் ○ புதுக்கவிதை வடிவங்களையும், உத்திகளையும் விளக்குதல் ○ உரைநடை வளர்ச்சி வரலாறு

			குறித்து அறிமுகம் செய்தல்
2.	நன்னூல்- எழுத்ததிகாரம்	DSC-2 A	- தமிழ் இலக்கண அறிமுகம் செய்தல் - இலக்கியத்திற்குத் தேவையான இலக்கண அறிவு பெறுதல் - நன்னூல் இலக்கணத்தை நுட்பமாகக் கற்று நடைமுறையில் பயன்படுத்துதல்
AECC - 1 / PADM 113			
1.	Public Administration	AECC-1	- நிர்வாகவியல் குறித்த அறிவு பெறுதல் - நிர்வாகத்தின் நோக்கங்கள் குறித்து விளக்குதல்
இரண்டாம் பருவம்			
முதன்மைப் பாடம்			
3.	இக்கால இலக்கியம் (கவிதை, புதினம், சிறுகதை, உரைநடை)	DSC -1B	- இக்கால இலக்கிய வகைகளையும் வடிவங்களையும் அறிமுகம் செய்தல் - கவிதை, சிறுகதை, நாடகம், உரைநடை, நாவல் ஆகியவற்றின் தோற்றம் மற்றும் வளர்ச்சி நிலைகளை எடுத்துரைத்தல் - இக்கால இலக்கியப் படைப்புகள் குறித்த விமர்சனப் பார்வை பெறுதல்
4.	நன்னூல் சொல்லதிகாரம்	DSC - 2B	- மொழிக் கல்வியை ஊக்குவித்தல் - பிழையின்றிப் பேசவும் எழுதவும் நன்னூல் வழிக் கற்பித்தல் - மொழியின் அடிப்படைகளைக் கற்றல்

AECC - 2/ENVS 123			
2.	சுற்றுச்சூழலியல் (Environmental Studies)	AECC -2	○ சுற்றுச்சூழலியல் கல்வியின் தேவை / அவசியம் குறித்து விழிப்புணர்வு தருதல் ○ சுற்றுச்சூழல் மாசுகளைத் தடுக்க உதவும் வழிமுறைகளை எடுத்துக்காட்டி அவற்றைப் பின்பற்ற ஊக்குவித்தல் ○ தமிழிலக்கியங்கள் உணர்த்தும் சுற்றுச்சூழல் பாதுகாப்பு முயற்சிகளை உணர்த்துதல்
இரண்டாமாண்டு மூன்றாம் பருவம்			
முதன்மைப் பாடம்			
5.	பக்தி இலக்கியம் & சிற்றிலக்கியம்	DSC-1 C	○ சிற்றிலக்கியங்கள், பக்தி இலக்கியங்கள் தோன்றிய காலப் பின்னணி குறித்து விளக்குதல் ○ அவற்றின் பாடுபொருளை எடுத்துரைத்தல் ○ பக்தி இலக்கியங்கள் காட்டும் தனிமனித ஒழுக்கம் குறித்து எடுத்துரைத்தல்
6.	யாப்பருங்கலக்காரிகை	DSC - 2C	○ செய்யுள் உறுப்புகள் குறித்து விளக்குதல் ○ பா வகைகள், பாவினங்கள், அவற்றுக்குரிய ஓசை முதலான இலக்கணங்களைக் கூறுதல் ○ மரபுக் கவிதை எழுதும் ஆற்றலை ஊக்குவித்தல்

சார்புப்பாடம்			
1.	படைப்பிலக்கியம்	SEC -1	மாணவர்களுக்குப் படைப்புகளை உருவாக்கும் வகையில் பயிற்சி அளித்தல்
நான்காம் பருவம்			
முதன்மைப் பாடம்			
7.	காப்பியங்கள்	DSC - 1 D	- காப்பிய மரபை அறிதல் - தமிழில் தோன்றியுள்ள பெருங்காப்பியங்கள், சிறுகாப்பியங்கள் வழி வாழ்வியல் விழுமியங்களை உணரச் செய்தல் - காப்பிய மாந்தர்களை மதிப்பீடு செய்தல்
8.	தண்டியலங்காரம்	DSC - 2D	- அணிகள் குறித்து அறிமுகம் செய்தல் - கவிதை இன்பம் பெற அணிகள் பயன்படும் விதம் குறித்து எடுத்துரைத்தல் - அணிகளைப் பயன்படுத்தி எழுதும் ஆற்றலை ஊக்குவித்தல்
சார்புப் பாடம்			
2.	பயன்பாட்டுத் தமிழ்	SEC -2	- கடிதங்கள், கட்டுரைகள் எழுதப்பயிற்றுவித்தல் - மரபுச்சொற்களையும், கலைச்சொற்களையும் கற்பித்தல் - பணி வாய்ப்புப் பெறும் வகையில் மொழித்திறன்மேம்பாட்டுப் பயிற்சி அளித்தல்

மூன்றாமாண்டு ஐந்தாம் பருவம்			
சார்புப் பாடம்			
9.	மொழிபெயர்ப்பு	SEC - 3	- மொழிபெயர்ப்பின் நோக்கங்கள், பயன்கள் குறித்து அறிதல் - பிற மொழி நூல்கள் குறித்து அறிதல் - தமிழில் இருந்து ஆங்கிலத்திற்கும், ஆங்கிலத்தில் இருந்து தமிழுக்கும் கடிதங்கள், கட்டுரைகள் போன்றவற்றை மொழிபெயர்த்துப் பயிற்சி பெறுதல்
முதன்மைப் பாடம்			
10.	சங்க இலக்கியங்கள் (புறம்)	DSE - 1A	- சங்ககால மக்களின் வாழ்வியலை விளக்குதல் - சங்க காலம் காட்டும் நெறிகளைப் போற்றி, அவற்றை மாணவர்தம் வாழ்க்கைக்கு வழிகாட்டியாகக் கொள்ள அறிவுறுத்தல்
11.	புறப்பொருள் வெண்பாமாலை	DSE - 2A	- தமிழுக்கே உரிய பொருளிலக்கணம் குறித்து எடுத்துரைத்தல் - அகம், புறம் – கூறுகளை அறிதல் - பழந்தமிழ்நாட்டின் மரபுகள், பண்பாட்டுக் கூறுகள் ஆகியவற்றை அறிதல்

12.	திருக்குறள்		○ அறநூல்கள் - அறிமுகம் ○ திருக்குறளின் மேன்மை குறித்து மாணவர்கள் அறியச் செய்தல் ○ திருக்குறளைப் பிற அறநூல்களோடு ஒப்பிட்டு நோக்குதல் ○ பழந்தமிழ் இலக்கியங்களின் செவ்வியல் தன்மையைப் பல்வேறு புலவர்களின் பாடல்வழி அறியச் செய்தல்
13.	மொழியியல் ஓர் அறிமுகம்	DSE - 3A	○ மொழியிலுள்ள அறிவியல்சார் கூறுகளை விளக்குதல் ○ பேச்சுத் தமிழின் முக்கியத்துவம் குறித்து எடுத்துரைத்தல் ○ மொழியியல் கோட்பாடுகள் மொழி வளர்ச்சிக்கு உதவும் தன்மையை விளக்குதல்
14.	தமிழக வரலாறும் பண்பாடும்		○ பழந்தமிழகத்தின் புவியியல் அமைப்பை அறிதல் ○ தமிழரின் வரலாறு, பண்பாடு குறித்துத் தெரிந்து கொள்ளுதல் ○ வரலாற்றுப் பின்புலம் இலக்கியங்களில் ஏற்படுத்திய தாக்கங்கள் குறித்து விளக்குதல்
15.	தமிழ்வழிக்கணினி	GE - 1	○ நவீன ஊடகமாகிய கணினியைப் பயன்படுத்தும் திறனை மேம்படுத்துதல் ○ தமிழ் மொழி வளர்ச்சியில் இணையத்தின் பங்கு குறித்து விளக்குதல் ○ பணி வாய்ப்புப் பெறும் வகையில் திறன்மேம்பாட்டுப் பயிற்சி அளித்தல்
ஆறாம் பருவம்			

சார்புப் பாடம்			
16.	பேச்சுக்கலை	SEC - 4	- பேச்சுக்கலையின் சிறப்பு மற்றும் தனித்தனமை குறித்து எடுத்துரைத்தல் - பேச்சுக்கலையின் தேவையை உணர்த்தி மாணவர்தம் கருத்துக்களைத் தெளிவாக எடுத்துரைக்கப் பயிற்றுவித்தல் - ஊடகங்கள் மற்றும் மேடைகளில் பேசும் முறை குறித்துக் கற்பித்தல்
முதன்மைப்பாடம்			
17.	சங்க இலக்கியங்கள் (அகம்)	DSE - 1B	- சங்க இலக்கியங்களின் சிறப்புகளை எடுத்துரைத்தல் - சங்க இலக்கியங்களின் வாயிலாக அகப் பண்பாடுகளை எடுத்துரைத்தல்
18.	நம்பியகப்பொருள்	DSE - 2B	- அகத்தினையியல் குறித்து விளக்குதல் - புறத்தினையியல் குறித்து விளக்குதல் - களவியல் - கற்பியல் குறித்து விளக்குதல்
19.	இலக்கியத் திறனாய்வு	DSE - 3B	- திறனாய்வுக் கொள்கைகளை அறிமுகம் செய்தல் - இலக்கியங்களில் திறனாய்வுப் பார்வையை மேம்படுத்துதல் - இலக்கிய மதிப்பீட்டுத் திறனை ஊக்குவித்தல்
20.	புலம்பெயர் தமிழர்களின்		புலம்பெயர்வதற்கான

	வாழ்வும் இலக்கியமும்		சமூக, பொருளாதார, அரசியல் காரணங்களை விளக்குதல் - புலம்பெயர் இலக்கியங்களை அறிமுகம் செய்தல் - புலம்பெயர் தமிழர்களின் வாழ்க்கை நிலை குறித்து விவாதித்தல்
21.	புதுச்சேரி விடுதலைப் போராட்ட வரலாறு		- புதுச்சேரியில் பிரெஞ்சியர் ஆட்சி குறித்து விளக்குதல் - பிரெஞ்சிந்திய விடுதலைப் போராட்டங்கள் குறித்து எடுத்துரைத்தல்
22.	பெரியாரியம்		- பெரியாரின் வாழ்க்கை குறித்து அறிதல் - திராவிட இயக்கம் குறித்து அறிதல் - பெரியாரின் சிந்தனைகள் குறித்து விளக்குதல்
23.	ஊடகவியல்	GE - 2	- தகவல் தொடர்பு ஊடகங்கள் குறித்த அறிமுகம் - பணிவாய்ப்புப் பெறும் வகையில் ஊடகங்களுக்கு செய்திகள், நிகழ்ச்சிகள் தயாரிக்கப் பயிற்றுவித்தல் - திரைப்பட நுணுக்கங்களைக் கற்றுத்தருதல்

Department: Hindi

Course Outcomes

Semester-I			
Course Code	Course	Course Outcomes	
LHIN 111	Samanya Hindi I	CO1	Upanyas (Nirmala)
		CO2	Pallavan patrachar paribhashik shabdavali, padnam
		CO3	Anuvad aivam usake swarup , computer ka Hindi me prayog
Semester-II			
LHIN 121	Samanya Hindi II	CO1	Natak (Andher nagari)
		CO2	Shabshudhi, shabdgyan, muhavare anek shabdon ka ek shabd
		CO3	Devnagari lipi, lipi ka manakrup, sankshepan,
Semester-III			
LHIN 231	Samanya Hindi III	CO1	Gadya gatha-1 Kahani , Nibandh, Rekhachitra,
		CO2	Gadya gatha 2 Sansmaran, Vyang, Ripotarj, Diary
		CO3	Hindi bhasha aur uske vividh rup
Semester-IV			
LHIN 241	Samanya Hindi IV	CO1	Bhaktikalin Kaviyon ka path-Kabir, Surdas, Tulasidas aur Bihari
		CO2	Adhunik yug ke kavi- Mathilisharangupt, Jayshankar Prasad, Sumitranandandpanth
		CO3	Anuvad vyavahar

Department: French

Course Outcomes

Semester-I			
CourseCode	Course	CourseOutcomes	
MILF 1 CS	Modern Indian Languages :French I	CO1	Premiers Contact
		CO2	Se situer dans l'espace
		CO3	Poser des questions
Semester-II			
MILF 2 CS	Modern Indian Languages :French II	CO1	Demander et exprimer un avis
		CO2	Faire des comparaisons
		CO3	Raconter quelque chose
Semester-III			
MILF 3 CS	Modern Indian Languages :French III	CO1	Rappels et revisions
		CO2	La vie au quotidien
		CO3	Apparence et identite
Semester-IV			
MILF 4 CS	Modern Indian Languages :French IV	CO1	Papotages et reportages
		CO2	Travail et projets
		CO3	Reves et regrets

Department: B.A. Economics

Programme Outcomes (POs):

Upon completion of the B.A. Degree Programme, the graduate will be able to

PO1: Understand and analyze the fundamental concept of economics and economic behavior in practice.

PO2: Equip and learn the economic practices in local, national and international needs.

PO3: Perform basic quantitative analysis using tools appropriate for the programme.

PO4: Demonstrate an understanding of the basic functioning of the national and global economy.

PO5: Apply supply and demand analysis to examine the impact of government regulation.

Programme Specific Outcomes (PSOs):

Upon completion of these courses the student would

PSO1: Be able to adopt and evaluate economic models to solve economic problems.

PSO2: Be able to predict the impact of fiscal and monetary policy on the overall economic performance of the country.

PSO3: Be able to acquire more knowledge on national and international trade.

PSO4: Be able to analyze the economic problems and suggest policy measures for the development of the economy.

PSO5: Be able to analyze and attain exact data to assess economic variables with statistical tools and techniques.

PSO6: Be able to acquire the entrepreneurial skills and become successful entrepreneurs.

Course Outcomes

FIRST SEMESTER			
Course Code	Course	Course Outcomes	
ECON 111	Towards Understanding Economics	CO1	Explain what Economics is and explain why it is important
		CO2	Explain how Economists use economic concepts in policy making
		CO3	To make students understand the demand & supply concepts
		CO4	Students will be able to understand the links between household behavior and the economic models of demand
		CO5	Explain the Elasticity of demand and supply

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ECON 112	Statistical Methods I	CO1	Understanding the data and methods of data collection
		CO2	Understand how to compute average and standard deviation
		CO3	To know the relationship between economic variables
		CO4	Students will be able to understand basic theoretical principles of statistics
		CO5	Demonstrate skewness and kurtosis with their applications
ECON S02	Population studies	CO1	To make the students aware of the importance of population in economic development
		CO2	Explain various theories that explain the growth of population in a country
		CO3	Enlighten the students on the quantitative and qualitative aspects of population
		CO4	To understand the characteristics of the population through various population techniques
		CO5	To understand the population trends, family structure and Govt. policies related to population in India
PADM 113	Public Administration	CO1	To make students aware about the constitutional values of India and about their rights and duties
		CO2	To understand the federal structure of the country and various state apparatuses functioning within it
		CO3	to teach students about the working of Union Territories administration specially Pondicherry
		CO4	to understand the changing role of administration with advent of new concepts like good governance, grassroots democracy, public private partnership, social audit etc.
SECOND SEMESTER			
ECON 121	Microeconomics I	CO1	Understand the fundamentals of Micro Economics
		CO2	Get an introduction to supply and the demand and the basic forces that determine equilibrium in a market economy
		CO3	To understand introductory micro economic theory in a local, regional, national & international scenario

		CO4	To understand basic micro economic problems related to the operation of real economy
		CO5	To understand different types of markets
ECON 122	Mathematics for Economists I	CO1	The aim of the course is to introduce fundamental concept of sequence, series of real numbers and their convergence, continuity, differentiability of real valued functions
		CO2	To learn the basic ideas of abstract algebra and techniques with proof and its use in economics
		CO3	Evaluate determinants and use them to discriminate between invertible and noninvertible matrices
		CO4	Use the basic concepts of vector and matrix algebra including linear dependence/independence, basis and dimension of a subspace, rank and nullity for analysis of matrices and systems of linear equations
		CO5	To understand Inverse of a matrix and Cramer's rule
ECON S03	Environmental Economics	CO1	Understand the interrelationships between environment & economy
		CO2	Students get to know application of microeconomic principles to the environmental problems
		CO3	To understand the environmental resource problems
		CO4	Get exposed to the problem of valuation of environmental resources
		CO5	To understand the concept of Solid waste management and role of an individual to prevent pollution
ENVS 123	Environmental Studies	CO1	To understand the basic concepts of Environmental Policies, Practices, Environmental Laws and relationship between Human communities and the Environment.
		CO2	To study different kinds of Ecosystems, Renewable and Non-renewable resources, Biodiversity and Conservation aspects.
		CO3	To gain basic knowledge on different kinds of Pollution, Nuclear hazards causes, effects and control measures
		CO4	To make a field visit to river, forests, local polluted sites, and nearby ecosystems for live study of environmental issues.
		CO5	To study the ultrastructure of Eukaryotic cell and important cell

			organelles with their structure and function.
THIRD SEMESTER			
ECON 231	Microeconomics II	CO1	To understand basic micro economic problems related to the operation of real economy
		CO2	To understand introductory micro economic theory in a local, regional, national & international scenario
		CO3	It will also help in understanding the efficiency and equity implications of market interference including government policy
		CO4	It will result in understanding the micro and macro theories of distribution, welfare economics, general equilibrium in closed and open system and analysis of economic behavior under uncertainty
		CO5	Understand how factor market works, illustrate basic tools in welfare economics and understand the concept of social welfare functions.
ECON 232	Macroeconomics I	CO1	To make students aware of the basic theoretical framework underlying the field of macroeconomics
		CO2	It helps students to study the aggregates and to provide overall idea about national economic policies and its implications
		CO3	Students get to know about the determination of equilibrium income
		CO4	Understand the money supply, money demand and interest rate
		CO5	Understanding the various theories of interest and applications.
ECON 233	Statistical Methods II	CO1	To understand the uncertain occurrence situations with logical manner
		CO2	Recognize common probability distributions for discrete and continuous variables
		CO3	To learn variety of probability and non-probability sampling methods for selecting a sample from a population
		CO4	Fostering understanding through real world statistical applications
		CO5	Theoretical probability distribution models
ECON 234	Economics of Insurance	CO1	To understand the concepts and principles of insurance
		CO2	To know the various types of insurance and insurance business in

			India
		CO3	To become aware of insurance legislation in India
		CO4	Students will be able to propose regulatory and market solutions that are based on economic theory (as well as practical and legal considerations).
		CO5	Evaluate the Growth of Life Insurance and General Insurance and Role of IRDA
FOURTH SEMESTER			
ECON 241	Money and Banking	CO1	Students learn about the concepts of money and banking
		CO2	Get exposed to the theories of demand for and supply of money
		CO3	Learn about functions of central bank and methods of credit control
		CO4	Study about conduct of monetary policy in India monetary policy
		CO5	Understand the recent developments in the Indian Banking System
ECON 242	Macroeconomics II	CO1	Understand various theories of consumption
		CO2	It enables students to understand determination of equilibrium income and interest rates
		CO3	To derive aggregate demand and supply curves and get expose to wage models
		CO4	Understanding the concept of inflation and Learn about open economy models
		CO5	To understand monetary Policy, Rule vs discretion
ECON 243	Mathematics for Economists II	CO1	To compute and analyze limits, derivatives and integrals function
		CO2	To understand the type of variable and usefulness in the development of the function
		CO3	To recognize the appropriate tools for calculus to solve applied problems
		CO4	The student is exposed to economic concepts in mathematical format through simple illustrations & prepares the ground for more scientific study
ECON 244	Economics of Insurance – Practice	CO1	Students will be able to describe the economic characteristics of risk mitigation and insurance

		CO2	Students will develop an understanding of risk management as well as of agency theory and market failure due to information asymmetry, as well as the economic rationale for regulatory intervention to improve market efficiency.
		CO3	Student will also examine case studies in the insurance market which regulatory failure has arisen
		CO4	Students will be able to propose regulatory and market solutions that are based on economic theory (as well as practical and legal considerations).
		CO5	Project Presentation
FIFTH SEMESTER			
ECON 351	International Economics I	CO1	The student will be acquainted with economic concepts and models of international trade
		CO2	Study about the emergence of international trade
		CO3	Understand various international trade theories
		CO4	Learn about gains from international trade and terms of trade
		CO5	Analyzing need, importance and effects of tariff and dumping
ECON 352	Public Finance I	CO1	Get to know basics of public finance
		CO2	Understand externalities, public goods and merit goods
		CO3	Get exposed to principles of taxation in various theories
		CO4	It will help in understanding analyzing the impact of public policy on the allocation of resources
		CO5	Understand the needs of public borrowing from all possible sources to meet the necessary public expenditure.
ECON 353	Basic Econometrics	CO1	Apply simple linear regression model to real life examples
		CO2	Understand multiple regression models with applications
		CO3	To learn the development of null & alternative hypothesis & types of errors,
		CO4	To understand the concepts of multicollinearity, autocorrelation and heteroscedasticity
		CO5	Relaxing the assumptions of Classical Linear Regression Model

ECON 354	Indian Economy I	CO1	Develop ideas of the basic characteristics of Indian economy, its potential on natural resources
		CO2	Understand the importance, caused and impact of population growth and its distribution, translate and relate them with economic development
		CO3	It will result in comprehensive understanding of Indian economy
		CO4	Student will be able to understand govt. policies and sectoral programmes
		CO5	Justify the growth rate of the economy on account of planning
ECON 355	Entrepreneurial Development	CO1	The students develop and can systematically apply an entrepreneurial way of thinking that will allow them to identify and create business opportunities that may be commercialized successfully.
		CO2	Have the ability to discern distinct entrepreneurial traits
		CO3	Know the parameters to assess opportunities and constraints for new business ideas
		CO4	Understand the systematic process to select and screen a business idea
		CO5	To understand the various forms of business ownership.
ECON S05	Development Economics	CO1	Understand meaning of economic development and its measurement
		CO2	To explain economic growth theories, international trade development theories and related economic development theories
		CO3	Student will be able to understand the landscape of Indian economic structure
		CO4	To get exposed to Indian social structure and development
		CO5	To understand the application of development models in Indian context
ECON S07	Society and Economy	CO1	This course attempts to facilitate the students to relate socio-religious institutions and the economy
		CO2	To understand how does social institutions determine people access to productive resources
		CO3	Students get to know human society, evolution of culture and how it plays a role in socio economic structures
		CO4	Understand the functions of village, caste, family, kinship in determining access to resources

ECON 356	Gender Studies	CO1	Analyze complex interconnections of gender, race, class, sexuality, ability, and other categories of power and identity in various spheres of human endeavor ranging from the sociopolitical to the aesthetic
		CO2	Demonstrate an openness to learning about people, cultures, and societies different from themselves and their own worlds
		CO3	Situate themselves among various strands of feminist thought and envision themselves as participants in a multidisciplinary dialogue with activists, artists, and academics regarding social, political, and cultural issues of gender and sexuality
		CO4	Apply central concepts and theories from Gender Studies to their own life experiences and the world around them
SIXTH SEMESTER			
ECON 361	International Economics II	CO1	The course is helpful to develop a systematic exposition of models that try to explain composition, direction and consequences of international trade
		CO2	The student will be acquainted with economic concepts and models of international trade
		CO3	Understand about international trade blocks and their importance
		CO4	Get exposed to economic environment of international trade
		CO5	Analyze the need & criteria for Market Segmentation
ECON 362	Public Finance II	CO1	Get exposed to sources of public revenue
		CO2	Understand trend and pattern the of public expenditure
		CO3	Get to know about Centre and state financial relationships
		CO4	Understand and analyze the distribution of income in the economy
		CO5	Understand the role of PAC AND CAG,FRBM Act
ECON 363	Indian Economy II	CO1	It helps in developing understanding of the students relate to different sectors of Indian Economy
		CO2	After studying the structural aspects of Indian economy students will be able to understand how planning and infrastructure support can develop an economy

		C03	To give in depth knowledge of banking and finance to the students
		C04	Student will be able to understand govt. policies and sectoral programmes
		C05	Explain the need of industrial planning and growth to foster Economic Development
ECON 364	History of Economic Thought	C01	to learn and discuss, at an advanced undergraduate level, how the economic thought has evolved over time
		C02	Introducing students to the critical comparison of the contributions of the main schools of economics: the classical, the marginalist revolution and its application to the theories of general and partial equilibrium, the current macroeconomic debate between the neo-classical and the Keynesian school
		C03	to understand specific contributions on themes of economic analysis and concerning figures of economists still important in the international economic debate at the international level
		C04	Through selected readings of their texts and linking the different positions of economic thought to philosophical foundations and political implications.
		C05	Extracting the contributions of Marginal school and Historical School to economic thought
ECON 365	Entrepreneurial Development – Practice	C01	Develop idea generation, creative and innovative skills
		C02	Learn how to start an enterprise and design business plans those are suitable for funding by considering all dimensions of business.
		C03	Understand entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship.
		C04	Student will also examine case studies in the field of entrepreneurship development
ECON S08	Indian Financial Institutions and Markets	C01	To understand the conceptual framework of financial markets & institutions of India
		C02	Students will be able to understand the nature of financial instruments and their usage

		C03	To give in depth knowledge of banking and finance to the students
		C04	Students get to know about money and capital market functioning in India
		C05	To understand the derivatives market in India

Department: Public Administration (B. A.)

Programme Outcomes (POs):

- PO1:** Provide students with learning experiences that develop broad knowledge and understanding of key concepts of Public Administration and equip them with advanced knowledge and understanding for analysing and performing the tasks concerning public affairs.
- PO2:** Develop students' ability to apply the acquired knowledge and skills to the solution of specific theoretical and applied problems in Public Administration settings.
- PO3:** Develop abilities in students to come up with innovative prescriptions/solutions for the benefit of society, by diligence, leadership, teamwork and lifelong learning.
- PO4:** Demonstrate critical thinking, research, and communication skills as applied to the public and private sectors.
- PO5:** Explain the cross-cultural context of public and private institutions operating in a global.

Programme Specific Outcomes (PSOs):

- PSO1:** Understand the Evolution of Public Administration Theories, Approaches, different levels of Administration and functions of Government Machinery.
- PSO2:** Increase knowledge of the Classical, Neo-Classical and Motivational Theories with Indian context
- PSO3:** Analyse the New Public Management concept on Non-Governmental Organization and Human Resource Management.
- PSO4:** Understand the Evolution of Development Administration Principles through E-Governance in Financial, Police, Social Welfare & Labour Welfare Administration.
- PSO5:** Understand the Principles of Political Science and Compare the Asian Political System
- PSO6:** Explain the Research and analytical skills, including the ability to think critically; to construct logical arguments; to collect, analyze, and interpret evidence and data; and to formulate reasoned conclusions.

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Course Outcomes

FIRST SEMESTER			
BPAD 111	Constitution of India	CO1	Enumerating the historical background of constitution-making and its importance in building a democratic India.
		CO2	Explain the functioning of the three branches of government: executive, legislative, and judiciary.
		CO3	Explain the value of fundamental rights and duties for becoming a responsible citizen of India.
		CO4	Analyse the distribution of power between the central, state, and local self-government.
		CO5	Apply knowledge to strengthen constitutional institutions such as the Comptroller and Auditor General (CAG), Election Commission, and Union Public Service Commission (UPSC) to sustain democracy.
BPAD 112	Administrative Thinkers	CO1	To Appreciate the nature, scope and changing paradigms of Public Administration.
		CO2	Grasp the administrative theories, concepts and principles of eminent thinkers to make sense of administrative Practices with emerging trends.
		CO3	Understand the world of public administration from the public perspective and provide foundation for further studies in Public Administration.
		CO4	Understand the synthesizing nature of knowledge of public administration from public Perspective.
PAD M 113	Introduction to Public Administration	CO1	Explain meaning, nature and scope of Public Administration.
		CO2	Illustrate the strategies and techniques of organizational development and discuss various approaches of Public Administration.
		CO3	Understand the contemporary administrative theories of Organization.
		CO4	To acquaint with the theories, approaches, concepts and principles of Public Administration
		CO5	To Understand public administration theory and concepts from multiple perspectives
II SEMESTER			
BPAD 121	Principles of Public Administration	CO1	Understand the public and private administration and public administration related with other social sciences
		CO2	Explain the organizational principles and integration of administrations
		CO3	Evaluation of executive functions of corporations, commissions and boards.

		CO4	Explain the management functions and public relations
		CO5	Estimate the control over public administration and human rights
BPAD 122	Public Personnel Administration	CO1	Understand the theories and concepts of Public Personnel Administration.
		CO2	Identify the need for and importance of personnel planning in India.
		CO3	Analyse the various types of recruitment processes and evaluate the mechanisms for civil service training in India.
		CO4	Identify the motivational factors related to public personnel system in India and elaborate on the disciplinary actions.
		CO5	Identify the motivational factors related to public personnel system in India and elaborate on the disciplinary actions.
ENVS 123	Environmental Administration	CO1	This course intends to aware the student about the basics of environment, Environmental administration, regulations, and policies in India
		CO2	To analyse the environmental degradation and India's concern on environmental protection.
		CO3	To examine the environmental policy on pre independence and post-independence.
		CO4	To aware about the NGO's, pollution control board and movement's role and responsibilities to protect environment.
		CO5	To know about environment policies and to evaluate Constitutional aspects of Environmental
SEMESTER - III			
BPAD 231	Indian Administration	CO1	To understand the historical evolution and socio-economic, political, cultural and global context of Indian Administration
		CO2	To identify the trans-formative role of Indian Administration
		CO3	To make out the multidimensional problems and processes of Indian Administration
		CO4	To understand the form and substance of Indian Administration
		CO5	To appreciate the emerging issues in Indian Administration in the context of changing role of state, market and civil society
BPAD 232	Development Administration	CO1	Explain the basic concepts of Meaning, Nature, Scope of Development Administration
		CO2	Understanding the ideas of context of Development Administration and Political, Economic, Cultural, Administrative and Social

		CO3	Explain the Decentralization of Powers in India, State Planning and District administration and Field Agencies
		CO4	Analyse the Reforming Administrative System, Autonomy and Accountability of Administration and Corruption in Administration
		CO5	Analyse the Gender in development process gender related terms and concepts women in development
BPAD 233	Electoral System and Political Parties	CO1	Identify the major electoral systems in use around the world.
		CO2	Determine the exclusions present and past within a given electoral system and study the innovations that have emerged to overcome those exclusions.
		CO3	Engage with the experiences and practices of different electoral systems.
		CO4	Provides a foundational understanding of Indian politics.
		CO5	Studies the nature of party systems and electoral politics at the state level
FOURTH SEMESTER			
BPAD 241	Modern Administrative Systems	CO1	Explain meaning, nature and scope of Public Administration
		CO2	Discuss various approaches of Public Administration
		CO3	Explain concepts of administrative theory
		CO4	Describe Good Governance and Citizen’s Charter
		CO5	Discuss concepts New Public Administration and new Public Management
BPAD 242	Public Policy Administration	CO1	Explain Meaning, nature, scope of Public Policy
		CO2	Discuss Role of Executive in public policy making
		CO3	Explain Objectives and Goals of Public Policy
		CO4	Discuss Policy Making Characteristics
		CO5	Discuss Citizens Participation in Policy Implementation
BPAD 243	Ancient Indian Political Thought	CO1	Students gain insights into the political ideas of ancient Indian thinkers.
		CO2	They explore the works of philosophers, sages, and scholars who shaped India’s political thought.
		CO3	Students learn to contextualize ancient ideas within contemporary realities.
		CO4	By studying ancient Indian political thought, students can identify ways to advance and protect national interests.

		CO5	They develop the capacity to suggest effective domestic policies based on historical wisdom.
SEMESTER –V			
BPAD 351	Principles of Organisation	CO1	Students development into the work of major contributors to management theory
		CO2	This includes understanding the contributions of pioneers like Frederick W. Taylor, Max Weber, and Mary Parker Follett
		CO3	Students learn individual and group decision-making processes.
		CO4	Students identify common organizational structures and their pros and cons.
		CO5	They understand how external factors impact organizational strategy.
BPAD 352	Social Welfare Administration in India	CO1	Explain basic concept of Social Welfare Administration
		CO2	Discuss Social problems and the laws implemented to solve them
		CO3	Describe concept of social welfare planning and role of voluntary organizations at The Centre, State and Local levels
		CO4	Discuss Administrative Structures in Social Welfare Administration
		CO5	Explain different personnel roles in the welfare of Social Welfare administration
BPAD 353	Labour Welfare Administration	CO1	Students gain a deep understanding of labor laws, regulations, and policies.
		CO2	Students develop analytical skills to assess and address current labor-related challenges
		CO3	Students learn about various welfare facilities provided to workers.
		CO4	They learn how these legal frameworks apply in diverse workplace settings
		CO5	Students explore labour welfare measures specific to India.
		CO1	Understanding the core concept and nature of democracy
		CO2	Analysing the various forms of democracy and its impact on developing countries

BPAD 354	Democracy and Good Governance	CO3	Learners will be able to define governance and understand the principles underlying good governance.
		CO4	They will explore the measurement criteria for assessing good governance
		CO5	Discussing the adequate control mechanisms prevent misuse of power and resources.
BPAD 355	Modern Indian Political Thought	CO1	Tracing the evolution of Indian political thought
		CO2	Analysing the nationalist thought of Raja Ram mohan Roy
		CO3	Assessing the nationalist thought of Bankim, Vivekananda and Tagore
		CO4	Discussing the nationalism of Gandhi, M. N. Roy, Narendra Deva and Syed Ahmed Khan.
		CO5	Discussing the roots of communalism- Savarkar and Hindu Nationalism and Jinnah and the two-nation theory
SEMESTER –VI			
BPAD 361	Public Financial Administration	CO1	Gain conceptual clarity on Financial Administration in India.
		CO2	Explain the concept of Budget and its economic and social implications.
		CO3	Discuss the concept of financial federalism and gain clarity on centre- state financial relations.
		CO4	Evaluate the role of Finance Ministry and especially Financial Management Committees in socio-economic Development
		CO5	Develop understanding about the role of Finance Commission and Reserve Bank of India in Monetary and Fiscal Policies of India.
BPAD 362	Police Administration	CO1	Understanding the meaning nature, scope and significance of police administration.
		CO2	Examine the work ethics role of police in Indian democracy, Police ethics and code of conduct and police culture
		CO3	Evaluate the role of police in civil service judiciary and politics and police and Election process in India
		CO4	Analyses of the various wings of the police force in both the centre and the state

		CO5	Assess the special procedures pertaining to the recruitment and training of women police.
BPAD 363	Local Government in India	CO1	Understand the evolution of local self-government in India
		CO2	Appreciate the rural and urban institutional arrangements for development
		CO3	Understand the processes and results of systems of delivery of welfare programmes
		CO4	Critically appreciate the relationship of local governance and development
		CO5	Identify the challenges of development and the administrative responses
BPAD 364	Human Rights	CO1	Understand the historical growth of the idea of human rights
		CO2	Demonstrate an awareness of the international context of human rights
		CO3	Demonstrate an awareness of the position of human rights in the UK prior to 1998
		CO4	Understand the importance of the Human Rights Act 1998
		CO5	Analyse and evaluate concepts and ideas.
BPAD 365	International Law	CO1	Get Knowledge about the different Specialized Agencies of UNO
		CO2	Understand the working of UN agencies related to Development and Disaster Reduction.
		CO3	Acquire knowledge about the different Issues of United Nations like Sustainable Development, Climate Change, Global Health Crisis and Terrorism.
		CO4	Analyse the role of UN in issues of Human Rights, Women, Democracy and Disarmament.
		CO5	Would Develop competence to understand the role of UN Financial & Trade Organizations

Department: Commerce (B.Com)

Programme Outcomes (POs):

PO1: Knowledge Base

Demonstrate comprehensive knowledge and understanding of fundamental concepts, theories, and principles in various areas of commerce, including accounting, finance, economics, management, marketing, and business law.

PO2: Analytical Skills

Apply analytical and critical thinking skills to evaluate complex business problems, make informed decisions, and develop strategic solutions in diverse organizational contexts.

PO: 3 Communication Skills

Communicate effectively and professionally through oral, written, and technological means, demonstrating the ability to convey complex business ideas and information to diverse stakeholders.

PO: 4 Quantitative Skills

Utilize quantitative techniques and tools to analyze financial data, interpret statistical information, and solve numerical problems related to business decision-making and financial management.

PO5: Ethical and Social Responsibility

Recognize ethical dilemmas in business practices and demonstrate a commitment to ethical conduct, social responsibility, and sustainability in decision-making processes.

PO6: Global Perspective

Understand the impact of globalization on business operations and develop awareness of cultural diversity, international trade policies, and global economic trends affecting the business environment.

PO7: Entrepreneurial Mindset

Cultivate entrepreneurial skills and attitudes, including creativity, innovation, risk-taking, and adaptability, to identify and capitalize on business opportunities and foster organizational growth.

PO8: Research and Information Literacy

Conduct independent research using appropriate methodologies, critically evaluate academic and professional literature, and effectively utilize information resources to support business analysis and decision-making.

Programme Specific Outcomes (PSOs):**PSO1: Curriculum Alignment:**

Demonstrate alignment between the B.Com curriculum and contemporary industry requirements, regulatory standards, and emerging trends in commerce and business.

PSO2: Skill Development:

Develop practical skills in areas such as financial accounting, taxation, auditing, financial management, cost accounting, business law, and management accounting, among others, to prepare students for employment or further studies.

PSO3: Research Orientation:

Foster a research-oriented approach among students through projects, case studies, and assignments, enabling them to critically analyze business problems, apply theoretical knowledge to practical scenarios, and propose viable solutions.

PSO4: Industry Interaction:

Facilitate industry interactions, internships, guest lectures, and industrial visits to expose students to real-world business environments, enhance their understanding of industry practices, and bridge the gap between theory and practice.

PSO5: Ethical Values:

Instill ethical values, integrity, and professionalism in students, emphasizing the importance of ethical conduct, corporate governance, social responsibility, and sustainable business practices in commerce and industry.

PSO6: Communication Proficiency:

Enhance communication skills, including verbal, written, and interpersonal communication, to enable students to effectively articulate ideas, negotiate, and collaborate with stakeholders in various business settings.

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PSO7: Technology Integration:

Integrate technology tools and software applications relevant to commerce and business operations, enabling students to proficiently utilize information technology for data analysis, financial reporting, and business decision-making.

Course Outcomes

FIRST SEMESTER			
Course Code	Course	Course Outcomes	
BCGN 111	Financial Accounting	CO1	Demonstrate thorough understanding of the fundamental concepts
		CO2	Prepare and analyze financial statements, including the income statement, balance sheet, and cash flow statement
		CO3	Record business transactions systematically using appropriate accounting journals, ledgers, and subsidiary books
		CO4	Liability Measurement
		CO5	Comply with relevant accounting standards
BCGN 112	Business Law	CO1	Analyze legal issues and apply relevant laws to real-world business scenarios
		CO2	Interpret contractual agreements and evaluate their enforceability.
		CO3	Demonstrate an understanding of key legal concepts such as torts, contracts, and business entities.
		CO4	Identify potential legal risks and liabilities in business operations and propose risk mitigation strategies.
		CO5	Evaluate the ethical implications of legal decisions and demonstrate ethical reasoning in business contexts.
PADM 113	Public Administration	CO1	Understand key legal concepts in business.
		CO2	Apply legal principles to real-world scenarios
		CO3	Analyze legal issues critically.
		CO4	Communicate effectively about legal matters.
		CO5	Navigate ethical dilemmas within legal frameworks.

SECOND SEMESTER			
Course Code	Course	Course Outcomes	
BCGN 121	Business Management	CO1	Master core business concepts for real-world application.
		CO2	Enhance communication and ethical decision-making skills.
		CO3	Foster teamwork and leadership in diverse settings
		CO4	Apply strategic thinking to tackle complex challenges.
		CO5	Utilize technology and data analytics for informed decision-making.
BCGN 122	Company Law	CO1	Understand key legal concepts in business.
		CO2	Apply legal principles to real-world scenarios
		CO3	Analyze legal issues critically.
		CO4	Communicate effectively about legal matters.
		CO5	Navigate ethical dilemmas within legal frameworks.

THIRD SEMESTER			
BCGN 122	Goods and Services Tax	CO1	Comprehend GST principles and regulations.
		CO2	Apply GST concepts to business transactions.
		CO3	Analyze GST implications on financial activities.
		CO4	Communicate effectively regarding GST compliance
		CO5	Navigate ethical challenges within GST frameworks.
BCGN 232	Business Statistics	CO1	Grasp fundamental statistical concepts.
		CO2	Apply statistical methods to business data.
		CO3	Interpret and analyze statistical results.
		CO4	Communicate findings effectively.
		CO5	Utilize statistical tools for decision-making.
BCGN 233	Management Accounting -1	CO1	Understand how to interpret and analyze financial information
		CO2	Learn various methods to control and reduce costs effectively
		CO3	Gain the ability to evaluate the performance of departments
		CO4	Develop skills in using accounting information
		CO5	Learn to effectively communicate financial information
BCGN 234	Communicative Skills	CO1	Mastery of professional writing styles for business communication.
		CO2	Proficiency in delivering articulate and persuasive verbal presentations.
		CO3	Enhanced interpersonal skills for effective collaboration and relationship building.
		CO4	Improved critical listening abilities for comprehension and response in various contexts.
		CO5	Development of multimedia presentation skills for impactful communication in modern business environments.
FOURTH SEMESTER			
Course Code	Course	Course Outcomes	
BCGN 241	Management Accounting - II	CO1	Understand the objectives and functions of management accounting
		CO2	Evaluate the financial position by using ratios
		CO3	Gain knowledge about the preparation of fund flow statement
		CO4	Evaluate the financial position of a concern through cash flow statement
BCGN 242	Cost Accounting	CO1	Understand the importance of costing in companies
		CO2	Gain knowledge about losses in process costing
		CO3	Learn about the applications in Marginal Costing
		CO4	Understand the concepts of budgeting and budgetary control
BCGN 243	INCOME TAX	CO1	Understand the concept of income tax in detail
		CO2	Identify the residential status and incidence of tax and solve problems
		CO3	Compute taxable income from salary
		CO4	Compute taxable income from house property
		CO5	Understand the meaning of business and profession and compute taxable income
BCGN 244	ARITHMETIC SKILLS	CO1	Develop an idea about number systems and equations
		CO2	Familiarise with the laws of indices and logarithm and their application
		CO3	Know the various concepts like distance, slope, equation of straight line and
		CO4	Have a clear idea about matrices properties and solve problems

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FIFTH SEMESTER

BCGN 354	PRINCIPLES OF MMARKETING	CO1	Demonstrate an understanding of the overall role and importance of the finance function.
		CO2	Demonstrate basic finance management knowledge. Communicate effectively using standard business terminology.
		CO3	Understand the Modern marketing concepts
BCGN 355	CONSUMER BEHAVIOUR	CO1	Providing knowledge about marketing mix, segmentation, targeting and positioning.
		CO2	Get clear idea of product planning, Diversification, Elimination and pricing strategies.
		CO3	Gain knowledge about different types of consumers

BCGN 356	CORPORATE ACCOUNTING	CO1	Gain knowledge about different types of consumers
		CO2	Understand the procedure to file a complaint and the steps to handle complaints
		CO3	Understand the procedures for the issue of shares.
		CO4	Prepare Financial Statements of Companies
BCGN 357	ECONOMICS	CO1	Calculate purchase consideration in case of Amalgamation, Absorption and reconstruction.
		CO2	Ascertain profit or loss prior to incorporation by applying various methods
		CO3	Explain what economics is and explain why it is important
		CO4	Explain how economists use economic models
SIXTH SEMESTER			
BCGN 361	ENTREPRENEURIAL SKILLS	CO1	Use mathematics in common economic applications
		CO2	Use graphs in common economic applications
		CO3	Understand the functions of entrepreneur and its qualities
		CO4	Understand various dimensions of entrepreneurship
		CO5	Express the contemporary role models in Indian Business
BCGN 363	ESSENTIALS OF E-COMMERCE	CO1	Impart the students with higher level knowledge and understanding of contemporary
		CO2	To provide adequate knowledge and understanding about E-Com practices.
BCGN 364	AUDITING	CO1	students Gain knowledge about auditing, audit programmes, working papers and preliminaries
		CO2	Analyse about implementing internal check and internal control in concerns.
		CO3	Understand the various aspects of vouching.
		CO4	Learn how to verify and value various assets and liabilities
		CO5	Evaluate the traits of Company Auditor and how to draft Auditors Report.
BCGN 366	HUMAN RESOURCE MANAGEMENT	CO1	Understand the objectives, scope, functions and environment of Human Resource Management
		CO2	Understand manpower planning, components of a job study and selection process
		CO3	Evaluate the need as well as areas of training.
		CO4	Understand the significance of Industrial relations , disputes and settlement
BCGN 367	INDIAN ECONOMY	CO1	It helps in developing understanding of the students relate to different sectors of Indian Economy
		CO2	After studying the structural aspects of Indian economy students will be able to understand how planning and infrastructure support can develop an economy
		CO3	To give in depth knowledge of banking and finance to the students
		CO4	Student will be able to understand govt. policies and sectorial programmes

Department: COMPUTER SCIENCE (B.Sc)

Programme Outcomes (POs):

The objectives of the course B.Sc. Computer Science are as follows:

On successful completion of Graduate & Post Graduate programme, the students will be able to:

PO 1 : Gain Domain Expertise:

- Acquire comprehensive knowledge and skills.
- Make use of the knowledge in an innovative manner.
- Effectively apply the knowledge and skills to address various issues.

PO 2 : Gain Life-long Learning and Research:

- Learn “how to learn”- Self motivated and self directed learning.
- Adapt to the ever emerging demands of work place and life.
- Be inquisitive and establish cause and effect relationship.
- Investigate and report.

PO 3: Gain Modern equipment Usage

- Use ICT effectively.
- Access, retrieve and use authenticated information.
- Access, retrieve and use authenticated information. Have knowledge of software applications to analyze data.

PO 4: Gain Computing Skills and Ethics

- Develop rationale and scientific thinking process.
- Use technology intelligently for communication, entertainment and for the benefit of mankind.
- Ensure ethical practices throughout ones endeavors for the well being of human race.

PO 5: Complex problem Investigation & Solving

- Predict and analyze problems.
- Frame hypotheses.
- Investigate and interpret empirical data.
- Plan and execute action

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Programme Specific Outcomes(PSOs):

PSO-1: Ability to apply the theoretical knowledge of Mathematics, Computer software and hardware into practice.

PSO-2: To develop skillset in areas such as Digital logics and computer architecture, Algorithms, Programming, Networking, Software Engineering, Information Security, Web Designing, Micro-processors and micro-controllers.

PSO-3: To develop problem solving skills related to the computer programs.

PSO-4: To demonstrate the capabilities required to apply cross-functional business knowledge and technologies in solving real-world problems.

PSO-5: To build the necessary skill set and analytical abilities for developing computer- based solutions for real life problems.

PSO-6: It provides an opportunity to prepare for the competitive examination and also getting admission to Higher Education.

PSO-7: To train students in professional skills related to Software Industry like programmer, system engineer, software tester, junior programmer, web developer, system administrator, software developer etc.

Course Outcomes

FIRST SEMESTER			
Sl.No.	Title		Course Outcomes
CSCS113	Introduction to Problem Solving using C	C01	In-depth understanding of various concepts of C language.
		C02	Skill to write program code in C to solve real world problems and to debug a program
		C03	Develops programs Using C language, logical skills ap
		C04	Understanding 'C' language constructs like Iterative statements, arrayprocessing pointers etc
		C05	Apply 'C' language constructs and write a C language program
CSCS114	DIGITAL LOGIC & COMPUTER ORGANIZATION	C01	Skill to use the methods of systematic reduction of Boolean expression using K- Map. Ability to interpret logic gates and its operations.

		C02	Familiarization with combinational and sequential logic circuits in electronics.
		C03	Recognize the types of, counters, and memory mapping concepts.
		C04	Implement a hardware circuit to accomplish the encoder and decoder functionalit
		C05	Design complex circuits with boolean equations.
SECOND SEMESTER			
<i>CSCS123</i>	PYTHON PROGRAMMING	C01	Skill to write codes in Python to solve mathematical or real world problems.
		C02	Ability to isolate and fix common errors in Python programs.
		C03	Identify suitable programming constructs for problem solving.
		C04	Analyze various concepts of PYTHON language to solve the problem in an efficient way.
		C05	Develop a PYTHON program for a given problem and test for its correctness.
<i>CSCS124</i>	Data Structures and Algorithms	C01	Skill to analyze data and to determine appropriate data structure. Knowledge of various data structures and their implementations.
		C02	Ability to implement algorithms to perform various operations on data structures.
		C03	To understand the concepts of ADTs
		C04	To learn graph strutures and and application of graphs
		C05	To understand various sorting and searching
THIRD SEMESTER			
<i>CSCS231</i>	Object Oriented Programming using JAVA	C01	Skill to write Java application programs using OOP principles and proper program structuring.

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		C02	Ability to create packages and interfaces. Ability to implement error handling techniques using exception handling.
		C03	Understand the principles of Structured programming.
		C04	Understand basic terminology and syntax of java.
		C05	Develop programming skills using Java and Object Oriented Programming.
CSCS232	Operating Systems	C01	Understand how memory is utilized. Understand CPU scheduling algorithms to manage tasks.
		C02	Knowledge of methods to prevention and recover from a system deadlock. Manages I/O devices.
		C03	Describe the functions of Contemporary Operating System.
		C04	Understand various process management concepts including scheduling,synchronization and deadlocks.
CSCS233	Computer Networks	C01	Knowledge of OSI Layers in Computer Network.
		C02	Ability to identify transmission media, types and topologies of network. Familiarization with the techniques of error detection and congestion control
		C03	Create routing techniques for IP network infrastructure.
		C04	Identify data transmission collisions and their resolution.
		C05	Describe the process for delivering internet packets.
CSCS234	SOFTWARE ENGINEERING	C01	Understanding of various methods or models for developing a software product.
		C02	Ability to analyze existing system to gather requirements for proposed system. Skill to design and code a software

		C03	Able to differentiate different testing methodologies.
		C04	Able to understand and apply the basic project management practices in reallife projects.
FOURTH SEMESTER			
CSCS241	PROGRAMMING WITH VISUAL BASIC	C01	Understand Forms, module, components, menu editor and its concepts. Usage of controls such as text box, buttons, checkbox etc and control them through codes.
		C02	Ability to develop simple project with database using data source.
CSCS242	DATABASE MANAGEMENT SYSTEM	C05	Understand data modeling and database development process. Construct and normalize conceptual data models.
		C02	Implement a relational database into a database management system. Become proficient in using database query language.
		C03	Understanding normalization and apply such knowledge to the normalization of a database.
		C04	Database modelling using ER Diagrams and design database schemas based on the model.
		C05	Create a small database using ORACLE and SQ
CSCS245	Object Oriented Systems Design	C01	Ability to develop the design phase of software development using UML
		C02	Ability to develop simple project with object oriented .
CSCS247	Principles of Programming languages	C01	Get the clear idea about the construction of Programming language
		C02	Use different programming paradigms in and application
CSCS705	Introduction to E-Business	C01	Understand the various E-Business solutions available today such as E-Commerce and its mechanisms
		C02	Acquire knowledge from e-governance to e-learning
FIFTH SEMESTER			
CSCS351	WEB TECHNOLOGY	C01	Understand the various steps in designing Creative and dynamic website.
		C02	Ability to write HTML, JavaScript, CSS and ASP.
		C03	Designing interactive web pages using HTML and Style sheets.

		C04	Understand XML and its application in web based applications
		C05	Develop applications using latest web technologies.
<i>CSCS353</i>	<i>Data Mining</i>	C01	Acquire knowledge to compare and contrast OLAP and data mining as techniques for extracting knowledge from a data warehouse.
		C02	Implement data mining techniques like clustering, association rule and decision tree etc on the real data set.
<i>CSCS356</i>	<i>Systems Software</i>	C01	Understand the importance of assemblers, loaders, linkers, macro-processors and compilers
		C02	Know the working principles of assemblers, loaders, linkers, macro-processors and compilers
<i>CSCS704</i>	<i>Artificial Intelligence</i>	C01	Understand concepts of artificial intelligence and underlying characteristics
		C02	Learn various techniques of knowledge representation
		C03	Ability to express the ideas in AI research and programming language related to emerging technology.
		C04	Ability to represent solutions for various real-life problem domains using logicbased techniques
SIXTH SEMESTER			
<i>CSCS361</i>	MICROPROCESSORS AND MICROCONTROLLERS	C01	Get clear idea about the architectures and instruction set of microprocessor and microcontroller.
		C02	Do the arithmetic operation, logical operations and code conversion
<i>CSCS363</i>	CLOUD COMPUTING	C01	Understand the principles and paradigm of Cloud Computing
		C02	Get an idea about the basics of middleware architecture

		C03	Ability to design and deploy Cloud Infrastructure
		C04	Ability to understand role of Virtualization Technologies
		C05	Design & develop backup strategies for cloud data based on features
CSCS365	SOFTWARE QUALITY MANAGEMENT	C01	Able to understand the importance of quality and standards
		C02	Understand various models of dealing with software quality

Department: PHYSICS (B.Sc)

Programme Outcomes (POs):

After completing B.Sc. (Physics) Programme students will be able to:

PO1: Apply the basic principles of Physics to the events occurring around us and also in the world.

PO2: Try to find out or analyze scientific reasoning for various things.

PO3: Use of computers and various software and programming skills.

PO4: Apply the knowledge to develop the sustainable and eco - friendly technology for pollution free environment.

PO5: Collaborate effectively on team-oriented projects in the field of Physics.

PO6: Communicate scientific information in a clear and concise manner both orally and in writing or through audio video presentations.

PO7: Develop ability to work in group.

PO8: Develop capacity of critical reasoning. Judgment and communication skills.

PO9: Develop abilities for logical thinking.

Programme Specific Outcomes (PSOs) :

PSO1: The course as a whole opens up several career doors for the students interested in various areas of science and technology in private, public and government sectors.

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PSO2: Students may get job opportunities in higher education, research organizations, physics consultancy, radiology and many others.

PSO3: Some of the institutions where physics students can start their carrier are: BARC (Bhabha Atomic Research Centre), NPTC (National Thermal Power Corporation), IISc (Indian Institute of Science), ISRO (Indian Space Research Organization), ONGC (Oil and Natural Gas Corporation), BHEL (Bharath Heavy Electricals Limited), NITs (National Institute of Technology), etc.

Course Outcomes

B.Sc Physics

Semester-I			
Course Code	Course	CourseOutcomes	
PHYS-111	Mechanics of particles, rigid bodies and continuous media	CO1	To understand the laws of motion and to understand the basics of vector calculus.
		CO2	Understandthe laws of gravitation, GPS.
		CO3	To understand the rigid body dynamics.
		CO4	To understand and determination elasticity,viscosity and surface tension properties and their applications.
PHYS-112	Kinetic theory and Thermo-dynamics	CO1	To understand the laws of thermo -dynamics and their applications.
		CO2	To understand the different thermo-dynamic potential and application of specific heat of gases.
		CO3	To understand the black body radiation and derivation of different laws of radiation
		CO4	Introduction to statistical mechanics
Semester-II			
PHYS–121	Oscillationswavesand acoustics	CO1	To understand the super position principle of harmonic oscillations analytically and graphically and under stand the beat phenomenon
		CO2	To Understand Wave Motion and Applications
		CO3	To Understand the Sound Phenomenon and dependence of its on Pressure and Temperature
		CO4	To Understand Acoustics and its applications
PHYS–122	Optics	CO1	To UnderstandFermat’s Principals and Matrix Method of representation in Paraxial Optics

		CO2	To study Reflection and Refraction Phenomenon in Optics and different Aberrations present in lenses
		CO3	To study Interference and Diffraction of Light and their Applications
		CO4	To Understand Polarization of Light, its production and applications
Semester-III			
PHYS–231	Electricity and Magnetism	CO1	To study vector analysis and introduction to Gauss-divergence and Stoke's Theorem
		CO2	To understand electric force, electric field and electric potential in different media
		CO3	To understand the basic laws of magnetism and calculations of magnetic field.
		CO4	To study maxwell's equation and electromagnetic wave propagation.
HYS–232	Modern Physics and Relativity	CO1	To understand the various problems where classical physics fails to explain which leads to modern physics
		CO2	To understand plank's quantum principle, photon, photo electric effect and its applications
		CO3	To understand schrodinger equation and introduction to quantum mechanical operators, physics interpretation of wave equation, probabilities
		CO4	To understand special theory of relativity and its postulates. length contraction etc.
Semester-IV			
PHYS–241	Quantum Mechanics	CO1	Understand the time dependent schrodinger equation and its applications and evaluation of quantum mechanical operators.
		CO2	To study the general form of uncertainty principle and its applications
		CO3	Discussion of bound states in an arbitrary potentials
		CO4	Understand the quantum theory of hydrogen and like atoms.
PHYS–242	Electronics	CO1	Understanding of network theorems, LR, CR, LCR circuits
		CO2	Study of different diodes, biasing of diodes and applications and to study different transistor, biasing and applications
		CO3	Study of different fet, jfet, mosfet and applications
		CO4	Study of different operational amplifiers, its properties and its applications
Semester-V			
PHYS–352	Solid State Physics	CO1	Understanding of crystallography, lattice parameters, x-ray diffraction of crystals
		CO2	Study of types of bonding in solids, lattice vibrations-optic and acoustic mode and study of different conduction mechanism in solids
		CO3	Study of different magnetic properties and applications in solid state physics
		CO4	Study of superconductors, meissner effect and type-I and type-II superconductors.

PHYS– 353	Atomic and Molecular Spectroscopy	CO1	Understanding of atomic spectra, coupling of orbitals, x-ray spectra, moseley's law
		CO2	Study of the effect of magnetic field on energy levels:zeeman effect
		CO3	Understanding of rotational and vibrationall evels and their applications and study of raman effect and its applications
		CO4	Understanding of laser systems and their applications
PHYS– 354	DigitalElectronics	CO1	Understanding of binary numbers system and different logicgates,karnaughmap, combinational logic gates
		CO2	Understanding working principle of flipflops –rs flipflop, jkflipflop,jk-master slave flipflop,
		CO3	Understanding workingprincipleofmultiplexers, counters, a/dandd/a converters
		CO4	Studyof pinconfiguration, addressingmodes, instructionsetofmicroprocessors, studyofcomponentsofmicroprocessors,programmingof microprocessors.
PHYS– 355	Astrophysics	CO1	Understanding radio-interferometry–characteristics andproperties.workingof hubblespacetelescope
		CO2	Studyof astronomical objects,chandrasekharlimit,schwarzschild radius,tidal and planetesimaltheories
		CO3	Studyof solar system,bigbangtheory
		CO4	Application of astrophysics, rocket equations and theory of geosynchronous satellite.
Semester-VI			
PHYS– 362	NumericalMethodsand ComputationalPhysics	CO1	Understanding of numerical methods as successive approximation method, regula-falsi method, newton-rapson method and gauss-jordan method
		CO2	Study of numerical differentiation and forward & backward integration
		CO3	Study of computer languages, fortran, operators etc
		CO4	Study of programming, algorithm, flow charts, simple programmes using fortran
PHYS –363	NuclearPhysics	CO1	Understanding the properties of nuclear–size,mass,charge density, binding energy curve
		CO2	Understanding different nuclear model, magic numbers and concept of nuclear force.
		CO3	Understanding radioactivity decay, nuclear reactions, conservation laws
		CO4	Understanding the basics of particle physics and different quantum numbers and conservation rules
PHYS –364	RenewableEnergy and Energyharvesting	CO1	Understanding the importance of alternative sources of energy– fossil fuels and nuclear energy etc
		CO2	Studyof solar energyandits importance
		CO3	Importanceofgeothermalenergyanhydropower recourses
		CO4	Importanceofelectromagneticharvestingandrecentapplications

PHYS -365	Electronics and Communication	CO1	Understanding amplitude and frequency modulation
		CO2	Study of image transmission principle, working of tv
		CO3	Study of wave propagation in space
		CO4	Application of communication electronics

Programme: B.Sc. Mathematics

Programme Outcomes (POs):

- PO1:** Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study
- PO2:** A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved in mathematical reasoning.
- PO3:** Ability to analyse a problem, identify and define the computing requirements, which may be appropriate to its solution
- PO4:** Introduction to various courses like Real Analysis, Group Theory, Ring Theory, Field Theory, Metric Spaces, Statistics
- PO5:** Enhancing students' overall development and to equip them with mathematical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- PO6:** Ability to pursue advanced studies and research in pure and applied mathematical science
- PO7:** To develop in students approach towards logical thinking
- PO8:** To go for higher studies and seek employment opportunities.

Programme Specific Outcomes (PSOs):

- PSO1:** Students will be able to apply critical thinking skills to solve problems that can be modeled mathematically
- PSO2:** To critically interpret numerical and graphical data, to read and construct mathematical arguments and proofs
- PSO3:** Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand
- PSO4:** Formulate and develop mathematical arguments in a logical manner

PSO5: Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses

PSO6: Understand, formulate and use quantitative models arising in social science, Business and other contexts.

B.Sc. Mathematics

Course Outcomes

FIRST SEMESTER			
CourseCode	Course	Course Outcomes	
MATH 111	Theory of Equations and Trigonometry	CO1	To enable Student to understand the relations between the roots and the coefficients of a general polynomial equations in one variable
		CO2	To enablestudent for solving the Cubic and Biquadratic equations
		CO3	To enable Student to understand the concept of DeMoivre’sTheorem and its applications
		CO4	To enable Student to understand the concept of Logarithm of a complex quantity- Expansion of Trigonometricalfunctions.
		CO5	To enable Student to understand Gregory's series and Summation of series
MATH 112	DIFFERENTIAL CALCULUS	CO1	To enable Student to understand the concept of nth derivative and Trigonometrical transformation
		CO2	To enable Student to understand the concept of Total differential coefficients
		CO3	To enable Student to understand the concept of Maxima and Minima of two variables and Lagrange’s method of undetermined multipliers.
		CO4	To enable Student to understand Angle between the radius vector and tangent and Angle between the intersection of two curves
		CO5	To enable Student to understand Circle, radius and centre of curvature.
SECOND SEMESTER			
CourseCode	Course	Course Outcomes	
MATH 121	ANALYTICAL GEOMETRY - 3D	CO1	To enable Student to understand the concepts of direction cosines
		CO2	To enable Student to understand the concepts of Equation of Planes
		CO3	To enable Student to understand the concepts of Equation of Lines
		CO4	To enable Student to understand the concepts of Equation of Sphere
		CO5	To enable Student to understand the concepts of Equation of Cones
MATH 122	INTEGRAL CALCULUS	CO1	To enable Student to find the Integration of rational and irrational algebraic functions
		CO2	To enable Student to solve the Bernoulli’s formula and Reduction formulae
		CO3	To enable Student to solve the double integral and Triple integral
		CO4	To enable Student to Transform the given equations from Cartesian to polar coordinate and Cartesian to spherical coordinates
		CO5	To enable Student to understand Beta and Gamma functions

THIRD SEMESTER			
CourseCode	Course	CourseOutcomes	
MATH 231	ABSTRACT ALGEBRA	CO1	To enable Student to understand the concepts of Group and Subgroups
		CO2	To enable Student to understand the concepts of Normal subgroups and Quotient Groups and Homomorphisms
		CO3	To enable Student to understand the concepts of Automorphisms and Cayley's theorem and Permutation groups
		CO4	To enable Student to understand the concepts of Rings Ideals and quotients rings
		CO5	To enable Student to understand the concepts of The field of quotients of an integral domain.
MATH 232	REAL ANALYSIS - I	CO1	The students will gradually develop Analysis skills in sets, functions and infinite series of Real Numbers
		CO2	The students will gradually develop Analysis skills in sequence and subsequence.
		CO3	The students will gradually develop Analysis skills in Convergence and divergence
		CO4	The students will be able to think about the basic proof techniques and fundamental definitions related to Metric spaces
		CO5	The students will gradually develop Analysis skills in Functions continuous at a point on the real line Reformulation
MATH 233	LOGIC AND LATTICES	CO1	To enable Student to understand the concepts of Connectives
		CO2	To enable Student to understand the concepts of Normal forms
		CO3	To enable Student to understand the concepts of Partially ordered set and Hasse diagram
		CO4	To enable Student to understand the concepts of Lattices and sublattices.
		CO5	To enable Student to understand the concepts of Boolean algebra and Boolean Functions.
FOURTH SEMESTER			
CourseCode	Course	CourseOutcomes	
MATH 241	LINEAR ALGEBRA	CO1	The students will gradually develop Analysis skills in Vector spaces and subspaces
		CO2	The students will gradually develop Analysis skills in Linear independence and Dual spaces
		CO3	The students will gradually develop Analysis skills in Inner product spaces
		CO4	The students will gradually develop Analysis skills in Algebra of Linear transformations and Characteristic roots
		CO5	To enable Student to understand the concepts in Matrices.
MATH 242	REAL ANALYSIS II	CO1	The students will gradually develop Analysis skills in open sets and Complete metric spaces.
		CO2	The students will gradually develop Analysis skills in Compact metric spaces
		CO3	The students will gradually develop Analysis skills in Riemann integral

		CO4	The students will gradually develop Analysis skills in Rolle's theorem and Fundamental theorem of Calculus
		CO5	The students will gradually develop Analysis skills in Hyperbolic function, exponential function and logarithmic function
MATH 243	VECTOR CALCULUS	CO1	To enable Students to understand the concepts of Gradient, Divergence and Curl of a vector function
		CO2	To enable Students to solve the problems in Line integrals
		CO3	To enable Students to solve the problems in Surface and volume integrals
		CO4	To enable Students to solve the problems using Green's theorem and Stokes's theorem
		CO5	To enable Students to solve the problems using Gauss divergence theorem
FIFTH SEMESTER			
CourseCode	Course	Course Outcomes	
MATH - 351	Programming Using SCILAB - Practicals	CO1	To enable Student to write a program using all basic operations and commands in scilab
		CO2	To enable Student to write a program using. For loop, while loop, If-then-else.
		CO3	To enable Student to write a program using File Functions
		CO4	To enable Student to plot 2D and 3D graphs helps in visualizing the data.
		CO5	To enable Student to write a program for Solving ODEs using Scilab
MATH 352	COMPLEX ANALYSIS – I	CO1	The students will gradually develop Analysis skills in Complex numbers and its Algebraic properties
		CO2	The students will gradually develop Analysis skills in Analytic functions
		CO3	The students will gradually develop Analysis skills in Cauchy Riemann equations in polar form and Harmonic Functions
		CO4	The students will gradually develop Analysis skills in Elementary functions like Exponential function, Trigonometric functions, Hyperbolic functions and Logarithmic function
		CO5	The students will gradually develop Analysis skills in Mapping by elementary functions.
MATH 354	ORDINARY DIFFERENTIAL EQUATIONS	CO1	To enable Student to solve the Exact differential equations and Equations of the First, but of higher degree.
		CO2	To enable Student to solve the Linear Differential equations with constant and variable co-efficients
		CO3	To enable Student to solve the Simultaneous Linear differential equations with constant coefficients
		CO4	To enable Student to understand the concepts of Laplace transform
		CO5	To enable Student to understand the concepts of Inverse Laplace transforms
MATH 356	MATHEMATICAL STATISTICS - I	CO1	To enable Student to understand the concepts of Discrete and Continuous random variable.
		CO2	To enable Student to understand the concepts of Moment generating function and Cumulants.
		CO3	To enable Student to understand the concepts of Binomial distribution
		CO4	To enable Student to understand the concepts of Poisson distribution

		CO5	To enable Student to understand the concepts of Normal distribution
MATH 357	Programming Using SCILAB - Theory	CO1	To enable Student to write a program using all basic operations and commands in scilab
		CO2	To enable students to understand all basic operations on matrices through built-in functions so that the trouble of developing and testing code for basic operations are completely avoided.
		CO3	To enable Students to understand the concepts and write a program using For loop, while loop, If-then-else
		CO4	To enable Students to plot 2D and 3D graphs helps in visualizing the data.
		CO5	To enable Students to write a program for Solving ODEs using Scilab.
SIXTH SEMESTER			
CourseCode	Course	Course Outcomes	
MATH 361	PROGRAMMING LAB IN NUMERICAL METHODS - PRACTICALS	CO1	To enable Students to write a program to solving algebraic and transcendental equations by Bisection method and Newton-Raphson method
		CO2	To enable Students to write a program to solving simultaneous linear algebraic equations by Gauss jordan method
		CO3	To enable Students to write a program to find the inverse and determinant of a matrix of order n
		CO4	To enable Students to write a program to evaluate definite integral by Trapezoidal rule and Simpson's 1/3 rule
		CO5	To enable Students to write a program to solve first order ODE by Euler's method and Runge Kutta method
MATH 362	COMPLEX ANALYSIS – II	CO1	To enable Student to understand the concepts of Contour integrals and to solve problems using The Cauchy Goursat's theorem
		CO2	To enable Student to understand the concepts of The Cauchy integral formula and various theorems related to Analytic function.
		CO3	To enable Student to understand the concepts of Convergence of sequences and series and problems related to Taylor series and Laurent Series
		CO4	To enable Student to understand the concepts of Singularities and Residues.
		CO5	To enable Student to solve the various types of integrals using contour Integrals.
MATH 364	PARTIAL DIFFERENTIAL EQUATIONS	CO1	To enable Student to understand the procedure of Formation of Partial differential equations
		CO2	To enable Student to solve Standard types of first order differential equations
		CO3	To enable Student to solve Lagrange's equations and to solve differential equations using Charpit's Method
		CO4	To enable Student to solve Linear Partial Differential equation of Second and higher order with constant coefficients.
		CO5	To enable Student to solve problems related to One dimensional wave equations, heat equation, Laplace equation
MATH 366	MATHEMATICAL STATISTICS - II	CO1	To enable Student to solve problems related to Correlation and Rank Correlation
		CO2	To enable Student to solve problems related to Regression
		CO3	To enable Student to understand the concepts of Sampling and

			Procedures in testing of hypothesis
		CO4	To enable Student to solve problems related to Test of significance of single mean, difference of mean ,single proportion and difference of proportion.
		CO5	To enable Student to solve problems related to chi square test for test of goodness of fit and student's t test.
MATH 367	NUMERICAL METHODS	CO1	To enable Student to solve problems related to Numerical solution of algebraic and transcendental equations using various methods
		CO2	To enable Student to solve problems related to Numerical solution of simultaneous linear algebraic equations using various methods
		CO3	To enable Student to solve problems related to Interpolation and Numerical differentiation and Numerical Integration
		CO4	To enable Student to solve problems related to Numerical solutions of Ordinary differential equations of first and second order using various methods like Taylor series method and Picard's method.
		CO5	To enable Student to solve problems related to Numerical solutions of Ordinary differential equations of first and second order using various methods Euler's method – Improved Euler's Method - Modified Euler's Method – Runge-Kutta method of second and fourth order.

DEPARTMENT : ZOOLOGY

PROGRAMME OUTCOME

- PO1:** The students find their footings in life through wholesome and integral education.
- PO2:** The students are encouraged to climb the academic ladder by pursuing post graduate Education in different domain.
- PO3:** The students are academically and technically equipped to steer the nation along the path of progress and peace.
- PO4:** The students are trained to be employable and entrepreneurial citizen of the nation.
- PO5:** The students are fortified intellectually, ethically and socially to face the challenges in life.

PROGRAMME SPECIFIC OUTCOME

PSO1: Disciplinary knowledge

The students will develop their ability to understand the basic concepts of zoology viz., animal kingdom, systematic classification, anatomy, morphology, physiology, embryology, evolution, ecology etc.

PSO2: Critical thinking

The students will obtain knowledge to express their concepts effectively by understanding their subject with various disciplines.

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PSO3: Scientific reasoning

The students will have ability to identify, classify and describe various organisms from different phylum by understanding their structure and function of various organ system and relationship with their environment

PSO4: Research-related skills

The students will develop ability to explain structure and functions of a cell and organ (from molecular level to the organ system level) as well as the process of development of an embryo

PSO5: Problem solving

The students will acquire knowledge in cell biology, molecular biology, genetics, biotechnology, microbiology, biochemistry, biostatistics, developmental biology, Immunology, animal physiology, environmental biology, evolution etc., which helps to Develop their ability to analyse and solve various biological problems.

PSO6: Cooperation/Team work

The students will able to work effectively and respectfully with diverse team during vermin-culture and mushroom culture practices

PSO7: Information/digital literacy

The students will able to use various biological software to analyze the data by obtaining knowledge in biostatistics, computational biology and biotechnology.

PSO8: Self-directed learning

The students will able to work independently to enhance their expertise through various activities like seminars, assignments, etc., and they can manage a project like vermin-culture, mushroom culture, aquaculture etc., on completion of the course.

PSO9: Moral and ethical awareness/reasoning

The students will have the knowledge to minimize the environmental issues like global warming, pollution, degradation of natural resources, and helps in conservation endangered species, afforestation etc.

PSO10: Lifelong learning

The students will able to apply their knowledge of biological sciences in various disciplines like vermin-culture, mushroom culture, aquaculture, apiculture, agriculture and medicine. And Contribute the knowledge for Nations development.

COURSE OUTCOME

COURSE	CODE	COURSE NAME	COURSE OUTCOME
DSC-1A	UZOC 111	Biodiversity of Invertebrates	1. To understand Biodiversity, Habitat, Adaptation organization and taxonomic status of invertebrates. 2. Explaining the basic aspects of classification, structural and functional details of Invertebrates.

	UZOP 114	Biodiversity of Invertebrates Practical	To understand biodiversity, habitat and adaptations through practical.
DSC-2A	UZOC 112	Basic Zoology	To understand the diversity of animals and its general characters
	UZOP 115	Basic Zoology Practical	To understand the general characters of animals through some specimens available in the laboratory.
DSC-1B	UZOC 121	Biodiversity of Chordates and Vertebrates	To discuss habitat, adaptations and organization of chordates.
	UZOP 124	Biodiversity of Chordates and Vertebrates	To understand biodiversity, habitat and adaptations through practical.
DSC-2B	UZOC122	Animals and Human Welfare	To understand various breeds of cattles, products from animals, communicable and non-communicable diseases
	UZOP 125	Animals and Human Welfare Practical	To understand the prophylactics, treatment for various diseases spread among the population. To know the value of products from animals.
AECC - 2	ENVS 123	Environment studies	To understand the ecosystems, diversities across the world, the value of wild life and protection act, pollution and measures to be taken for reducing it.
DSC-1C	UZOC 231	Animal Physiology	Explaining various aspects of physiological activities of animals with special reference to mammals
	UZOP 234	Animal Physiology	To familiarize with ECG and blood parameters. Assess biochemical parameters that regulate metabolism.
SEC - 1	UZOS 233	Vermi-technology	To impart training on Earthworm culture technology To create knowledge on Self - Employment opportunity
DSC-1D	UZOC 241	Developmental Biology	To understand ontogenesis, the development of animals including parthenogenesis and to study embryonic adaptations, human reproduction and reproductive technology in man.
	UZOP 244	Developmental Biology practical	To understand the development of animals.
SEC - 2	UZOS 243	Clinical Laboratory Technology	To impart awareness on Clinical Lab Technology. To create knowledge on Self-Employment Opportunity.
SEC-3	UZOS 351	Apiculture	To understand various species of bees, products from honeybees and its use. Entrepreneur motivation for practicing apiculture as cottage industry.

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DSE – 1A	UZOE 352	Immunology	To study the process which help to maintain the organisms internal environment, when challenged with foreign substances. To understand the advances in Immunology
	UZOP 358	Immunology Practical	To study the process which help to maintain the organisms internal environment, when challenged with foreign substances. To understand the advances in Immunology
DSE –2A	UZOE 354	Cell and Molecular Biology	To learn the structure and functions of various cellular components. To understand the molecular basis of cell structure DNA structure and functions
	UZOP 358	Practical	To understand chromosomes and its structure, division of cells through practical.
DSE – 3A	UZOE 355	Biochemistry and Intermediary Metabolism	To define and explain the basic principles of biochemistry and metabolic pathway
	UZOP 358	Practical	To familiarize with the various chemical reactions to detect glucose, proteins and lipids present in our body.
GE - 1	UZOG 357	Public Health and Hygiene	To impart awareness on public health and Hygiene To create knowledge on Health Education.
SEC-4	UZOS 361	Aquatic biology and Culture Techniques	To study and understand the biology of fishes and make the students to know about the culture techniques of fish.
DSE – 1A	UZOE 362	Endocrinology and Reproductive Biology	Explaining the role of hormones on physiological activities of animals with special reference to humans.
	UZOP 368	Practical	To study the architecture of endocrine glands. Acquire knowledge on endocrine functions.
DSE – 2A	UZOE 364	Evolution and Conservation Biology	To explain the scientific concepts of animal evolution through theories and evidences.
	UZOP 368	Practical	To understand the concepts of animal evolution through models
DSE – 3A	UZOE 365	Genetics and Biotechnology	To know the principles of genetics and to integrate biology with technology
	UZOP 368	Practical	To familiarize with karyotype and mutant forms. To understand the chromosomal abnormalities.
GE - 2	UZOG 367	Value Added Products of Animals	To get knowledge about the products from different groups of animal and its products. Entrepreneurship for establishing processing units for these products.

Department: UG Chemistry

Programme Outcomes (POs)

- PO1:** In the scope of its subject, Chemistry lies somewhere at the intermediate position among various other branches of science.
- PO2:** Chemistry course provides a foundation for understanding both the basis and applied scientific disciplines at a fundamental and Entrepreneur level. Scope of Chemistry as a Career Option is immense in India.
- PO3:** Candidates can pursue Degree, Diploma and Certificate courses in Chemistry at Post Graduate (PG) and Doctoral Levels.
- PO4:** The Bachelor of Science Degree in Chemistry prepares students for careers as professional chemists and serves as a foundation for careers in other fields such as Medicine, Engineering and Geosciences. Analytical chemist, Biotechnologist, Chemical engineer, Healthcare scientist, Forensic scientist, Nanotechnologist, etc. used as evidences of the some job profiles suitable for degree holders in chemistry.

Programme Specific Outcomes (PSOs)

- PSO1:** B.Sc. Chemistry course lays the foundation for a student to pursue M.Sc. Chemistry under Specialized course like Pharmaceutical Chemistry, Industrial Chemistry, Petrochemical chemistry, Applied Chemistry, Bio- chemistry, Polymer Chemistry, Nano Technology and Green Chemistry.
- PSO2:** The curriculum offers a thorough fundamental knowledge of the major fields of chemistry, covering the general areas of inorganic, organic, and physical chemistry.
- PSO3:** Students gain laboratory experience in inorganic and organic synthesis, analytical methods, physical chemical measurements, spectroscopy, bio-chemical engineering and chemical methods in nuclear technology.

Course Outcomes

FIRST SEMESTER			
Course Code	Course	Course Outcome	
UCHM 111	General Chemistry - I	CO1	Understanding the basics of Atomic Structure, Schrodinger wave equation, Trends in the periodic table.
		CO2	Chemical bonding, Molecular Orbital Theory, Valence Bond Theory, Hybridization and discussion of structure of molecules.
		CO3	Study about the basis of nomenclature, Electron displacement effect, Aromaticity and Hybridization. Organic Reactive Intermediate and type of Organic Reaction.
		CO4	Basis of Stereochemistry, R and S configuration, E and Z configuration, isomerisation, conformation analysis of Ethane, Butane and cyclohexane.
		CO5	Detailed study about the Kinetics Theory of Gases, Derivation of Ideal gas Equations – van der Waals Equation, critical constants. Basis of Maxwells Distribution of molecular velocities – RMSV, AV and MPV, collisiton diameter,Collision Frequency,Mean Free Path.
UCHM 116	General Chemistry Practical – I (Volumetric Analysis & Chromatography)	CO1	Practical Training in doing Volumetric Analysis– Acidimetry,Alkalimetry, Permanganometry, Dichrometry, Iodometry and Complexometric Titrations involving EDTA titration.
		CO2	Paper Chromatographic Separation and finding of R _f values of Amino acids.
		CO3	Identification and Separation of Sugars by Paper Chromatography.
SECOND SEMESTER			
UCHM 121	General Chemistry - II	CO1	Study of Laws of Thermodynamics, Chemical Energetic, Thermochemistry, Kirchhoff's Equation, Residual Entropy.
		CO2	Concept of Chemical Equilibrium, Le Chatli Principle, Strong and Weak Electrolytes, Salt Hydrolysis, pH scale, Ionization of weak acids and bases, Common Ion effect, Buffer solutions, Solubility Products and it's applications.
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		CO3	Study of hydrogen, hydrides and s block elements – halides, Oxides, Hydroxides and Organometallic Compounds.
		CO4	Study the preparation, properties of Alkanes and Cyclo alkanes, Alkyenes and Alkynes.
		CO5	To study the Benzene Chemistry, Preparation, Properties, Mechanism of Electrophilic Substitution Reactions, Orientation in Electrophilic Substitution.
UCHM 126	General Chemistry Practical – II	CO1	Practical Training in determination of CST in phenol-water system, Effect of Impurity in CST, Transition Temperature of Salt Hydrate, Construction of Phase Diagram (simple eutectic), Distribution coefficient of Iodine in Carbon tetrachloride.
THIRD SEMESTER			
UCHM 231	Physical Chemistry - I	CO1	Study the solid state – Derivation of Bragg's Equation. X-ray Diffraction studies, Determination of structure of NaCl, CsCl and KCl, CO ₂ .
		CO2	Study chemical Kinetics, Derivation of Rate Constant, Half-Life period, Determination of order of reaction, Effect of temperature.
		CO3	To study catalysis, Derivation of MM constant, Theories of Catalysis, Theories and Laws of Adsorption and Photochemistry, Fluorescence, Phosphorescence, Quantum Yield.
		CO4	Study of Dilute solutions and Colligative properties, Rault's law, MW determination, Osmotic pressure, Elevation of boiling Point, Depression of Freezing point and Thermodynamic derivations.
		CO5	Study of Phase equilibrium, Derivation of Gibb's Phase rule, Phase diagram for one component and two component system, Rault's and Hendry's Law, Azeotropes and Nernst Distribution law.
UCHM 232	Inorganic Chemistry - I	CO1	Study of Nuclear Chemistry, Mass Defect and Binding Energy, Nuclear fission and Fussion reactions, Group displacement law, Isotopes, Applications of isotopes.
		CO2	Principles of Quantitative Analysis, Solubility and Solubility Product, Separation of metal ions, Applications of Solubility product, Principles of Quantitative and Qualitative analysis, Spot tests,

			Separation and purification of mixtures.
		CO3	To study of Acids and Bases and Non-aqueous Solvents – Acid Base Theories, Hard & Soft Acids and Bases (HSAB), Acid Base Strength & Hardness and Softness.
		CO4	To study the P-Block Elements – Boron, Carbon and Nitrogen Groups.
		CO5	To study the oxygen – Sulphur family, Halogens and Noble gases.
UCHM 235	Basic Analytical Chemistry	CO1	Laboratory glass wares, Calibration of apparatus, Principles of Stoichiometry, Calculations involving various types of concentration systems.
		CO2	Principles of titrimetric analysis, acid base, redox, complex formation and precipitation titrations.
		CO3	Statistical evaluation of analytical data, types of errors, confidence limit, q test and linear regression of data.
UCHM 236	Physical and Inorganic Practical	CO1	Inorganic Chemistry Practical – Qualitative Semi-micro inorganic mixture analysis containing two cations and anions
		CO2	Determination of surface tension, viscosity and melting point.
UCHEM AO1	Chemistry-I for II Zoo/Phys	CO1 to 5	To study classification and IUPAC nomenclature of organic compounds, Hybridization, concept of resonance, Cleavage of Bonding, to study the isomerism in organic compounds, Configuration and Conformation, Understanding basic concept of Chemical Equilibrium constants, Concepts of Acids and Bases, pH, pH of Acids and Bases, Buffer Solution, Henderson's Equation of Buffer, Stoichiometry and its calculations, Understanding the basic concepts of nuclear chemistry and carbohydrates.
UCHEM AO2	Chemistry Practical-I for Zoo/Phys	CO1 and 2	Practical training in doing Volumetric Analysis and Determination of melting point and Enthalpy of given Organic Compound.
FOURTH SEMESTER			
UCHM 241	Physical Chemistry - II	CO1	To study electro chemistry, specific and equivalent conductance, Derivation of Kohlrausch, Debye-Huckel-Onsanger equation, transport number, Determination of K_a and K_{sp} .
		CO2	To study types of reversible electrodes, Nernst Equation, Derivation of cell EMF, Single

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			electrode potential, electro chemical cell, Determination of pH, Potentiometric titrations, Buffers, Handersen-Hazal Equation, Hydrolysis of salts.
		CO3	To study the principles of elementary quantum mechanics, Black body radiation, photo electric effect, Compton Effect, Heisenberg's uncertainty Principle, Schrödinger wave equation, postulates of quantum mechanics, particle in one dimensional box.
		CO4	To study the basic principles of molecular spectroscopy – microwave and IR spectroscopy.
		CO5	To study Raman and Electronic spectroscopy, optical activity and polarization, dipole moment studies, refractivity methods and magnetic properties.
UCHM 242	Organic Chemistry– I	CO1	To study alkyl and aryl halides – preparations and properties.
		CO2	To alcohols and Phenols - preparation and properties, some important naming reactions
		CO3	To study carbonyl compounds – Aldehydes, Ketones, Carboxylic acids and their derivatives.
		CO4	To study organic compounds of Nitrogen, Aliphatic and Aromatic Amines and Diazonium salts.
		CO5	To study Heterocyclic compounds – Five and Six member hetero cyclic compounds.
UCHM 247	Business Skills for Chemist	CO1	Safe handling of Chemicals, Chemical materials, skills with chemical instruments.
		CO2	Planning and designing of experiments, oral, information retrieval skills, report writing skills.
		CO3	Problem solving skills, key for business concepts, making moneys, financial aspects of Business with case studies, concept of Intellectual properties and Patents.
UCHM 246	Physical and Organic Chemistry Practical	CO1	Electrical and Non-electrical Physical Chemistry Practical, Determination of Pseudo first order and Second order kinetics, Determination of Standard Electrode Potential of Silver, Copper and Zinc, Determination of Solubility Product and pH using EMF experiment, Estimation of Chromate by spectrophotometry, Verification of Beer – Lambert's Law.
		CO2	Separation and Purification of Organic Mixture.

UCHEM AO3	Chemistry-II for Zoo/Phys	CO1 to 5	To understand the concepts of Thermodynamics and chemical kinetics, To study Chromatography and Solid State, To study Classifications, properties and stereochemistry of amino acids, to understand the structure of proteins, mechanism of enzyme action, To study Polymers, Dyes, Nucleic acids and Drugs.
UCHEM AO4	Chemistry Practical-II for Zoo/Phys	CO1 and 2	Practical training in Organic Qualitative Analysis and Determination of viscosity and transition temperature of given substance.
FIFTH SEMESTER			
UCHM 351	Inorganic Chemistry-II	CO1	To study the general characteristics of d-block elements. Properties of the elements of the first transition series. Relative stabilities of their oxidation states. Extraction from ores and refining of Ti, Mn, Cr, Fe, Co, Ni, Cu and Zn and their uses.
		CO2	To gain knowledge about the General characteristics, Comparative treatment with their 3d analogues in respect of ionic radii, oxidation states, magnetic behavior. Metallurgy of silver, gold, platinum and palladium.
		CO3	To Understand the chemistry behind Lanthanides and Actinides: (a) Lanthanides: Position of lanthanides in the periodic table. General characteristics of lanthanides. Extraction of lanthanides from monazite sand & separation of lanthanide elements by ion exchange method. Uses of lanthanides and their compounds. (b) Actinides: Position of actinides in the periodic table. General characteristics of actinides. Comparison between lanthanides and actinides. Th and U (extraction only). Separation of Np, Pu and Am from U.
		CO4	To study the classification of ligands - chelation and effect of chelation, Co-ordination number and stereo chemistry of complexes, Werner's theory, EAN rule, Nomenclature of mono nuclear and binuclear (bridged) complexes. Isomerism in complexes, Applications of Co-ordination compounds in qualitative and quantitative analysis, Applications in industry and medicine.
		CO5	To understand the valence bond theory,

			hybridisation, geometry and magnetic properties, limitations of VBT, Crystal field theory, splitting of <i>d</i>-orbitals in octahedral, tetrahedral and square planar complexes, Comparison of VBT and CFT. To understand the basic principles of molecular orbital theory (MOT) of co-ordination compounds as applied to octahedral complexes without π-bonding and its MO correlation diagram of $[\text{Co}(\text{NH}_3)_6]^{3+}$. The adjusted crystal field theory (ACFT) or the ligand field theory (LFT) and Spectrochemical series.
UCHM 353	Analytical Methods in Chemistry	CO1	To understand principles of gravimetric analysis, Gravimetric factor, calculations involved, Theory of precipitation, Types of precipitants, organic precipitants & advantages, purity of precipitates, Co-precipitation and post-precipitation, Precipitation from homogeneous solution, Drying and ignition of precipitates.
		CO2	To study the Quantitative aspects of absorption of radiation, Beer-Lambert's Law, derivation of equation, deviation from Beer-Lambert's Law, Methods of doing Colorimetric Analysis, to study the applications of colorimetry, Molar composition of complexes by Job's method and mole ratio method, Determination of Iron and Manganese compounds, Simultaneous determination of metal ions (Cr and Mn).
		CO3	To study the Radiochemical Methods, the properties of radioisotopes, Isotopic tracing, Isotopic dilution analysis – Neutron activation analysis, Limitations of radioanalytical methods, Thermo analytical methods, Principles of TGA and DTA, Honda's Balance, Thermometric titration, Principle and instrumentation of thermometric titration and its application using HCl (vs) NaOH.
		CO4	To study the Polarography Basic principles, DME, The Ilkovic equation (derivation not required) and significance, experimental assembly, current voltage curve- oxygen wave-influence of temperature and agitation on diffusion layer. Half wave potential ($E_{1/2}$)– Experimental set up, Applications, Polarography as an analytical tool in quantitative and qualitative analysis, Determination of copper and zinc in brass. To gain knowledge about the Solvent Extraction, Principles-techniques of solvent extraction, Factors favouring solvent extraction of inorganic species, Application

			of Solvent extraction.
		CO5	To study the Theory and principles of chromatographic methods, Column Chromatography, principles and experimental procedures, Adsorbents and Solvent systems, Applications, Thin layer chromatography, Principles and experimental procedures, Paper Chromatography, Gas liquid chromatography, Principles, Instrumentation, Types of Columns, Types of Detectors and Applications.
UCHM 354	Nano Chemistry	CO1	To study the length scales and importance of nanoscale and its technology, Classification of nanomaterials (0D, 1D and 2D), self assembly of materials, self-assembled nanostructures, porous solids, nanowires, nanomachines and quantum dots.
		CO2	To study the types of nanoparticles, preparation, properties and uses of gold, silicon, silver, zinc oxide, iron oxide, alumina and titania nanoparticles. Techniques to synthesize nanoparticles, top down and bottom up approaches, common growth methods.
		CO3	To study the overview of nanostructures and nanomaterials, classification, Preparation, properties and applications of carbon nanotubes, nanorods, nano fibre and nanoclay, toxic effects of nanomaterials, Nanoarchitecture, control of nanoarchitecture, one dimensional control.
		CO4	To understand the principles of Electron microscopes, scanning electron microscopes (SEM), transmission electron microscopes (TEM), scanning probe microscopy, atomic force microscopy (AFM), scanning tunneling electron microscope (STEM), basic principles only.
		CO5	To study the synthesis and purification of carbon nanotubes, Single walled carbon nanotubes and multi-walled carbon nanotubes, Structure-property relationships, Fullerenes, carbon nanotubes and grapheme, Applications of nanomaterials in electronics, optics, catalysis, computers, sensors, transportation, medicine and in environment related issues.
UCHM 358	Green Methods in Chemistry	CO1	To study the definitions of Green Chemistry, Brief introduction of twelve principles of Green Chemistry with examples, special emphasis on

			atom economy, reducing toxicity.
		CO2	To gain the knowledge of sources of waste, some problems caused by waste, Cost of waste, Waste minimization techniques, On-site waste treatment, Design for degradation and polymer recycling.
		CO3	To study the conventional reactors, Inherently safer design, Process intensification, In-Process monitoring.
		CO4	To study the processes of a brighter shade of green, Greening of Acetic acid manufacture, Vitamin C, Leather manufacture- tanning and fat liquoring. Dyeing to be green, Polythene-radical process and Ziegler-Natta catalysis, Eco-friendly Pesticides-Insecticides.
		CO5	To study the green synthesis of poly lactic acid from Corn and Surfactants for carbon dioxide, Replacing smog producing and ozone depleting solvents with CO ₂ for precision cleaning and dry cleaning of garments.
UCHM 350	Inorganic Chemistry– Practical - II	CO1	Practical Training in Gravimetric Analysis, Determination of water of hydration, Determination of Lead as Lead chromate (sintered glass crucible), Determination of Copper as cuprous thiocyanate (sintered glass crucible), Determination of Zinc (or Magnesium) as oxinate (sintered glass crucible), Determination of Nickel as Ni-DMG complex (sintered glass crucible), Determination of Calcium as oxalate (sintered glass crucible), Determination of Iron as ferric oxide, Determination of Barium as Barium sulphate (silica crucible), Determination of Barium as Barium chromate (sintered glass crucible), Determination of Fluoride as PbClF.
		CO2	Practical Training in Preparation Of Inorganic Complexes, Preparation of Ni-DMG complex, Preparation of Copper tetrammine complex, Preparation of Lead-thiourea complex, Preparation of Potassium trioxalato chromate complex, Preparation of Sodium trioxalato ferrate (III).

UCHM 353	Analytical Methods In Chemistry- Practical		Practical Training in Paper chromatographic separation of Fe^{3+} , Al^{3+} , and Cr^{3+} , Paper chromatographic separation of Ni^{2+} , Co^{2+} , Mn^{2+} and Zn^{2+} , Separation and identification of the monosaccharides present in the given mixture (glucose & fructose) by paper chromatography, Separate a mixture of Sudan yellow and Sudan Red by TLC, Chromatographic separation of the active ingredients of plants, flowers and juices by TLC, To separate a mixture of Ni^{2+} & Fe^{2+} by complexation with DMG and extracting the Ni^{2+} -DMG complex in chloroform, Colorimetric determination of Manganese, Determine the composition of the ferric-salicylate/ ferric-thiocyanate complex by Job's method.
UCHM 354	Nano Chemistry - Practical		Practical Training in Synthesis of hydrogel by co-precipitation method, Synthesis of silver and gold metal nanoparticles, Synthesis of Aqueous Ferrofluid Nanoparticles, Synthesis of Ruby Red Colloidal Gold Nanoparticles, Synthesis of Cholesteryl Ester Liquid Crystals, Investigation of a Liquid Crystal Watch, Calibration of a Liquid Crystal Mood Ring, Make a Liquid Crystal Pixel, Graphene preparation from graphite with sticky tape, Nitinol wire Train Nitinol to a desired shape, Preparation of Surface Conductive Glass, Titanium Dioxide Raspberry Solar Cell.
SIXTH SEMESTER			
UCHM 361	Organic Chemistry-II	CO1	To study the classification, inter molecular and intra molecular rearrangements - mechanisms, evidences, migratory aptitude, inter or intra molecular of the following rearrangements: Pinacol-Pinocolone rearrangement, Hofmann rearrangement, Beckmann rearrangement, Benzil-Benzilic acid rearrangement, Baeyer-Villiger, Fries rearrangement, Claisen rearrangement, Benzidine rearrangement, Curtius rearrangement, Wagner-Meerwein rearrangement and Wolff rearrangement.
		CO2	To study the classification, nomenclature, occurrence, isolation and preparation of Terpenoids and Isoprene rule, To study the classification, occurrence, isolation and synthesis of alkaloids, introduction to steroids, poly-phenolics, marine natural products and their biological significance.

		CO3	To study the classification of Carbohydrates, configuration of aldoses & ketoses, reactions of monosaccharides (glucose, fructose), Determination of ring size in glucose and fructose, disaccharide (sucrose and maltose with structure determination) and polysaccharides (starch and cellulose without involving structure determination).
		CO4	To study the classification, structure and stereochemistry of amino acids, isoelectric point of amino acids. Preparation and properties of alpha-amino acids, tests for amino acids, Solid-phase peptide synthesis. Structure determination of polypeptides - end group analysis, Classification of protein, structure of protein, constituents of nucleic acid, RNA and DNA, types of RNA, structure of DNA.
		CO5	To study the principles Spectroscopy, application of UV-Visible Woodward-Fieser rules, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation, concept of chromophore and auxochrome, bathochromic, hypsochromic, hyper chromic and hypochromic shifts. Infra Red Spectroscopy, Molecular vibrations, Hook's law, finger print region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic molecules, Proton Magnetic Resonance (^1H NMR) Spectroscopy.
UCHM - 363	Polymer Chemistry	CO1	To study the classification of polymers, Natural, synthetic, linear, cross linked and network, distinction between plastics, elastomers and fibres, Rate of polymerization, degree of polymerization, functionality of cross linked polymers.
		CO2	To study the types of polymerization reactions - addition, condensation, ionic, co-ordination. Addition polymerisation, mechanism, initiation, propagation and termination processes, initiators, condensation polymerizations, Mechanism and kinetics of copolymerization and emulsion polymerization techniques.
		CO3	To study the physical, thermal, flow & mechanical properties of polymers, glass transition temp, Structure-Property relationships, Concept of average molecular weight of polymers.

		CO4	To study the Polymerization techniques, Bulk, solution, suspension & emulsion polymerization, compression moulding, casting, extrusion, fibre spinning, injection moulding, thermoforming, vulcanization of elastomers, Polymer processing, Polymer degradation, thermal, mechanical, oxidative and chemical methods and biodegradation.
		CO5	To study the general methods of preparation, properties and uses of the following: polyethylene, polystyrene, polyesters, polyamides, polycarbonates, PVC, Teflon, acrylic polymers – Phenol formaldehyde resins (Bakelite and Novolac), polyurethanes and silicone polymers, Bio-Polymers, biomaterials, polymers in medical field, High temperature and fire resistant polymers, Conducting and semiconducting polymers [polyacetylene, polyaniline, poly(p-phenylenesulphide), polypyrrole, polythiophene)].
UCHM - 365	Industrial Chemicals And Environment	CO1	To gain knowledge about Industrial Gases, Large scale production, hazards in storage and handling of the following gases, Hazards in handling the following chemicals, hydrochloric acid, nitric acid, sulphuric acid, caustic soda, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, chrome alum and potassium dichromate.
		CO2	To understand the Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry, Effects of air pollution on living organisms and vegetation. Greenhouse effect and Global warming, Ozone depletion by oxides of nitrogen, chlorofluorocarbons and Halogens, removal of sulphur from coal. Control of particulates.
		CO3	To study the Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Impacts of water pollution on hydrological and ecosystems, Thermal pollution, causes, effects and control, Industrial waste management, incineration of waste, Effluent treatment plants (primary, secondary and tertiary treatment).
		CO4	To understand the noise pollution, brief discussion on control of industrial noise pollution, radioactive pollution, Sources of radiations, effects of radiations, Somatic effects,– Genetic effects.

		CO5	To understand the Ecosystems, Biogeochemical cycles of carbon, nitrogen and sulphur, Coal, petrol and natural gas. Nuclear Fusion/Fission, Solar energy, Hydrogen, geothermal, Tidal and Hydel, etc, Nuclear Pollution: Disposal of nuclear waste, nuclear disaster and its management, biocatalysis: Importance in “Green Chemistry” and in Chemical Industries with examples.
UCHM 368	Fuel Chemistry	CO1	To study the renewable and non-renewable energy sources, Classification of fuels and their calorific value, coal, requisites of a good metallurgical coke, Coal gasification (Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining.
		CO2	To study about the Petroleum and Petrochemical Industry, Composition of crude petroleum, Refining and different types of petroleum products and their applications, Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking), Reforming Petroleum and non-petroleum, fuel from waste, synthetic fuels (gaseous and liquids), clean fuels and Petrochemicals.
		CO3	To study the classification of lubricants, lubricating oils (conducting and non- conducting) Solid and semisolid lubricants, synthetic lubricants, Properties of lubricants and their determination.
UCHM - 360	Organic Chemistry Practical-II	CO1	Practical Training in Organic Qualitative Analysis, Systematic Qualitative Analysis of organic compounds containing the following mono functional groups, Carbohydrate, carboxylic acid, dicarboxylic acid, phenol, aldehyde, ketone, aromatic primary amine, aromatic amide, aliphatic diamide, and nitro compound, Detection of nitrogen, sulphur and halogens, Tests to find whether saturated or unsaturated, Tests to find whether aromatic or aliphatic, Tests to find the functional group, Confirmation of functional group by preparation of derivatives.
		CO2	Practical Training in Organic Preparations, Acetylation of salicylic acid, Acetylation of aniline, Benzoylation of aniline/phenol, Preparation of Iodoform from ethanol/ acetone, Preparation of S-benzyl isothiuronium chloride, Preparation of m-dinitrobenzene, Preparation of benzoic acid from benzaldehyde.
UCHM -	Polymer Chemistry	CO1	Practical Training in Polymer synthesis, Free

363	- Practical		radical solution polymerization of styrene (St) / Methyl Methacrylate (MMA) / Methyl Acrylate (MA) / Acrylic acid (AA) involving, Purification of monomer, Polymerization using benzoyl peroxide (BPO)/ 2,2'-azo-bis- isobutyronitrile (AIBN), Preparation of nylon 66/6, Interfacial polymerization, preparation of polyester from isophthaloyl chloride (IPC) and phenolphthalein consisting of the following steps, Preparation and Purification of IPC, Interfacial polymerization, Redox polymerization of acrylamide, Precipitation polymerization of acrylonitrile, Preparation of urea-formaldehyde resin, Preparation of novalac resin.
		CO2	Practical Training in Polymer characterization, Determination of molecular weight by viscometry, Polyacrylamide-aq. NaNO ₂ solution, Poly vinyl propylidene (PVP) in water, Determination of the viscosity-average molecular weight of poly(vinyl alcohol) (PVOH), Determination of molecular weight by end group analysis: Polyethylene glycol (PEG) (OH group), Testing of mechanical properties of polymers, Determination of hydroxyl number of a polymer using colorimetric method.
UCHM – 365	Industrial Chemicals & Environment - Practical	CO1	Study of some of the common bio-indicators of pollution, Measurement of dissolved CO ₂ Estimation of SPM in air samples, Determination of acetic acid content in Vinegar by titration with NaOH, Determination of alkali content in antacid tablets by titration with HCl, Determination of copper content in brass by Iodoametric titration, Determination of available chlorine in bleaching powder, Determination of dissolved oxygen in water, Determination of Chemical Oxygen Demand (COD), Determination of Biological Oxygen Demand (BOD), Determination of hardness of water, Percentage of available chlorine in bleaching powder, Determination of Mn content in Pyrolusite, Measurement of chloride, sulphate and salinity of water samples by simple titration method (AgNO ₃ and potassium chromate), Estimation of total alkalinity of water samples (CO ₃ ²⁻ , HCO ₃ ⁻) using double titration method, Synthesis of Chalcone by green chemical method (condensation of benzaldehyde and acetophenone).

Name of the Department : P.G. TAMIL

Programme Outcomes (PO)

PO1: To explain letters, words and grammar in Tamil Language.

PO2: Learn to write Tamil Sentences without grammar mistakes.

PO3: To develop the Creative writing.

PO4: To understand the history and Tamil culture.

PO5: To learn about the specialty of Modern Literatures.

PO5: To understand the history and Tamil culture

PO6: To fully understand the grammar of Nannool & Tholkappiyam

PO7: Will be able to Translate and Compare the World Literature.

Programme Specific Outcomes

PSO1: Basic concepts like Agam, Puram, Ilakkiya Varalaru and Ilakkana Varalaru etc.

PSO2: Introduction on Sangam, Kappiyangal, Thirukkural and Modern Literature.

PSO3: Acquainted with some basic Modern Literature Theories.

PSO4: Learners will be involved in creative writings and can develop spoken skill by learning such papers like Pechchukkali & Padaippukkali.

PSO5: To provide computer knowledge for gaining employment through studying Internet Tamil.

PSO6: Students will learn about Folk literature and gain knowledge about old Tamil culture.

PSO7: To create awareness about Mass Media.

Name of the Programme : முதுகலைத் தமிழ்

முதலாண்டு முதற் பருவம்		
தாள்	பாடம்	பாட நோக்கம்
1.	இக்கால இலக்கியம் (மரபுக் கவிதை, புதுக்கவிதை)	○ புதுக்கவிதையின் வடிவங்கள் குறித்த அறிமுகம் ○ மரபுக்கவிதை, புதுக்கவிதை ஆகியவற்றைத் திறனாய்வு நோக்கில் அணுகப் பயிற்றுவித்தல்
2.	பக்தி இலக்கியம்	○ சமய இலக்கியங்கள் தோன்றிய காலச் சூழல் குறித்த தெளிவு பெறுதல் ○ சைவ, வைணவ, சமண, பௌத்த, கிறித்துவ, இஸ்லாமிய இலக்கியங்களை ஆழக் கற்றல்
3.	சிற்றிலக்கியம்	○ சிற்றிலக்கியங்களின் வகைகள் குறித்த அறிவு பெறுதல் ○ சிற்றிலக்கியங்களின் இலக்கியச் சிறப்புகளைக் கற்றல்
4.	தொல்காப்பியம் எழுத்ததிகாரம்	○ தமிழரின் தொன்மையைத் தொல்காப்பியத்தின் வழி உணர்த்துதல் ○ தனிமொழி, புணர்மொழி எழுத்துக்களைப் பற்றி அறிதல்
5.	மக்கள் தொடர்பியல்	○ தகவல் தொடர்பு ஊடகங்கள் குறித்த விரிவான செய்திகள் தருதல் ○ பணி வாய்ப்புப் பெறும் வகையில் ஊடகங்களுக்குச் செய்திகள், நிகழ்ச்சிகள் தயாரிக்கப் பயிற்றுவித்தல்

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இரண்டாம் பருவம்		
6.	இக்கால இலக்கியம் (சிறுகதை, நாவல், நாடகம், சுயசரிதை நூல்கள், உரைநடை நூல்கள்)	- சிறுகதை, நாவல், சுயசரிதை நூல்கள், உரைநடை நூல்கள், நாடக நூல்கள் – அறிமுகம் - நூல்களைத் திறனாய்வு செய்து, இலக்கியக் கோட்பாடுகளையும் கொள்கைகளையும் உய்த்துணர்தல்
7.	அற இலக்கியம்	- நீதி இலக்கியத்தின் இயல்புகள் குறித்தும் தமிழ் இலக்கியங்களில் அறக்கருத்துகள் குறித்தும் விளக்குதல் - திருக்குறள், நாலடியார், நன்னெறி, நல்வழி, நீதிநெறி விளக்கம் போன்ற நூல்களின் சில பகுதிகளைப் பயிற்றுவித்தல்
8.	பெண்ணியம்	- பெண்ணியம் தோற்றம், வளர்ச்சி குறித்து விளக்குதல் - பெண்ணிய வகைகளை எடுத்துக்காட்டி, தற்கால இலக்கியங்களைப் பெண்ணியப் பார்வையில் மதிப்பிடுதல்
9.	தொல்காப்பியம் சொல்லதிகாரம்	- மொழியின் வாக்கிய அமைப்பைச் சொல்லதிகாரம் வழி உணரச் செய்தல் - மொழிக்கூறுகளை விளக்குதல்
10.	இலக்கியக் கொள்கையும் திறனாய்வும்	- சங்ககால இலக்கியக் கொள்கை, இடைக்கால இலக்கியக் கொள்கை, அரிஸ்டாட்டிலின் கவிதையியல் ஆகியவற்றை விளக்குதல் - சமூக இயக்கங்களும் திறனாய்வுக் கொள்கைகளும் குறித்து விரிவாக எடுத்துக்கூறுதல்
இரண்டாமாண்டு மூன்றாம் பருவம்		
11.	காப்பிய இலக்கியம் - I	- காப்பிய இலக்கணம் பொருந்தும் தன்மையை உய்த்துணரச் செய்தல் - பெருங்காப்பியங்கள் வழி வாழ்வியல்

		விழுமியங்களை உணரச் செய்தல்
12.	சங்க இலக்கியம் - அகம்	- பழந்தமிழ் இலக்கியங்கள் காட்டும் வாழ்வியல் நெறிகளை உணரச் செய்தல் - பழந்தமிழ் இலக்கியங்களின் (பாட்டும் தொகையும்) செவ்வியல் தன்மையை அறியச் செய்தல்
13.	தொல்காப்பியம் பொருளதிகாரம் - I (முதல் ஐந்து இயல்கள்)	- அகப்புறத் திணைகளை விளக்குதல் - அகப்பாடல்களுக்குப் பொருள் காணும் முறையைப் பொருளியல் வழி எடுத்துக்காட்டல்
14.	நாட்டுப்புறவியல்	- நாட்டுப்புற இலக்கிய வகைகள், நாட்டுப்புறக் கலைகள், நாட்டார் வழக்காறுகள் குறித்து விரிவாக அறியச் செய்தல் - நாட்டுப்புறவியல் ஆய்வியல் கோட்பாடுகளை உணரச் செய்து, களஆய்வுக்கு வழிகாட்டுதல்
15.	இலக்கண வரலாறு	- எழுத்து, சொல், பொருள், யாப்பு, அணி இலக்கணங்களின் வகைகள், வரலாறுகள் குறித்து விவரித்தல் - பல்வேறு இலக்கண நூல்கள் கூறும் செய்திகளை ஒப்பீட்டு நோக்கில் உணர்தல்
நான்காம் பருவம்		
16.	காப்பிய இலக்கியம் - II	- காப்பிய நெறிகளை உணர்த்துதல் - வில்லிபாரதம், நளவெண்பா, திருவிளையாடற்புராணம், சீறாப்புராணம், இயேசுகாவியம் போன்ற நூல்களில் சில பகுதிகளை அறிமுகம் செய்தல்
17.	சங்க இலக்கியம் - புறம்	- வீரநிலைக்காலம் அறிமுகம் - புறப்பாடல்கள் வழி தமிழரின் வீரமும் மாண்பும் குறித்து உணரச் செய்தல்

18.	தொல்காப்பியம் பொருளதிகாரம் – II (பின் நான்கு இயல்கள்)	○ அக, புற ஒழுக்கத்திலுள்ள மெய்ப்பாடுகள் யாவை என அறிதல் ○ மரபியல் வழி உயிரினங்களின் பாகுபாடுகள் குறித்து அறியச் செய்தல்
19.	இலக்கிய ஒப்பாய்வியல்	○ ஒப்பிலக்கியத்தின் தேவை குறித்தும் ஒப்பிலக்கியக் கொள்கைகள் குறித்தும் விளக்குதல் ○ ஒப்பிலக்கியம் பிற துறைகளோடு கொண்டுள்ள தொடர்புகளை எடுத்துரைத்தல்
20.	சைவ சித்தாந்தம்	○ அறுவகைச் சமயங்கள் குறித்த அறிமுகம் ○ முப்பொருள் இயல்பு குறித்து விளக்குதல்

Department: M.Sc Computer Science

Programme Outcomes (POs):

PO1: Apply knowledge of Computing and mathematics appropriate to the discipline.

PO2: Design, implement, and evaluate a computational system to meet desired needs within realistic constraints.

PO3: Use design and development principles in software systems, software development tools, and modern computing platforms.

Programme Specific Outcomes (PSOs)

PSO1: After completing M.Sc. Computer Science Program students will be able to:

PSO2: Enrich the knowledge in the areas like Artificial Intelligence, Web Services, Cloud Computing, Paradigm of Programming language, Design and Analysis of Algorithms, Database Technologies Advanced Operating System, Mobile Technologies, Software Project Management and core computing subjects. Choose to study any one subject among recent trends in IT provided in the optional subjects.

PSO3: Students understand all dimensions of the concepts of software application and projects.

PSO4: Students understand the computer subjects with demonstration of all programming and theoretical concepts with the use of ICT.

PSO5: Developed in-house applications in terms of projects.

PSO6: Interact with IT experts & knowledge by IT visits.

PSO7: Get industrial exposure through the 6 months Industrial Internship in IT-industry.

PSO8: To make them employable according to current demand of IT Industry and responsible citizen.

PSO9: Aware them to publish their work in reputed journals

Course Outcomes

FIRST SEMESTER			
Course Code	Course	Course Outcomes	
COMS411	Design of Algorithms	CO1	Ability to learn the concepts of List, stacks, Queue, Trees and sorting methods.
		CO2	Ability to learn the concepts of Greedy Method and dynamic programming
		CO3	Ability to learn the traversal techniques for graphs in order, preorder, level order and post order.
		CO4	Ability to learn backtracking methods of sum of subsets, graph coloring and knapsack problem.
		CO5	Ability to learn the branch and bound techniques of knapsack problem, travelling sales person.

COMS413	Computer Architecture and Organization	CO1	To understand the Boolean algebra, combinational logic and circuits.
		CO2	To understand concepts of the decoders, encoders and flip flops.
		CO3	Ability to understand the processor design and ALU.
		CO4	To understand the concepts of hardwired control logic design.
		CO5	Ability to understand the hierarchy of memory, associative memory, virtual memory, etc.
COMS414	Visual Programming	CO1	To understand the concepts of GUI based Windows programming.
		CO2	To understand the concepts of Visual Basic programming.
		CO3	To understand the concepts of Visual C++ programming.
		CO4	To understand the advanced features in VB and VC++
		CO5	To understand the overview of .Net Language.
COMS415	Database Systems	CO1	Describe the fundamental elements of Database Management Systems
		CO2	Design ER-models, ER Notions to represent simple database application scenarios.
		CO3	Ability to learn the Normalization concepts First normal form to Third Normal Form.
		CO4	To Learn and formulate SQL/PLSQL Command queries on data
		CO5	Ability to learn the Hashing techniques, data dictionaries.
COMS418	Visual Programming Lab	CO1	To implement the design an analog clock.
		CO2	To implement the design and develop and intranet chatting tool.
		CO3	To implement the design and develop of win32 API.
COMS419	Algorithms Lab	CO1	Identify the problem given and design the algorithm using various algorithm design techniques.
		CO2	Implement various algorithms in a high level language.
		CO3	Analyze the performance of various algorithms.
		CO4	Compare the performance of different algorithms for same problem.
COMS546:	Data mining and warehousing	CO1	Ability to understand the role of data Warehousing and data mining.
		CO2	To familiarize with various data mining architecture & design, hardware.
		CO3	Ability to do data mining preprocessing and learning association rules.
		CO4	To learn cluster analysis and finding trends in data mining
		CO5	To learn OLEDB for data mining and DB Miner.
SECOND SEMESTER			
Course Code	Course	Course Outcomes	
COMS 412	Automata Theory & Formal Languages	CO1	To learn the concepts of DFA, NFA, Mealy and Moore Models.
		CO2	To understand the concept of Push Down Automata Theory
		CO3	To learn the concept of Turing Machine, techniques for TM.
		CO4	To understand the Chomsky hierarchy, LBA, and Universal Turing Machine.
		CO5	Ability to understand the applications of Finite Automata.
COMS462	Data Communication Networks	CO1	Understanding the concepts of reference models OSI and TCPIP.
		CO2	Ability to understand the Data Link Layers, Error detection and correction methods.
		CO3	To understand the Network layer, congestion control algorithms.
		CO4	To implement the transport protocols, internet transport protocols UDP/TCP.

		CO5	To learn the importance of the application layers, DNS, E-mail, WWW and cryptography.
COMS463	Software Engineering Concepts	CO1	To understand the Software Engineering Concepts and various Software process models.
		CO2	To understand the software process and project metrics to estimate software costs.
		CO3	To implement a software designs, design principles in real-time systems.
		CO4	To know the various types of software testing methods to evaluate a software
		CO5	To learn the clean room software engineering and reengineering in software engineering.
COMS464	Object Oriented System Design	CO1	Ability to analyze and model object oriented system design development life cycle.
		CO2	Ability to abstract to design Unified Modeling Language Model.
		CO3	To identify the object relationships, attributes and methods in UML.
		CO4	Ability to use Object Oriented System Design process, patterns and frameworks.
		CO5	To design an access layer and designing interface objects. To analyzing the bank ATM a case studies.
COMS465	Web Technology	CO1	To learn a working principles of web and internet. Creation of HTML and Cascaded style sheets.
		CO2	To learn implement a client side scripting using java script.
		CO3	Ability to learn PHP language basics and working with PHP and MYSQL.
		CO4	Ability to learn XML , DTD, XML Schema, SOAP and creating simple web services.
		CO5	Ability to work with xml in JavaScript and AJAX.
COMS467	Networks Lab	CO1	Identify and use various networking components Understand different transmission media and design
		CO2	cables for establishing a network
		CO3	Implement any topology using network devices
		CO4	Implement device sharing on network
		CO5	Learn the major software and hardware technologies used on computer networks
COMS469	Case Tools Lab(OOSD)	CO1	Prepare the CASE tools for the given specification using Rational Rose Software
		CO2	Understand and develop the UML diagram for real time applications.
		CO4	Analyze the development of CASE tools
COMS540	Elective-II: Artificial Intelligence	CO1	To understand Intelligent Agents, A*,AO* Alpha Beta Pruning.
		CO2	To understand Propositional Logic First order Logic.
		CO3	Ability to understand First Order Logic forward and Backward Chaining.
		CO4	Ability to understand Simple Planning Agent and probabilistic Reasoning Systems
		CO5	Ability to understand the Computational Learning Theory, Learning in Neural and Belief Networks.

THIRD SEMESTER			
Course Code	Course	Course Outcomes	
COMS511	Principles of Compiler Design	CO1	Ability to understand the compiler, lexical Analyzer and role of a lexical analyzer.
		CO2	To understand the Context free grammars, derivations, types of parsing.
		CO3	To understand the LR parsers, parsing tables and syntax directed translation.
		CO4	Ability to understand the symbols tables, error detection and recovery.
		CO5	To understand the code optimization, loop optimization DAG representation of basic blocks and peephole optimization.
COMS512	Computer Graphics	CO1	Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
		CO2	Discuss various algorithms Line drawing, circle drawing algorithms.
		CO3	Use of geometric transformations on graphics objects 2D Transformations.
		CO4	Extract scene with different clipping methods and its transformation to graphics display device 3D object transformations and 3D Viewing.
		CO5	Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.
COMS513	Cryptography and Network Security	CO1	To understand concept of cryptography, ciphers, encryption standards.
		CO2	Ability to understand the advanced encryption standards and key distribution.
		CO3	Ability to understand the RSA algorithm, authentication and hash functions.
		CO4	To understand the digital signatures, authentication protocols and digital signature standards.
		CO5	Ability to understand the network security practice, electronic mail security, secured MIME.
COMS 531	Elective III:E-Commerce	CO1	Analyze the impact of E-commerce environment and opportunities.
		CO2	Approaches to safe electronic commerce, secure transport protocols and secure transactions.
		CO3	Ability to understand the computer security, specific intruders approaches over the networking and access to the Internet.
		CO4	To understand the master card Visa secures electronic transactions and MIME.
		CO5	Ability to understand the internet application for Commerce.
COMS 530	Elective IV: Multimedia System & App	CO1	To understand the Multimedia systems and applications.
		CO2	To know the types of Multimedia data compression-RTF-TIFF-JPEG,etc.
		CO3	Ability to understand the Multimedia I/O technologies voice and image display systems.
		CO4	To implement the multimedia application design and application workflow design issues.
		CO5	To work with multimedia systems in a distributed client-server operations
COMS518	Practical V- Compiler Design Lab	CO1	To implement simulation of lexical analyser
		CO2	To implement parsers, recursive descent and predictive parsers.
		CO3	To implement dynamic storage allocation and overloaded functions.
COMS519	Practical VI -	CO1	Define the fundamentals of underlying principles of computer

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	Client/Server Lab		networking.
		CO2	Understand the key topology which supports the internet.
		CO3	Create socket and analyze different client server model.
		CO4	Demonstrate the installation and configuration of network simulator.
		CO5	Evaluate the error using various error correcting techniques.
FOURTH SEMESTER			
Course Code	Course	Course Outcomes	
COMS561 COMS562 COMS563	Project Seminar Project Work Project Report& Viva-Voce	CO1	Students should be able to design and construct a hardware and software system, component, or process to meet desired needs.
		CO2	Students are provided to work on multidisciplinary Problems.
		CO3	Students should be able to work as professionals, with portfolio ranging from data management, network configuration, designing hardware, database and software design to management and administration of entire systems.
		CO4	Ability to develop a Software application.
		CO5	Ability to develop a web based application.

M.A. Economics

Programme Outcomes (POs):

Upon completion of the M.A. Degree Programme, the graduate will be able to

- PO1:** Understand and analyze the fundamental concept of economics and economic behavior in practice.
- PO2:** Equip and learn the economic practices in local, national and international needs.
- PO3:** Perform basic quantitative analysis using tools appropriate for the programme.
- PO4:** Demonstrate an understanding of the basic functioning of the national and global economy.
- PO5:** Apply supply and demand analysis to examine the impact of government regulation.

Program Specific Outcomes

Upon completion of these courses the student would

- PSO 1:** The behavioural patterns of different economic agents, advance theoretical issues and their applications.
- PSO 2:** Understand the basic concept of microeconomics.
- PSO 3:** Acquaint with some basic statistical methods to be applied in economics.
- PSO 4:** Acquaint with some basic mathematical methods to be applied in economics.
- PSO 5:** Acquaint with some basic theoretical concept of public finance.

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PSO 6: Acquaint with the measurement of development with the help of theories along with the conceptual issues of poverty and inequalities with Indian perspectives.

PSO 7: Delineate the fiscal policies designed for developed and developing economics.

PSO 8: Facilitate the historical developments in the economic thoughts propounded by different schools.

PSO 9: Learn the basic concept of monetary analysis and financial marketing in Indian financial markets.

PSO 10: Learn the development issues of Indian economy.

PSO 11: Acquaint with basic concepts of Research Methodology.

PSO 12: Learn the real and monetary sides of International Economics.

FIRST SEMESTER			
Course Code	Course	Course Outcomes	
ECON111	Micro Economic Analysis -1	CO1	Get introduced for learning about consumer behavior and analyzing consumer decisions
		CO2	To understand introductory micro economic theory in a local, regional, national & International scenario
		CO3	Explain the fundamental techniques to think about a number of policy questions
		CO4	It will also help in understanding the efficiency and equity implications of market interference including government policy.
ECON112	Macro Economics - 1	CO1	To make students aware of the basic theoretical framework underlying the field of macroeconomics
		CO2	It enables students to understand determination of equilibrium income and interest rates.
		CO3	To derive aggregate demand and supply curves and get expose to wage models
		CO4	Understanding the concept of inflation and Learn about open economy models
ECON113	Mathematical Economics	CO1	The student is exposed to economic concepts in mathematical format through simple illustrations & prepares the ground for more scientific study.
		CO2	Understand abstract ideas and rigorous methods in mathematical analysis to solve practical problems.
		CO3	Know the chain rule and use it to find derivative of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation
		CO4	Evaluate determinants and use them to discriminate between invertible and non-invertible

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ECON114	Econometric Theory	CO1	Understand multiple regression models with applications
		CO2	To learn the development of null & alternative hypothesis & types of errors,
		CO3	To understand the concepts of multicollinearity, autocorrelation and heteroscedasticity
		CO4	To learn how to develop regression model and apply for the specific perspective data in appropriate manner
ECON115	Economics of Growth & Development	CO1	To explain economic growth theories, international trade development theories and related economic development theories
		CO2	Learn hardcore economic prescriptions to development, concerns hitherto relegated to background like education, health, sanitation and infrastructural development, have found a place of pride in explaining the preference of various economies
		CO3	Student will be able to understand the landscape of Indian economic structure
		CO4	Understand meaning of economic development and its measurement
SECOND SEMESTER			
Course Code	Course	Course Outcomes	
ECON121	Micro Economic Analysis -II	CO1	To understand basic micro economic problems related to the operation of realeconomy
		CO2	It will help students in understanding the behavior of individuals and smallorganizations in making decisions on the allocation of limited resources
		CO3	It will result in understanding the micro and macro theories of distribution, welfareeconomics, general equilibrium in closed and open system and analysis of economicbehavior under uncertainty
		CO4	To understand the efficiency and equity implications of market interference including government policy
ECON122	Macro-Economic Analysis -II	CO1	To make students aware of the basic theoretical framework underlying the field of macroeconomics
		CO2	It helps students to study the aggregates and to provide overall idea about national economic policies and its implications
		CO3	Apply the principle of Macroeconomics in explaining the behaviour of Macroeconomic variables at national as well as global level.
		CO4	Associate the current economic phenomenon with existing theory and put their views on contemporary economic issues.
ECON123	Statistical Methods in Economics	CO1	Understand the basic principles underlying survey designs and estimation
		CO2	To train students with essential tools for statistical analysis at post graduate level
		CO3	To present the general theory of statistical distributions as well as the standardddistribution found in statistical practice
		CO4	Fostering understanding though real world statistical applications

ECON124	Applied Econometrics	CO1	To learn and develop scientific view to understand the time series data and itsanalysis
		CO2	To learn stationary and non-stationary time series models
		CO3	Apply auto regressive, moving average, ARMA, ARIMA models, Box Jenkins approach to forecast time series data empirically
		CO4	to develop an ability to analyze and apply some basic stochastic processes for solving real life situations
ECON125	Public Economics	CO1	It will help in understanding analyzing the Economics impact of public policy on the allocation of resources
		CO2	Understand and analyze the distribution of income in the economy
		CO3	Analyze in detail about public expenditures, taxation, budgetary procedures, stabilizationinstruments and debt issues
		CO4	Get to know about central and state financial relationships
THIRD SEMESTER			
Course Code	Course	Course Outcomes	
ECON231	International Trade & Finance	CO1	The course is helpful to develop a systematic exposition of models that try to explaincomposition, direction and consequences of international trade
		CO2	The student will be acquainted with economic concepts and models of international trade
		CO3	Understand about international trade blocks and their importance
		CO4	Get exposed to economic environment of international trade
ECON232	Contributionsby Noble Laureates - I	CO1	Students get to know about the greatest contributions made by renowned Economists in thefield of economics
		CO2	Understand the contributions made by Hicks, Arrow, Amartya Sen, Kantorovich and Koopmansin the field of welfare economics
		CO3	Students get better understanding about different school of thoughts with regardto open economy, macroeconomics, theory of general equilibrium and development of nationalaccount
		CO4	Students get exposed to various tools and mechanisms used in economics proposed byEconomists
ECON233	Computer Applications in Economic Analysis	CO1	The course describes an alternative approach to teaching content by using computerapplications that emphasize the empirical testing or applicationsof the theory
		CO2	Get exposed to various statistical packages viz., E-views and SPSS
		CO3	Understand stochastic process with soft wares
		CO4	Get exposed to time series and forecasting models viz, ARMA, Granger causality , fixed effectsand random effects models etc
		CO5	
ECON234	Research Methodology	CO1	Develop understanding on various kinds of research, objectives of doing research,research process, research designs and sampling
		CO2	Students will have basic knowledge on qualitative research techniques
		CO3	Students will have adequate knowledge on measurement & scaling techniques as well as thequantitative data analysis

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		CO4	Students will be able basic awareness of data analysis-and hypothesis testing procedures
ECON235	Indian Economy : Issues & Policies – I	CO1	Develop ideas of the basic characteristics of Indian economy, its potential onnatural resources
		CO2	Understand the importance, caused and impact of population growth and its distribution,translate and relate them with economic development
		CO3	It will result in comprehensive understanding of Indian economy
		CO4	Student will be able to understand govt. policies andsectoral programmes
FOURTH SEMESTER			
Course Code	Course	Course Outcomes	
ECON241	Indian Economy : Issues & Policies – II	CO1	It helps in developing understanding of the students relate to different sectors of Indian Economy
		CO2	After studying the structural aspects of Indian economy students will be able tounderstand how planning and infrastructure support can develop an economy
		CO3	To give in depth knowledge of banking and finance to the students
		CO4	Student will be able to understand govt. policies and sectoral programmes
ECON242	Financial Economics	CO1	understand the role of asymmetric information in financial markets
		CO2	Identify the main assumptions driving the results of a model
		CO3	Understand why and how financial frictions lead to inefficient prices
		CO4	Comprehend how trading in derivative markets affect the price of the underlying asset
ECON243	Contributions by Noble Laureates - II	CO1	The aim of this course is to make Students understand about the greatest contributions made byrenowned Economists in the field of economics
		CO2	It helps students to understand the contributions made by Simon Kuznets, Schultz, Lewis,Solow, Fogel in the field of institutional change, development and growth
		CO3	It helps students to think strategically and make decisions to ptimize the outcome.
		CO4	Studying this course will help students to get exposed to recent developments ineconomic theory.
ECON244	Project Work	CO1	The aim of the course is to make student to take up a mini research topic and to work on itto carry out research activities for further studies.
		CO2	It is a well-planned, organized and goal oriented work. Hence students understand applicationof economic concepts in real life situations.
		CO3	Students get exposure with regard to sampling and collection of data and processing of data.
		CO4	Students able apply statistical tools for analyzing economic phenomena with the help of thedata and soft wares and report writing.

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Department: Public Administration (M. A.)

Programme Outcomes (POs):

- PO1:** Provide students with learning experiences that develop broad knowledge and understanding of key concepts of Public Administration and equip them with advanced knowledge and understanding for analyzing and performing the tasks concerning public affairs.
- PO2:** Develop students' ability to apply the acquired knowledge and skills to the solution of specific theoretical and applied problems in Public Administration settings.
- PO3:** Develop abilities in students to come up with innovative prescriptions/solutions for the benefit of society, by diligence, leadership, team work and lifelong learning.
- PO4:** Demonstrate critical thinking, research, and communication skills as applied to the public and private sectors.
- PO5:** Explain the cross-cultural context of public and private institutions operating in a global.

Programme Specific Outcomes (PSOs):

- PSO1:** Understand the Evolution of Public Administration Theories, Approaches, different levels of Administration and functions of Government Machinery.
- PSO2:** Increase knowledge of the Classical, Neo-Classical and Motivational Theories with Indian
- PSO3:** Analyze the New Public Management concept on Non-Governmental Organization and Human Resource Management.
- PSO4:** Understand the Evolution of Development Administration Principles through E-Governance in Financial, Police, Social Welfare & Labour Welfare Administration.
- PSO5:** Understand the Principles of Political Science and Compare the Asian Political System
- PSO6:** Explain the Research and analytical skills, including the ability to think critically; to construct logical arguments; to collect, analyze, and interpret evidence and data; and to formulate reasoned conclusions.

Course Outcomes

FIRST SEMESTER

MPAD 111	Public Administration	CO1	Explain meaning, nature and scope of Public Administration.
		CO2	Illustrate the strategies and techniques of organizational development and discuss various approaches of Public Administration.
		CO3	Understand the contemporary administrative theories of Organization.
		CO4	Describe Good Governance and Citizen's Charter.
		CO5	Discuss concepts New Public Administration and new Public Management.
MPAD 112	Public Personal Administration	CO1	To Appreciate the nature, scope and changing paradigms of Public Administration.
		CO2	Grasp the administrative theories, concepts and principles to make sense of administrative Practices with emerging trends.
		CO3	Understand the world of public administration from the public perspective and provide foundation for further studies in Public Administration.
		CO4	Understand the synthesizing nature of knowledge of public administration from public Perspective.
MPAD 113	Indian Administrative Systems	CO1	To understand the historical evolution and socio-economic, political, cultural and global context of Indian Administration
		CO2	Explain development administration process and Administrative Development in India and explain relationship between Bureaucracy and Development.
		CO3	To identify the transformative role of Indian Administration.
		CO4	To make out the multi-dimensionality of problems and processes of Indian Administration
		CO5	Acquaint with the functioning of the Indian administration, at central levels and the responses of these systems in addressing the concerns of the people.
MPAD 114	Financial Administration	CO1	Learn the financial administration of India
		CO2	Understand the Role of Political and Administrative organizations in managing Public Finances
		CO3	Analyze the Budgetary process of union and state
		CO4	Interpret the Financial control of legislative and CAG
		CO5	Illustrate the Economic Relations between Center and state
MPAD 115	Environmental Administration	CO1	This course intends to aware the student about the basics of environment, Environmental administration, regulations, and policies in India
		CO2	To analyze the environmental degradation and India's concern on environmental protection.
		CO3	To examine the environmental policy on pre independence and post-independence.
		CO4	To aware about the NGO's, pollution control board and movement's role and responsibilities to protect environment.
		CO5	To know about environment policies and to evaluate Constitutional aspects of Environmental

SEMESTER – II			
MPAD 121	Organizational Behaviour	CO1	This course attempts to enable the students to understand the complex nature of organization behavior, conflicts and challenges in the organizational setting.
		CO2	Study of the acceptable human behavior and hyphenating organization into the behavior- management specter provides enhanced application capacity to the students.
		CO3	Study and application of knowledge about human behavior in organization as it relates to other system elements.
MPAD 122	HRM	CO1	Learn the concepts of Internal Security and Threats in India
		CO2	Illustrate the relevant mechanism in dealing with internal security challenges
		CO3	Analyze the strategies followed by the government in dealing with security challenges
		CO4	Evaluate the prevailing structures and understand the need for reform
		CO5	Analyze the emerging issues in Law and order and internal security.
MPAD 123	Public Policy Analysis	CO1	Explain Meaning, nature, scope of Public Policy
		CO2	Discuss Role of Executive in public policy making
		CO3	Explain Objectives and Goals of Public Policy
		CO4	Discuss Policy Making Characteristics, and Categorize stages and techniques in Policy implementation
		CO5	Discuss Citizens Participation in Policy Implementation
MPAD 124	Comparative Public Administration	CO1	Attempts to develop a better understanding of theoretical as well as practical aspects of comparative public administration.
		CO2	Develop the knowledge of different approaches, administrative system of different national setting.
		CO3	Understand the emergence of Comparative Public Administration.
		CO4	Compare the administrative systems of developed and under developed countries.
		CO5	Interpret the linkage between development administration and sustainable development.
SEMESTER – III			
MPAD 231	Police Administration	CO1	Explain basic concept of Police Administration
		CO2	Discuss Social problems and the laws implemented to solve them
		CO3	Describe concept of social welfare planning and role of voluntary organizations at The Centre, State and Local levels
		CO4	Discuss Administrative Structures in the society.
MPAD 232	Administrative Law	CO1	Acquire the basic knowledge about the concept of administrative law.
		CO2	Understand the theoretical perspective of ethical conducts adopted by the society.

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		CO3	Learn the role and purpose of the establishing the tribunals at various levels.
		CO4	Illustrate the newly evolving laws in protection of Minorities, women, children and whistle blowers.
		CO5	Analyzing evaluation and monitoring methods of administrative and political bureaucracy duties
MPAD 233	SOCIAL WELFARE ADMINISTRATION	CO1	To understand the concept of population
		CO2	To develop skills for planning and implementing Family Planning and welfare programmes
		CO3	To study role of social workers in family welfare programmes and Environment Change.
MPAD 234	Research Methodology	CO1	Explain Meaning, Method of Research Methodology
		CO2	Discuss concept of variables and hypotheses, their nature, importance and types
		CO3	Discuss sample and describe the steps involved in the process of sampling.
		CO4	Explain different tools of data collection.
		CO5	Discuss writing report for Public Administration project.
		CO4	Students would be able to perform financial planning, budgeting, controlling and auditing decisions in a healthcare organization.
FOURTH SEMESTER			
MPAD 242	ICT in Public Administration	CO1	Acquaint the role of ICT in the domain of administration and governance
		CO2	Understand the concept of E-Governance, theories and various models
		CO3	Understand the policy framework and evolving institutional framework of e-governance
		CO4	Assess the capacity building measures required for digital intervention
		CO5	Analyze the role of e- governance in enhancing the efficiency and transparency
MPAD 243	Local Government in India	CO1	Gain basic knowledge about the concepts of local government development in India
		CO2	Exemplifying the fundamental structure of local governance in Indian context
		CO3	Explain the Structure and Functions of rural local government
		CO4	Assess the policies and programmes implemented by the governments at gross root level
		CO5	Analyze the importance of role of District Collector in Local Government Administration and Understand the working of Municipality
MPAD 241	Disaster Management	CO1	Learn the concepts and meaning of disaster & crises
		CO2	Understanding the contemporary remedies of disaster management & preparedness
		CO3	Articulate the increased role of Risk Analysis, Resource management & Rehabilitation challenges.

		CO4	Analyze the role of Governance in disaster management and environment protection
		CO5	Understand the disaster management strategies at National, state and local level and assess the role of international conventions in achieving the SDGs
	Dissertation work	CO1	Provide an opportunity to students to apply their research skill through review of literature and field studies on any of their chosen topics to produce a dissertation writing.
		CO2	students would be able to get a systematic knowledge on how to develop scientific writing
		CO5	Complex interrelations among domestic and international governmental, intergovernmental and nongovernmental actors.
		CO4	Interpret the cumulative role ethics in the public sector and cognizance of moral & social responsibility of public managers
		CO5	Analyze the shift of governance to citizen centric governance

Department: M.Com

Programme Outcomes (POs):

PO1: Knowledge Base

Demonstrate comprehensive knowledge and understanding of fundamental concepts, theories, and principles in various areas of commerce, including accounting, finance, economics, management, marketing, and business law.

PO2: Analytical Skills

Apply analytical and critical thinking skills to evaluate complex business problems, make informed decisions, and develop strategic solutions in diverse organizational contexts.

PO: 3 Communication Skills

Communicate effectively and professionally through oral, written, and technological means, demonstrating the ability to convey complex business ideas and information to diverse stakeholders.

PO: 4 Quantitative Skills

Utilize quantitative techniques and tools to analyze financial data, interpret statistical information, and solve numerical problems related to business decision-making and financial management.

PO5: Ethical and Social Responsibility

Recognize ethical dilemmas in business practices and demonstrate a commitment to ethical conduct, social responsibility, and sustainability in decision-making processes.

PO6: Global Perspective

Understand the impact of globalization on business operations and develop awareness of cultural diversity, international trade policies, and global economic trends affecting the business environment.

PO7: Entrepreneurial Mindset

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Cultivate entrepreneurial skills and attitudes, including creativity, innovation, risk-taking, and adaptability, to identify and capitalize on business opportunities and foster organizational growth.

PO8: Research and Information Literacy

Conduct independent research using appropriate methodologies, critically evaluate academic and professional literature, and effectively utilize information resources to support business analysis and decision-making.

M. Com. Program Specific Outcomes

PSO1: To inculcate the knowledge of business and the techniques of managing the business with special focus on marketing, Insurance and banking theory law and practices and to develop an ability to apply knowledge acquired in problem solving.

PSO2: Ability to work in teams with enhanced interpersonal skills and communication.

PSO3: Ability to work in MNCs as well as Private and Public companies.

PSO4: To acquaint a student with conventional as well as contemporary areas in the discipline of Commerce which enable the students to work in different domains like Accounting, Taxation, HRM, Banking and Administration.

PSO5: Ability to start their own business.

PSO6: To develop team work, leadership and managerial and administrative skills. Students can go further for professional courses like CA/ CS/CMA/CFA

PSO7: To enable a student well versed in national as well as international trends.

PSO8: To create awareness in Application Oriented Research through research for business decisions.

PSO9: To acquaint a student with conventional as well as contemporary areas in the discipline of Commerce.

PSO10: To enhance the computer literacy and its applicability in business through latest version on tally and e-commerce principles.

PSO11: To develop the decision-making skill through Costing Methods and practical application of Management Accounting principles.

Course Outcomes

FIRST SEMESTER			
Course Code	Course Name	Course Outcomes	
MAJOR I	MANAGEMENT CONCEPTS AND ORGANISATION BEHAVIOUR	CO1	Understand the evolution of management theories and their relevance to modern organizational practices. Explain the basic functions of management: planning, organizing, leading, and controlling. Analyze the role of managers in different organizational contexts.
		CO2	Understand the key concepts and theories related to individual behavior in organizations, including personality, attitudes, motivation, and perception. Evaluate how individual differences affect work behavior and performance. Apply theories of motivation to improve employee engagement and productivity.
		CO3	Identify the stages of group development and the characteristics of effective teams. Analyze the impact of group dynamics on organizational performance. Develop strategies for building cohesive teams and managing conflict effectively.
		CO4	Understand the principles of organizational structure and design, including division of labor, hierarchy, and span of control. Evaluate the advantages and disadvantages of different organizational structures. Analyze the impact of organizational design on efficiency and flexibility.
		CO5	Explore various leadership theories and styles, including transformational and transactional leadership. Understand the impact of different management styles on employee behavior and organizational culture. Develop personal leadership strategies that align with organizational goals and employee needs.
MAJOR II	BUSINESS ENVIRONMENT	CO1	Understand the concept, significance, and nature of the business environment. Identify and differentiate between the internal and external elements of the business environment. Comprehend the changing dimensions of the business environment and its impact on businesses. Develop skills in environmental scanning and monitoring techniques to anticipate and adapt to business environment changes.
		CO2	Recognize the significance and elements of the economic environment affecting business operations. Understand the relationship between economic systems and the business environment. Analyze the impact of economic planning in India, government policies (industrial, fiscal, monetary, EXIM) on business. Evaluate the role of public sector, development banks, and economic reforms in the economic development of India and their relevance to business.
		CO3	Assess the critical elements of the political environment and their impact on business. Examine the interplay between government and business and the changing dimensions of this relationship. Understand the implications of legal environment changes in India, including the Competition Act, FEMA, and licensing policy, on business operations.
		CO4	Identify the critical elements of the socio-cultural environment and their influence on business. Analyze social institutions, values, attitudes, and groups, including the middle class and its impact on business. Discuss the dualism in Indian society, problems of uneven income distribution, the emerging rural sector, and their implications for Indian business.

			Understand the social responsibility of business, consumerism in India, and the Consumer Protection Act.
		CO5	Evaluate the role of multinational corporations, foreign collaborations, and non-resident Indians in the Indian corporate sector. Understand the significance of international economic institutions like the WTO, World Bank, and IMF to India. Assess of the impact of foreign trade policies and Rupee devaluation on business. Comprehend the technological environment in India, policy on research and development, patent laws, and technology transfer.
MAJOR III	ADVANCED FINANCIAL ACCOUNTING	CO1	Understand the factors affecting the value of Goodwill and apply various methods for its valuation. Learn to evaluate equity shares using different valuation techniques and understand the implications of share valuation on financial decision-making.
		CO2	Amalgamation, Absorption, External Reconstruction, and Internal Reconstruction. Master the accounting treatment for amalgamation, absorption, and external reconstruction of companies, including the preparation of purchase consideration and the accounting books of purchasing and vendor companies. Understand the procedures for alteration of share capital and the steps involved in internal reconstruction, including schemes of capital adjustment.
		CO3	Holding Companies and Consolidated Financial Statements. Learn to prepare consolidated financial statements for holding companies, including the treatment of minority interest and cost of control. Understand the elimination of common transactions, treatment of contingent liabilities and unrealized profits, revaluation of assets and liabilities, and the accounting for bonus shares within a group structure.
		CO4	Grasp the main features of the double account system and its application in utility and transportation companies. Learn to prepare final accounts including Revenue Account, Net Revenue Account, Capital Account, General Balance Sheet, and Investment Accounts under the double account system.
		CO5	Understand the principles and application of International Financial Reporting Standards (IFRS) and Indian Accounting Standards (Ind AS) in global and local contexts. Learn the accounting treatments for human resource accounting, inflation accounting, dividend distribution, social responsibility accounting, and environmental accounting. Appreciate the importance of these specialized areas of accounting in reflecting the broader economic, social, and environmental impacts of business operations on financial statements.
MAJOR IV	STATISTICAL METHODS	CO1	Understand and apply the concepts of classical, relative, and subjective probability to solve problems. Utilize addition and multiplication probability models to determine the probability of compound events. Apply conditional probability and Bayes' theorem to solve real-world problems. Describe the characteristics and applications of binomial, Poisson, and normal distributions.
		CO2	Analyze decision environments and identify optimal decisions using expected profit under uncertainty. Apply the principles of assigning probabilities to uncertain outcomes in decision-making processes. Understand and apply utility theory to make decisions under uncertainty.
		CO3	Distinguish between probability and non-probability sampling methods and identify appropriate contexts for their use. Recognize and mitigate

			sampling and non-sampling errors in research. Understand and apply the Law of Large Numbers and the Central Limit Theorem in the context of sampling distributions. Describe the characteristics of sampling distributions and their relevance to statistical inference.
		CO4	Perform point and interval estimation for population means, proportions, and variances. Understand and apply hypothesis testing, including identifying types of errors and determining appropriate sample sizes. Conduct Z-tests, T-tests, and F-tests to analyze large and small samples for statistical inference
		CO5	Understand and apply Chi-square tests for goodness-of-fit and independence in categorical data. Utilize non-parametric tests such as Sign tests, Wilcoxon Signed Rank tests, Wald-Wolfowitz tests, and Kruskal-Wallis tests in situations where parametric test assumptions do not hold.
MAJOR V	HUMAN RESOURCE MANAGEMENT	CO1	Understand the nature, scope, and objectives of human resource management (HRM) and its impact on organizations. Describe the evolution of HRM, including its history, present status, Analyze the role of HR policies, principles, and the environment in shaping organizational behavior and culture. Understand the concepts of human resource accounting and audit and their relevance to strategic HRM. Identify new challenges in HRM and explore areas of research within the HRM field
		CO2	Explain the process of human resource planning and manpower planning, including their importance and methodologies. Perform job analysis to identify and document job requirements and specifications. Understand and apply various recruitment and selection techniques to attract and hire suitable candidates. Design and implement orientation and placement programs to effectively integrate new employees into the organization
		CO3	Describe the role of training and development in enhancing employee performance and job satisfaction. Implement job evaluation techniques to establish equitable compensation structures. Develop and manage performance appraisal systems that accurately assess employee performance and contribute to organizational objectives. Design economic incentive systems, including wage incentives, benefits, and services, to motivate employees and improve productivity
		CO4	Analyze various theories of motivation, including Maslow's hierarchy of needs and Herzberg's two-factor model, and apply them to workplace scenarios. Utilize behavioral modification techniques to influence employee behavior and motivation. Implement expectancy models to enhance motivational patterns and employee engagement within the organization
		CO5	Understand the nature of leadership and identify different leadership styles and their impact on employee participation and organizational performance. Foster effective employee communication using appropriate communication processes and systems. Develop and implement employee counseling programs, understanding their types and benefits to support employee well-being and performance
SECOND SEMESTER			
Course Code	Course	Course Outcomes	
MAJOR VI	MANAGERIAL ECONOMICS	CO1	Understand the objectives of a firm and the intersection of economic theory with managerial decision-making. Describe the role and

			responsibilities of managerial economists in organizational decision-making. Apply fundamental economic concepts such as the incremental principle, opportunity cost principle, discounting principle, and equi-marginal principle to solve business problems.
		CO2	Analyze individual and market demand functions and understand the law of demand and its determinants. Calculate and interpret the elasticity of demand, including price elasticity, income elasticity, and cross elasticity, and use these concepts in managerial decisions.
		CO3	Apply cardinal utility approach, indifference curve approach, revealed preference theory, and theory of consumer choice under risk to consumer behavior analysis. Estimate demand for major consumer durable and nondurable products and apply demand forecasting techniques for business planning
		CO4	Production Theory and Pricing Practices: Understand and analyze production functions, including the stages of production and economies of scale. Estimate production and cost functions, and understand the nature, shape, and inter-relationship of short and long-run cost functions. Apply economic value analysis and familiarize with various pricing practices and methods of price determination
		CO5	Identify characteristics of different market structures (perfect competition, monopolistic competition, oligopoly, and monopoly). Determine price and firm's equilibrium in the short-run and long-run under various market conditions and understand the implications of price discrimination, international price discrimination, dumping, and transfer pricing on business strategies
MAJOR VII	ACCOUNTING FOR MANAGERIAL DECISIONS	CO1	Understand the objectives, nature, and scope of financial accounting, cost accounting, and management accounting. Identify the roles and responsibilities of management accounting in the context of managerial decisions. Analyze the impact of management accounting information on managerial decisions and organizational strategy.
		CO2	Explain the concept of responsibility accounting and identify the different types of responsibility centers (cost, profit, and investment centers). Understand and address issues related to transfer pricing and the objectives and determinants of responsibility centers. Develop, implement, and control budgets, understanding the essentials, types, and significance of budgeting, including fixed and flexible budgets, zero-base budgeting, and performance budgeting
		CO3	Apply standard costing as a control technique, including setting and revising standards. Perform variance analysis, identifying and analyzing material, labor, and overhead variances, and understanding their uses and relevance to budgeting and standard costing. Manage and dispose of variances in a way that aligns with organizational objectives and accounting practices
		CO4	Understand the concept of marginal cost and the differences between marginal costing and absorption costing. Apply cost-volume-profit analysis and break-even analysis to make informed decisions regarding sales mix, make-or-buy decisions, and discontinuation of product lines. Evaluate the assumptions and practical applications of break-even analysis in various business scenarios
		CO5	Conduct horizontal, vertical, and ratio analyses of financial statements to assess an organization's financial health. Perform cash flow and funds

			flow analyses to understand the financial dynamics of an organization. Apply financial statement analysis techniques to inform managerial decisions related to investment, financing, and operational activities
MAJOR VIII	MARKETING MANAGEMENT	CO1	Understand the concept, nature, scope, and importance of marketing in contemporary business environments. Analyze the evolution of marketing concepts and the significance of the marketing mix in strategic marketing planning. Evaluate social, ethical, and legal issues in marketing, understanding their impact on business strategies and operations. Explore the nuances of marketing services, international marketing, green marketing, cyber marketing, and relationship marketing
		CO2	Define and classify products, understanding major decisions related to product lines and mixes. Develop strategies for branding, packaging, and labeling that align with product and brand identity. Analyze the strategic implications of the Product Life Cycle and integrate them into product planning and development. Understand the new product development process and consumer adoption models to manage product introductions effectively
		CO3	Identify and analyze factors affecting price determination and integrate them into pricing strategies. Develop and implement pricing policies and strategies, considering market and organizational factors. Utilize discounts and rebates effectively as tools in pricing strategies to achieve marketing objectives
		CO4	Understand the nature, functions, and types of distribution channels, and make informed decisions regarding their management. Analyze the roles of intermediaries in distribution channels and develop strategies for channel management. Evaluate retailing and wholesaling strategies to optimize distribution and physical distribution decisions
		CO5	Comprehend the communication process and develop an integrated promotion mix strategy, including advertising, personal selling, sales promotion, publicity, and public relations. Plan and determine advertising budgets, design and test advertising copy, and select appropriate media for advertising campaigns. Assess advertising effectiveness and utilize various tools and techniques of sales promotion to support marketing objectives
MAJOR IX	FINANCIAL MANAGEMENT	CO1	Understand the meaning, nature, and scope of financial management, including the goals of profit maximization versus wealth maximization. Comprehend finance functions - investment, financing, and dividend decisions - and their impact on organizational success. Analyze different investment evaluation criteria, such as net present value (NPV), internal rate of return (IRR), profitability index, payback period, and accounting rate of return. Apply concepts of NPV and IRR comparison, capital rationing, and risk analysis in capital budgeting decisions.
		CO2	Calculate and interpret the cost of various capital components (debt, preference capital, equity capital, and retained earnings) and the combined (weighted) cost of capital. Understand and apply the concept of the Capital Asset Pricing Model (CAPM) in determining the cost of equity. Measure and analyze the effects of operating and financial leverage on profits, including the examination of alternative financial plans
		CO3	Explore capital structure theories, including Traditional and Modigliani-Miller hypotheses, both without taxes and with taxes. Apply theoretical concepts to determine an optimal capital structure in practical situations

		CO4	Understand the issues surrounding dividend decisions, including Walter's model, Gordon's model, and Modigliani-Miller hypothesis. Analyze the relevance of dividend policies and their impact on uncertainty. Evaluate dividend policy in practice, including the forms of dividends and the importance of stability in dividend policy
		CO5	Define the meaning, significance, and types of working capital, and calculate operating cycle periods and working capital requirements. Explore financing options for working capital and understand the norms of bank finance. Manage cash, receivables, and inventory effectively including the use of factoring services and the consideration of various committee reports on bank finance
MAJOR X	ENTREPRENEURIAL DEVELOPMENT AND SMALL BUSINESS MANAGEMENT	CO1	Understand the concept, definition, nature, and characteristics of small business and its importance in the economy. Analyze the relationship between small and large businesses and understand the scope and types of small businesses. Recognize the rationale and objectives behind small businesses and their role as a seedbed of entrepreneurship.
		CO2	Differentiate between an entrepreneur and a manager and understand the concept of entrepreneurship. Identify and develop entrepreneurial competencies necessary for successful business management. Explore the functions and types of entrepreneurship, including the focus on women and rural entrepreneurship.
		CO3	Master the steps involved in setting up a small enterprise, from project identification to selecting a product. Conduct market and technical analyses to evaluate the feasibility of project ideas and formulate project reports. Address the initial challenges faced in establishing small enterprises, including project feasibility assessment and preparation of project reports.
		CO4	Understand the need for growth in small businesses and identify various growth strategies, including expansion, diversification, and subcontracting. Develop strategies to implement growth in small businesses while considering the potential risks and benefits
		CO5	Identify and leverage incentives and subsidies offered by central and state governments to support small businesses. Understand how government schemes can aid in the startup and growth of small enterprises, enhancing their competitiveness and sustainability.
THIRD SEMESTER			
MAJOR XI	FINANCIAL MARKETS AND SERVICES	CO1	Understand the constituents and functions of the Indian Financial System and its role in economic development. Analyze financial development ratios and the inter-relationship between the financial system and industrial development. Evaluate efficiency indicators of the financial system, including the role of the RBI and the impact of financial sector reforms in India. Assess the globalization of the Indian Financial System and its implications for domestic markets
		CO2	Describe the major segments of financial markets, including money markets, capital markets, foreign exchange markets, and government security markets. Understand the operations and instruments of the money market, such as call money, repos, T-bills, commercial papers, and certificates of deposits. Analyze the structure and functioning of capital markets, including primary and secondary markets, cash/spot and derivative markets, and equity and debt markets
		CO3	Comprehend the processes of securities trading and settlement and the

			importance of listing securities. Understand the functions of stock exchanges and the operations of OTCEI and NSE. Evaluate the role of SEBI in ensuring fair market practices and investor protection, along with recent trends in the securities market
		CO4	Gain knowledge of fixed income securities, including bonds, warrants, and specific innovations in bond features. Understand common stocks and their characteristics, including bonus shares, right shares, ADRs, and GDRs. Explore the features and implications of hybrid securities, such as convertible debentures, ECBs, and FCCBs
		CO5	Identify the nature and types of financial services, including fee-based and fund-based services. Analyze the role and importance of credit rating, factoring, venture financing, angel financing, and securitization. Understand the functions of merchant banking, and the strategic importance of mergers and acquisitions. Examine the methods of issue of securities and their implications for corporations and investors
MAJOR XII	ECONOMIC LEGISLATION	CO1	Understand the concept of competition and the historical development of competition law. Explain the key provisions of the Competition Act, 2002, including anti-competitive agreements, abuse of dominant position, and regulation of combinations. Identify the role and functions of the Competition Commission of India and understand the procedure for appearance before the Commission. Comprehend the compliance requirements under the Competition Law. Understand the genesis, objectives, and rights under the Consumer Protection Act, 1986, and identify the nature and scope of remedies available to consumers
		CO2	Understand the objectives behind the regulation of essential commodities and the powers vested in the Central Government. Identify procedures related to the seizure and confiscation of essential commodities and summary trial processes. Explain the significance of the Standards of Weights and Measures Act, 1976, and its implications for trade and commerce
		CO3	Grasp the objectives and key definitions under the Foreign Exchange Management Act (FEMA). Differentiate between current and capital account transactions, and understand regulations related to foreign direct investment (FDI). Comprehend the procedures for the acquisition and transfer of immovable property, establishment of branch offices in India, and the export of goods and services. Understand the process for the realization and repatriation of foreign exchange, roles of authorized persons, and the framework for penalties and enforcement under FEMA
		CO4	Understand the various kinds of intellectual property (IP) and the underlying concepts. Explain the rights, laws, and enforcement mechanisms related to trademarks, copyrights, patents, and designs. Identify the procedures and best practices for protecting intellectual property in India and internationally
		CO5	Understand the powers and functions of the Securities and Exchange Board of India (SEBI) and the importance of disclosure by companies. Explain the regulatory framework related to collective investment schemes, issuance of directions by SEBI, and penalties. Grasp the adjudication procedure, appeal process to the tribunal, and the role of the central government in offences and punishment. Understand the process for making rules and regulations under the SEBI Act and the significance of the SEBI annual report

MAJOR XIII	CORPORATE TAX PLANNING	CO1	Understand the concepts of tax planning and tax management, and differentiate between them. Explain the distinctions and implications of tax avoidance and tax evasion. Develop strategies for effective tax planning and management to optimize tax liabilities while ensuring compliance with tax laws
		CO2	Understand the computation of income from business and the impact of depreciations on taxable income. Explain the concepts of Minimum Alternate Tax (MAT), Dividend Distribution Tax, and tax on income distributed to unit holders. Identify tax incentives available to exporters and how to apply them in corporate tax planning
		CO3	Apply tax planning strategies in making foundational corporate decisions for new businesses. Evaluate tax considerations in decisions related to capital structure, dividend distribution, owning vs. leasing, making vs. buying, and other critical business decisions. Understand the tax implications of selling assets used for scientific research and decide between repairing or replacing assets, and between shutting down or continuing operations
		CO4	Comprehend the tax implications of business restructuring, including amalgamations and demergers. Analyze various provisions under tax laws that affect business restructuring. Develop strategies for tax planning in the context of business restructuring to optimize tax liabilities
		CO5	Understand the processes and obligations related to Tax Deducted at Source (TDS), Tax Collected at Source (TCS), and advance tax payments. Develop an understanding of the advisories needed on various tax issues for informed decision-making. Equip with the knowledge to ensure compliance with tax laws while making advance tax payments and handling TDS/TCS
OPTION PAPER I	HUMAN RESOURCE DEVELOPMENT	CO1	Students will understand the contemporary trends and challenges in human resource development at both micro and macro levels. They will be able to identify and describe the concepts and subsystems of HRD, recognize the evolving roles, concerns, and professionalism within HRD, and articulate the challenges and expectations for future managers and management practices.
		CO2	Students will gain knowledge on the steps involved in career planning and development, including the distinctions and implications of internal vs. external mobility. They will be able to analyze key issues in career development, understand the benefits of career planning and development, and propose solutions to common career problems
		CO3	Students will be able to describe and evaluate various management development techniques and the essential ingredients of management development programs. They will learn to assess their managerial skills, understand the self-development process, and apply the phases of development to personal and professional growth
		CO4	Students will comprehend the concepts of rationalization and automation within the industry, including their aims, stages, and impacts on employment. They will be able to critically evaluate the government's policy on automation and differentiate between automation and mechanization
		CO5	Students will explore the contemporary problems faced by managerial personnel and the concept of quality of work life (QWL). They will understand the barriers to QWL and strategies for improvement, and they

			will be able to describe the structure, goals, and effectiveness of quality circles
OPTION PAPER II	HUMAN RESOURCE ACCOUNTING	CO1	Students will understand the fundamental concepts of human resource planning, including its meaning, definition, and importance. They will be able to differentiate between natural resources and human resources, appreciate the value of investing in human capital, and analyze the relationship between workforce quality and performance. Additionally, students will explore the efficient use of human resources in driving organizational growth and understand the principles of modern market investment theory related to human capital
		CO2	Students will gain insights into human capital, its investment, and the balance between expenditure and productivity. They will explore the impact of education and training on human capital development and understand the dynamics of human capital discrimination. The course will equip students to critically evaluate the investment in human capital and its implications on productivity and discrimination
		CO3	Students will learn to convert human resource data into monetary values, understanding the objectives and limitations of human resource accounting. They will be introduced to various approaches to human resource accounting, enabling them to apply these methods in assessing the value of human capital within organizations effectively
		CO4	Students will delve into the investment approach to human resources, including the costs associated with recruiting and training, depreciation, and rates of return. They will examine the relationship between organizational behavior and turnover, identifying strategies for minimizing the waste of human resources and enhancing retention through effective investment in human capital
		CO5	Students will understand the components and significance of personnel costs, including fringe benefits, and the role of auditing and accounting in human resource management. They will learn about audit relationships and techniques, as well as how to integrate personnel costs into accounting and financial statements, equipping them with the skills to analyze and optimize human resource investments for financial reporting and decision-making
FOURTH SEMESTER			
MAJOR XIV	STRATEGIC MANAGEMENT	CO1	Understand and define the concept of strategy, including the different levels at which strategy operates within an organization. Explore various approaches to strategic decision-making and the importance of mission, purpose, objectives, and goals in guiding these decisions. Analyze the concept of Strategic Business Units (SBUs) and understand functional level strategies, including outsourcing strategies, and their significance in overall strategic planning
		CO2	Grasp the concept of the business environment and its components, and the importance of environment scanning and appraisal. Conduct organizational appraisals to identify strengths, weaknesses, opportunities, and threats (SWOT analysis) and understand strategic advantage analysis and diagnosis. Apply tools and techniques for analyzing the internal and external environments to inform strategic decisions
		CO3	Understand the process of strategy formulation and the different strategic alternatives available, including modernization, diversification, integration, mergers, takeovers, and joint strategies. Evaluate turnaround,

			divestment, and liquidation strategies as options for organizational change. Analyze industries and competitors, perform SWOT analysis, and understand the factors affecting strategic choice, including generic competitive strategies like cost leadership, differentiation, focus, value chain analysis, benchmarking, and service blueprinting
		CO4	Develop marketing, production/operations, R&D, personnel, and financial plans and policies as part of functional strategies. Understand the inter-relationship between strategy formulation and implementation, including issues in strategy implementation and resource allocation. Apply strategic management principles to develop coherent and aligned functional strategies that support the overall strategic direction of the organization
		CO5	Examine the relationship between strategy and organizational structure, including considerations for designing structures to support strategic initiatives. Understand organizational design and change management in the context of implementing strategies. Learn the overview of strategic evaluation, strategic control, and the techniques of strategic evaluation and control, enabling effective oversight and adjustment of strategic initiatives
MAJOR XV	E-COMMERCE	CO1	Understand the fundamental concepts and differences between electronic commerce and traditional commerce, including media convergence, and the channels of E-Commerce. Explore the business applications of E-Commerce for consumers and organizations, and appreciate the special features of E-Commerce as an electronic trading system. Grasp the concept and evolution of the Internet, including web technologies, global publishing, universal reader concept, client-server architecture, hypertext publishing, URLs, HTTP, HTTPD servers, HTML, HTML forms, and CGI gateway service
		CO2	Identify and analyze various E-Commerce business models, including supply chain management, product and service digitization, remote servicing, and online marketing and advertising. Understand the resources and planning needed for E-Commerce infrastructure, workflow management, mass customization, product differentiation, organization restructuring, integrated logistics, and distribution. Explore knowledge management issues in E-Commerce and the role of E-Commerce infrastructure in addressing these challenges
		CO3	Understand the special features required in payment systems for E-Commerce, including types of E-Payment systems like E-Cash, currency servers, digital token-based credit cards, smart cards, electronic purses, and debit cards. Discuss the business issues, economic implications, operational, credit, and legal risks associated with E-Payment systems and the risk management options available. Analyze the components of an effective electronic payment system and its importance in E-Commerce transactions
		CO4	Understand the needs and alternative models of B2B E-Commerce, including the technologies supporting B2B E-Commerce like EDI, paperless trading, EDI architecture, and EDI standards. Explore the costs of EDI infrastructure, features of EDI service arrangements, and the advantages of Internet-based EDI and FTP-based messaging for business transactions
		CO5	Identify the security risks associated with E-Commerce, including exposure of resources, types of threats, sources of threats, and the security

			tools and risk management approaches available. Understand the importance of a rational security policy for E-Commerce and explore the IT Act 2000 and its implications for E-Commerce businesses. Examine the role of corporate digital libraries in enhancing E-Commerce security and knowledge management
MAJOR XVI	CORPORATE REPORTING PRACTICES	CO1	Understand and differentiate between the deductive and inductive approaches in theory formulation within accounting. Explore critical, normative, and positive theories of accounting and their implications on the formulation of accounting standards and practices. Analyze the concepts of income and balance sheets for financial reporting and discuss the limitations of accounting reports in accurately reflecting a company's financial position
		CO2	Gain knowledge of Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS), their origins, applications, and importance in global finance. Understand the process for issuing, complying with, and the current status of accounting standards in India. Discuss ethical considerations facing accountants and the importance of harmonization of accounting standards for global business operations
		CO3	Explore the valuation of inventories (AS-2), depreciation policy (AS-6), and the measurement and reporting of revenues and expenses (AS-9) through the lens of relevant accounting standards. Analyze accounting practices for investments (AS-13), and understand the valuation and revaluation of assets and liabilities (AS-10, AS-26, AS-29), emphasizing their impact on financial statements
		CO4	Understand the objectives and roles of corporate reporting in economic development, including both statutory and non-statutory reporting. Examine the financial reporting of interests in joint ventures (AS-27), cash flow statements (AS-3), segment reporting (AS-17), accounting for earnings per share (AS-20), and periodic and interim financial reporting (AS-25). Discuss recent developments in financial reporting, such as e-financial reporting and sustainability reporting, and explore the international dimensions and factors affecting corporate reporting
		CO5	Understand the purposes and types of corporate disclosure, including fair disclosure and its objectives. Examine the determinants of the extent of disclosure and the importance of disclosing accounting policies (AS-1) and related party disclosures (AS-18). Discuss theories of voluntary disclosure and the increasing importance of environmental and social disclosure in corporate reporting practices
OPTION PAPER III	LABOUR LEGISLATION	CO1	Students will gain a thorough understanding of the Factories Act, 1948, including its key definitions and provisions related to health, safety, and welfare. They will learn about the legal requirements for working hours, holidays, the employment of women and young persons, and annual leave with wages. Students will be equipped to assess compliance with these standards in a factory setting
		CO2	Students will comprehend the Workmen's Compensation Act, 1923, focusing on definitions, rules regarding compensation, and employer liability. They will explore the act's coverage of occupational diseases and the framework for providing compensation to workers. The course will enable students to navigate the intricacies of workmen's compensation effectively

		CO3	Students will understand the Payment of Wages Act, 1936, including its definitions and the rules governing the payment of wages, permissible deductions, and the maintenance of registers & records. They will learn about the roles of inspectors, the appeal process, and penalties for non-compliance, preparing them to ensure adherence to wage regulations
		CO4	Students will be introduced to the Industrial Disputes Act, 1947, learning about its definitions, the processes for resolving industrial disputes, the legal framework for strikes and lockouts, and the rules governing layoff and retrenchment. This unit will prepare students to navigate labor relations within the context of industrial disputes effectively
		CO5	Students will explore the Industrial Employment (Standing Orders) Act, 1946, focusing on definitions, the schedule of matters to be included in the Standing Orders, the submission and certification process, and appeals. They will understand the significance of Standing Orders in maintaining industrial discipline and the provisions for payment of subsistence allowance and penalties for non-compliance
OPTION PAPER IV	ORGANIZATIONAL DEVELOPMENT	CO1	Understand the fundamental definitions, growth, and relevance of Organizational Development (OD).Comprehend the underlying assumptions about individuals, groups, leadership, and organizational systems in the context of OD.Recognize the values and belief systems of behavioral scientists and change agents, and how they influence organizational change
		CO2	Gain insights into the OD process including entering and contracting, diagnosing systems at different levels, and collecting and analyzing diagnostic information.Learn how to effectively design and implement OD interventions, manage change, and evaluate the outcomes of OD interventions.Develop the skills for feedback provision and the ability to lead and manage change processes within organizations
		CO3	Acquire knowledge on the variety and nature of OD interventions.Understand the role, style, competencies, and challenges faced by OD practitioners, including power dynamics and politics.Learn about personal and interpersonal interventions, including employee empowerment, sensitivity training, the Johari Window Model, Transactional Analysis, and stress management techniques
		CO4	Explore the importance of teams and workgroups as strategic units within organizations.Master team and intergroup intervention techniques such as team building, role analysis, force field analysis, and third-party peacemaking.Understand the process and benefits of diagnostic meetings, team building, and intergroup interventions for enhancing organizational effectiveness
		CO5	Study comprehensive and structural interventions including the confrontation meeting, strategic management activities, and the application of various organizational development theories and modelsExamine the impact of job design, Quality Circles, Management by Objectives (MBO), socio-technical systems, and work restructuring on organizational development.Analyze the role of physical settings, quality of work life projects, and the collateral organization in facilitating organizational change and development

Department : MASTER OF SOCIAL WORK (MSW)

Programme Outcomes (POs):

- P01:** Students will apply the knowledge of the respective domain of knowledge and specialization to the solution of complex problems in professional, social and personal life.
- P02:** Develop a multidisciplinary perspective and contribute to the knowledge capital of the world in general and the country in particular.
- P03:** Acquire communication and presentation skills and become employable in the job market.
- P04:** Critically review research literature and pursue socially relevant research to solve problems with sustainable approach and create new knowledge in their respective domain
- P05:** Develop sensitivity for social issues and become proactive citizens.

Programme Specific outcome (PSO):

- PO 1. Apply at the MSW level the foundation knowledge, skills, values and ethics of socialwork practice in the assessment and treatment of individuals, families, groups, organizations, and communities.
- PO 2. Develop a professional identity as a social worker by applying professional values and ethics to social work practice.
- PO 3. Demonstrate an understanding and appreciation for human diversity, to engage in non-discriminatory culturally sensitive practice that seeks social and economic justice for clients, without regard to age, class, caste, culture, disability, ethnicity, family structure, gender, marital status, national origin, race, religion, and sexual orientation.
- PO 4. Use appropriate supervision and consultation to conduct research and disseminate research findings that contribute to enhancement of students' personal and professional development.

Course Outcomes

FIRST SEMESTER			
MSW 411	Introduction to Professional Social Work	CO1	To understand the concept, definition, objectives, functions, theoretical foundations, the historical development and methods of social work
		CO2	To gain knowledge on the theories of Social Work
		CO3	To imbibe the principles, values and ethics of professional social work; recognise the need and importance of social work education and field work practicum
		CO4	To introduce the Fields of Social Work:
		CO5	To understand the practice of Social Work Education in India
MSW 412	Sociology for Social Work practice	CO1	To understand the basic concepts and theories about society
		CO2	To understand the functions of the insititutions
		CO3	To have a wider knowledge of the culture and social process
		CO4	To gain knowledge the contributions of different sociological thinkers.
		CO5	To acquire skills to identify and critically analyze existing and emerging social problems
MSW 413	Psychology for Social work practice	CO1	To understand the relevance of Psychology to social work practice.
		CO2	To understand the basic concepts and processes in social psychology and its relevance to Social Work
		CO3	To understand determinants and processes of personality development.
		CO4	To understand the Process of Human Behaviour
		CO5	Understanding the symptoms, causes and treatment of major and minor mental illnesses and the role of Social Worker
MSW 414	Social Work for individuals	CO1	To understand Social Casework as a method of Social Work practice.
		CO2	To be clear with the approaches and models of Case Work
		CO3	To gain knowledge about the Casework Process and the relationship of the case worker and the client
		CO4	To understand the basic concepts on the tools, techniques, processes and Skills of working with individuals.
		CO5	To develop an understanding of application of case works in diverse settings
MSW	Social Work with groups	CO1	To understand about the group and group work as a method

415			of professional social work
		C02	To learn theoretical approaches that inform group work practice
		C03	To gain insight into dimensions of group processes and group work practice
		C04	To develop an understanding of process of group development
		C05	To develop competencies for working with groups in diverse settings
MSW 416	FIELD WORK & RURAL CAMP	C01	To develop work plan in consultation with agency supervisor
		C02	To develop capacity for observation and analysis of social realities.
		C03	To practice the methods of working with individuals and groups and communities
		C04	To develop understanding of the needs, problems and Programmes for different target groups.
SECOND SEMESTER			
MSW 421	SOCIAL WORK WITH COMMUNITIES	C01	To gain knowledge about the primary method of social work practice with communities and the steps involved in it
		C02	To understand the models of community organization
		C03	To be familiarize with the methods of community organization
		C04	To underst social action as a methods of social work and to know the approaches of Social Action
		C05	To understand various Tools of Social Action.
MSW 422	SOCIAL WORK RESEARCH AND STATISTICS	C01	To comprehend the importance of research as a social work method.
		C02	To be familiar with various research designs, methods, of social work research.
		C03	To understand the sampling techniques to use in the research
		C04	To be familiar with, statistical tools and techniques relevant to social work research.
		C05	To learn how to Write a research report
MSW 423	SOCIAL POLICY AND SOCIAL WELFARE ADMINISTRATION	C01	To gain knowledge about social policy.
		C02	To understand the welfare policies of the government
		C03	To understand the administration of Human service organizations

		C04	To the learn the Procedures in registering an organization
		C05	TO understand the Administrative Processes and administrative skills
MSW 424	HUMAN RIGHTS AND SOCIAL LEGISLATION	C01	To gain knowledge about human rights and minorities
		C02	Gain insight into the problems faced by the people belonging to different strata of society and tools available to tackle it
		C03	To gain knowledge on Social Legislation:
		C04	To know about various social legislation to assist social issue
		C05	To know about various social legislation to address other social issue
MSW 425	FIELD WORK	C01	To work in agencies working in different types of areas of Social Work practice
		C02	To develop work plan in consultation with agency supervisor
		C03	To develop capacity for observation and analysis of social realities
		C04	To practice the methods of working with individuals and groups
		C05	To develop understanding of the needs, problems and Programmes for different target groups
THIRD SEMESTER			
MSW 511	SOCIAL WORK AND DISASTER MANAGEMENT	C01	Enable the learner to know and understand the nature and types of disaster.
		C02	To gain knowledge of various disaster management strategies
		C03	To learn the international and national policies, institutional mechanisms in disaster services
		C04	To understand the role of international and national organizations in combating disaster and their role in disaster management
		C05	To study the role of Social Work practice in Disaster management
	SPECIALISATION - I		Human Resource Management
MSW 512	HUMAN RESOURCE MANAGEMENT AND OCCUPATIONAL SOCIAL WORK	C01	To understand the Principles and approaches of Management
		C02	To understand the Concept of Personnel Management, Human Resource Management (HRM) – Strategic Human

			Resource Management
		C03	TO understand the importance of Human Resource Planning
		C04	To gain knowledge on social work orientation on corporate culture, particularly as it relates to social issues in the workplace.
		C05	To acquire the skills of comprehending a multi-stakeholder perspective in viewing workplace issues.
MSW 513	LABOUR LEGISLATIONS AND LABOUR WELFARE	C01	Develop the understanding of Labour , labour welfare and functions of labour welfare officer.
		C02	To gain knowledge about labour legislations.
		C03	Develop understanding about types and wages and laws related to it
		C04	To have an understanding about Legislations relating to social security
		C05	To understand the Legislations for labour welfare in different types of industries.
MSW 514	INDUSTRIAL RELATIONS	C01	To understand the concept, approaches and actors of industrial relations
		C02	To develop the knowledge on various statutory / legal aspects
		C03	To develop knowledge on Industrial Dispute and legislation pertaining to it
		C04	To Understand the intervention of trade union and the its governing Act
		C05	To acquire interpersonal relationship and negotiation skills
		C02	Students will learn the Process of Job Analysis, Job Specification-Recruitments, Methods of recruitment and Placement process.
		C03	Learn the process of training and career planning development and the methods of performance appraisal.
		C04	Students are able to gain the knowledge of methods of wage and salary administration-methods of wage payments and employee benefit services etc.
		C05	It will able to develop skills of personnel record and audit
	Community Development		Specialisation
MSW 518	RURAL COMMUNITY DEVELOPMENT	C01	To gain knowledge about rural realities and problems in rural communities
		C02	To gain knowledge about theories and approaches of community development and experiments about rural community development

		C03	To learn about community development programmes in India.
		C04	To understand the local self administration of rural development and various development agencies working for rural development
		C05	To learn about the Contemporary Approaches/Strategies in Community development
MSW 519	URBAN COMMUNITY DEVELOPMENT	C01	Develop knowledge and understanding about the Urban community and its problem
		C02	To acquire knowledge on the Concepts: History and Theories of Urbanization
		C03	To have a wider knowledge about the Issues and Services related to urban slums
		C04	Develop an understanding about the Concept of Community Development and its administration
		C05	To understand the Urban Community Development policies and Programmes
MSW 520	LIVELIHOOD PROMOTION	C01	To understand the concept and importance of livelihood and livelihood strategies
		C02	To develop understanding about the livelihood frameworks.
		C03	To acquire skills in developing livelihood interventions
		C04	To understand the nature of and development of Markets for better Livelihoods
		C05	To know about the various initiatives taken by different agencies in Livelihood Promotion
MSW 524	FIELD WORK & STUDY TOUR	C01	To develop work plan in consultation with agency supervisor
		C02	To practice the methods of working with communities
		C03	To identify and utilize human, material and financial resources
MSW 525	BLOCK PLACEMENT	C01	To undergo training for twenty five days in an agency setting according to the specialization.
		C02	To understand the role of the agency in addressing current social realities.
		C03	To acquire and consolidate skills relevant to the profession
		C04	To foster an appropriate attitude and professional development at work.
FOURTH SEMESTER			
MSW	CORPORATE SOCIAL	C01	To understand the concept , scope and models of corporate

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611	RESPONSIBILITY		social responsibility
		C02	TO know about the Stakeholders and tools of Corporate social responsibility
		C03	To acquire skills to frame CSR policies
		C04	To acquire knowledge of on implementing CSR in the Indian workplace
		C05	To know about the Legal provisions, specifications and models on CSR
Specialisation Human Resource Management			
MSW 612	ORGANISATIONAL BEHAVIOUR	C01	To gain knowledge about organizational behavior
		C02	To know about the foundations of Individual behaviour
		C03	To learn about the foundation of group behaviour
		C04	To understand the functions of organizational structure
		C05	To gain knowledge about the work stress and employee engagement
MSW MSW 613	HUMAN RESOURCE DEVELOPMENT	C01	To understand the concept, processes and outcomes of human resource development
		C02	To understand about Performance appraisal and performance management..
		C03	Students will gain the knowledge of Career planning career development and succession planning.
		C04	Students will develop insight in to the conceptual framework for training.
		C05	To develop the knowledge and acquire skills in organizational development interventions
Specialisation Community Development			
MSW 616	Participatory Approaches in Rural And Urban Development	C01	To understand the overview of approaches, methods and techniques in PRA in rural and urban areas
		C02	Understanding the project cycle and project management
		C03	To develop an understanding of tools and techniques of monitoring, evaluation and sustainability analysis
		C04	To gain knowledge on the various approaches to participatory approach.

		C05	To develop knowledge on action research
MSW 617	Social Entrepreneurship	C01	To have knowledge on third sector
		C02	To develop understanding about social entrepreneurship. .
		C03	To get a wider exposure to the social enterprises
		C04	To know the way creating environment for social enterprises
		C05	To strengthen the competence in social entrepreneurship
MSW 620	FIELD WORK	C01	To develop work plan in consultation with agency supervisor
		C02	To continue practicing the methods of working with communities
		C03	To familiarize with manpower planning, Recruitment and Selection Process, Induction & Orientation, in service Training and Development programmes of the organization .
		C04	To design and implement community interventions, Social action, lobbying and awareness generation .
MSW 621	RESEARCH PROJECT	C01	To develop ability to initiate and conduct research
		C02	To develop research Skills of identifying and selecting a research area and preparing research proposal
		C03	To develop skills of doing literature review and steps of research methodology
		C04	To be familiarize with the process of data analysis and report writing
		C05	To know the process of publishing the article.

Department: Mathematics

Programme Outcomes (POs): M.Sc. Mathematics

- PO1: Comprehensive understanding:** To provide students with a comprehensive understanding of advanced mathematical theories, principles, and techniques.
- PO2: Analytical Skills Development:** To develop analytical and problem-solving skills among students through rigorous mathematical training and application.
- PO3: Research Aptitude:** To foster a research-oriented mindset among students, preparing them for further academic pursuits or careers in research and development.
- PO4: Interdisciplinary Applications:** To enable students to apply mathematical concepts and methodologies to various interdisciplinary fields such as engineering, finance, computer science, and physics.
- PO5: Advanced Studies:** To facilitate advanced studies in specialized areas of mathematics including but not limited to algebra, analysis, topology, differential equations, and mathematical modeling.
- PO6: Communication Skills:** To enhance students' ability to communicate mathematical ideas effectively through written reports, presentations, and discussions.
- PO7: Professional Ethics:** To instill a sense of professional ethics and integrity in mathematical practice, emphasizing honesty, accuracy, and respect for intellectual property rights.
- PO8: Career Readiness:** To equip students with the necessary skills and knowledge to pursue careers in academia, industry, government, or entrepreneurship related to mathematics.

Programme Specific Outcomes (PSOs):

- PSO1: Abstract Algebra Proficiency:** To develop a deep understanding of abstract algebraic structures such as groups, rings, and fields, and their applications in various mathematical contexts.
- PSO2: Real and Complex Analysis Mastery:** To master the principles of real and complex analysis, including convergence, continuity, differentiability, and integration, and their applications in theoretical and applied mathematics.
- PSO3: Numerical Methods Competence:** To acquire proficiency in numerical methods and computational techniques for solving mathematical problems, including approximation, interpolation, and numerical integration.
- PSO4: Advanced Algebra Mastery:** To gain expertise in advanced concepts of abstract algebra, particularly on Group theory, Field Extensions, Linear Algebra, deeply on, relation between the algebra of linear operators and the algebra of matrices.

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PSO5: Differential Equations Understanding: To develop a deep understanding of ordinary and partial differential equations, including qualitative analysis, existence and uniqueness theorems, and numerical methods for solving differential equations.

PSO6: Fluid Mechanics Skills: To develop concepts and computational skills on various facets of fluid motion and the mathematical fundamentals involved in its analysis.

PSO7: Advanced Concepts of Analysis: To develop concepts of some of advanced topics in analysis, including Lebesgue measure theory, Topology, and Functional analysis.

M.Sc. Mathematics

Course Outcomes

FIRST SEMESTER			
CourseCode	Course	CourseOutcomes	
MATH 411	ADVANCED ALGEBRA	CO1	To make students understand basic definitions of Groups axioms, Subgroup generated by subsets of a Group
		CO2	To make students understand basic definitions of Quotient groups and Group Actions.
		CO3	To make students understand Compact space and its characteristics.
		CO4	Define Euclidean domains and prove related theorems.
		CO5	Characterize direct, semi-direct products and Abelian groups.
MATH 412	REAL ANALYSIS – I	CO1	To make students understand the basic definition of compact sets, connected sets, sequences.
		CO2	To enable students solve problems on root and ratio tests and define addition and multiplication of series
		CO3	To make students understand limits of function, continuous function, Monotonic function.
		CO4	To enable students for finding derivatives of higher order and vector-valued function
		CO5	To make students understand the definition and existence of integral, properties and related theorems.
MATH 416	GRAPH THEORY	CO1	To make students understand the operations on Graphs.
		CO2	To make students get an idea of Cut sets and Connectivity.
		CO3	To make students understand Coverings, Matchings in Bipartite Graphs and prove related theorems.
		CO4	Define Coloring, Girth and prove related theorems.
		CO5	To make students understand Planarity and prove related theorems.
MATH 536	DIFFERENCE EQUATIONS	CO1	To make students understand the Derivation, Operators and Factorial polynomials.
		CO2	To make students understand general first-order equation.

		CO3	To make students understand Fundamental theorem for homogeneous equations.
		CO4	To make students understand Sturm Liouville Difference equation.
		CO5	To make students construct a difference equation.
SECOND SEMESTER			
CourseCode	Course	CourseOutcomes	
MATH 519	GALOIS THEORY	CO1	To make students understand basic definitions of Polynomial rings, Irreducible criteria.
		CO2	To make students study basic definitions of Algebraic Extensions
		CO3	To make students analyse Separable and inseparable extensions.
		CO4	To enable students prove the fundamental theorem of Galois Theory.
		CO5	To enable students formulate Cyclotomic extensions and abelian extensions over $\mathbb{Q}$.
MATH 425	REAL ANALYSIS– II	CO1	To make students understand the basics of Bounded variation, Metric Spaces, Nowhere dense sets.
		CO2	To enable students for finding uniform convergence Iterated limits, Equi-continuous Families of Functions.
		CO3	To enable students for solving Exponential, Trigonometric and Logarithmic Functions.
		CO4	To enable students define Linear Transformation, the Contraction Principle and prove related theorems.
		CO5	To make students analyze implicit Function, and theorems on Rank and Determinants.
MATH 423	COMPLEX ANALYSIS	CO1	To make students understand basic definitions of Analytic functions and Luca's Theorem.
		CO2	To make students define Linear transformations, Cross ratio and construct elementary conformal mappings.
		CO3	To make students perceive Cauchy's theorem for rectangle and disc.
		CO4	To make students understand basic definitions of Zeros and poles.
		CO5	To make students understand Definite integrals, Taylor's and Laurent's series.
MATH 511	FLUID MECHANICS	CO1	To make students understand the basic laws of mass and energy.
		CO2	To enable students define the Concepts of circulation of fluid in incompressible flows.
		CO3	To enable students interpret Navier- Stokes equations and Decomposition concepts.
		CO4	To make students understand the flows in Potential and its paradox.
		CO5	To enable students view on Boundary layers and prove related theorems.
MATH 413	DISCRETE MATHEMATICS	CO1	To make students understand the basic definition of Posets and lattices with examples.
		CO2	To enable students study special lattices and their properties.
		CO3	To make students understand Atoms, Boolean functions, canonical forms of Boolean expressions.

		CO4	To enable students form Logic gates and solve K-Maps.
		CO5	To make students understand Directed graphs and related theorems.
THIRD SEMESTER			
CourseCode	Course	CourseOutcomes	
MATH 414	TOPOLOGY	CO1	To make students understand definitions of sets, Lattices, Metric Spaces.
		CO2	To make students understand basic definitions of Topology, Separability, Countability.
		CO3	To enable students elaborate Compact space and its characteristics.
		CO4	Define Sequential compactness, Hausdroff space.
		CO5	To make students understand connected space and prove related theorems.
MATH 422	LEBESGUE MEASURE THEORY	CO1	To make students understand the basic definition of σ - algebras and examples.
		CO2	To enable students interpret Measurable functions with examples and related theorems.
		CO3	To make students understand Lebesgue integral of non- negative measurable functions, Lebesgue integral of integrable functions and related theorems.
		CO4	To enable students compare Riemann and Lebesgue integration and can prove theorem on almost everywhere differentiable monotonically increasing functions.
		CO5	To make students understand Absolutely continuous functions, their examples and properties and can Characterize absolutely continuous functions as indefinite integrals.
MATH 424	ORDINARY DIFFERENTIAL EQUATIONS	CO1	To make students understand Qualitative properties of solutions, Eigen values and Eigen functions and vibrating string.
		CO2	Enable students to solve Series solutions of first and second order equations.
		CO3	To enable students construct Legendre polynomials, Bessel functions and their properties.
		CO4	To enable students solve homogeneous linear system with constant coefficients.
		CO5	To enable students find the method of successive approximations and prove Picard's theorem.
MATH 523	ALGORITHMIC GRAPH THEORY	CO1	To make students understand the basics of Graphs and notations, Operations on graphs.
		CO2	Define Search methods ,groups, fields and vector spaces
		CO3	To make students understand Fundamental cut sets, Connectivity and separability.
		CO4	Define Incidence matrix, Cycle matrix, cut set matrices and Path matrix
		CO5	To enable students analyse The shortest path problem using algorithm
MATH 541	INTEGRAL	CO1	To enable students classify integral equation, IVP for ODE

	EQUATIONS	CO2	Define the Concepts of BVP for elliptic PDE and Abel’ s problem.
		CO3	To enable students solve Singular boundary value problems.
		CO4	To make students understand Degenerate kernels and a different approach.
		CO5	Prove theorems on Newmann series.
FOURTH SEMESTER			
CourseCode	Course	CourseOutcomes	
MATH 513	FUNCTIONAL ANALYSIS	CO1	To make students understand the basics of Normed Linear Spaces, Dual Spaces.
		CO2	To enable students characterize finite dimensional normed linear spaces and prove related theorems.
		CO3	To enable students prove Hahn-Banach theorem and related theorems
		CO4	To make students understand Orthonormal sets, Orthonormal basis and prove related theorems.
		CO5	To enable students prove theorems on Separable Hilbert spaces, Orthogonal projections.
MATH 421	LINEAR ALGEBRA	CO1	To make students understand the basic of Linear Transformation, Invariant subspace and matrices.
		CO2	To enable students find the Nilpotent transformation, index and invariance.
		CO3	To enable students formulate Jordan forms, Modules and related theorems
		CO4	To make students understand rational canonical form, trace, transpose and determinants.
		CO5	To enable students analyse Normal transformations and Real Quadratic forms.
MATH 537	PARTIAL DIFFERENTIAL EQUATIONS	CO1	To make students understand the basic of first order PDE, Non-linear first order PDEs.
		CO2	To enable students classify Second order PDE, and can solve Linear PDE with constant solutions.
		CO3	To enable students prove one dimensional wave equation, find adjoint operators.
		CO4	To enable students derive Laplace equation, Poisson equation, Neumann problems for a rectangle and circle.
		CO5	To enable students define Heat Conduction Problem and classify n-variables.
MATH 539	NUMERICAL ANALYSIS USING ORDINARY DIFFERENTIAL EQUATIONS	CO1	To enable students interpret the concepts of Euler, Trapezoidal and Theta method.
		CO2	To make students understand order and convergence of Adams - Bashforth method
		CO3	To make students understand Explicit and Implicit Runge-Kutta scheme.
		CO4	To make students understand A-stability of RK and multistep methods.
		CO5	To enable students solve the errors in Runge-Kutta method.

Department: PG Chemistry

Programme Outcomes (POs)

At the end of PG programme, students will be able to:

- PO1:** To understand and appreciate the diverse aspects and scope of advanced chemistry.
- PO2:** To apply fundamental knowledge of the basic principles in various fields of Chemistry.
- PO3:** To imbibe ethical/moral/social values and create awareness towards environment.
- PO4:** To develop scientific temper/research aptitude, logical thinking, observative skills and the ability to draw inferences.
- PO5:** To collaborate in team, enhance leadership qualities and make them competent and employable. 6. To express the subject effectively and to improve presentation skills.
- PO6:** Express legal and ethical issues and understand the moral dimensions of decisions and responsibilities
- PO7:** Recognise the need and ability to engage in lifelong learning and work effectively as an individual and as a member of diverse team. Students get the ability to act with an informed awareness of issues to participate in civic life through volunteering

Programme Specific Outcomes (PSOs)

Programme Specific Outcome (PSO) Upon completion of the M.Sc. (Chemistry) Programme:

The students would be able:

- PSO1:** To understand systematically the fundamental concepts in Physical Chemistry, Organic Chemistry, Inorganic Chemistry, Environmental Chemistry and all other related areas of Chemistry
- PSO2:** To explain/compare the various concepts and express the subject through writing and oral presentations effectively.
- PSO3:** To develop critical thinking ability by way of solving problems/numerical using basic chemistry knowledge and concepts.

PSO4: To inculcate a habit of self-learning continuously through use of advanced ICT technique and other available techniques/e-resources/books for academic advancement as well as for increasing employability opportunity.

PSO5: To work in team by contributing in laboratory engagements, project work, industrial visits and Chemical Society activities.

PSO6: To understand and develop moral/ethical/social awareness/values through extracurricular and extension activities.

PSO7: To acquaint with the basic principles of equipment/instruments and its applications.

PSO8: To carry out advanced experiments, record the observations present the inference/results and discuss/interpret the result.

PSO9: To demonstrate experimental techniques and methods of advanced nature through project work and develop research aptitude.

PSO10: To make themselves competent for UGC-CSIR NET, GATE and other competitive examinations etc.

Course Outcomes

FIRST SEMESTER			
Course Code	Course	Course Outcomes	
CH-401	Inorganic Chemistry – I	CO1	Detailed study about covalent bonding and structure: Nature of covalent bond, VB and MO theory, symmetry and orbital overlap MO diagrams for homo and hetero nuclear diatomic and simple polyatomic, hybridization, delocalization, ionic character in covalent bond, dipole moment calculation, Bond properties like bond order, bond length, bond energy, their correlation and Electron deficient Hydrides.
		CO2	Demonstrate knowledge of ionic bonding and solid state: Symmetry elements- proper and improper rotation axes, screw axis, glideplane symmetry groups, point and space groups. Close packing of atomic spheres. Crystal system. Unit cell, Bravais lattices. Basic principles and application of X-ray, Neutron and electron diffraction to structural studies. Structures of CsCl, Sphalerite, wurtzite, fluorite and antiferite, rutile, perovskite and spinels. Energetics of ionic bonding –Born-lande,

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			Born –Mayer and Kapustinskii equations - Born-Haber cycle and energetic of dissolution of ionic compounds.
		CO3	Study about the theory of solids: Metallic states- free electron and band theories- imperfections in solids- frankel and schottky defects, non-stoichiometry defect, line defects, plane defects-defect equilibria. Introduction to properties of metals insulators and semiconductors- Hall effect super conductivity and High TC superconductivity. Inter metallic compounds, Solid solution, Leves-Zintle phases. Hume- Rothary rules.
		CO4	Deals with nuclear chemistry: Radioactive decay and equilibrium- Transient and secular equilibria- types of nuclear reactions- counting techniques- G.M, Ionisation and proportional counters. Radioactive techniques, tracer technique- Neutron activation analysis- isotopic dilution analysis- Szilard chalmers process.
		CO5	Explain inorganic chain and ring compounds: Polyanions, Isopoly and heteropoly anions of Vanadium, Molybdenum and Tungsten. Inorganic ring – Borazines, Phosphazines, Silicates. Sulphur-Nitrogen compounds $[S_2N_2, S_4N_4, (SN)_x]$ and phosphorus Sulphides ($P_4S_3, P_4S_4, P_4S_5, P_4S_7, P_4S_{10}$). Metal cluster- Di, tri, tetra and hexa nuclear clusters.
CH-421	Organic Chemistry-I	CO1	Detailed study about nature of bonding and reactive intermediates: Delocalised chemical bonding- conjugation, cross conjugation, Resonance, hyper conjugation, bonding in fullerenes, tautomerism. Aromaticity in benziniod and non-benziniod compounds, Alternant and non-alternant hydrocarbons, Huckels rule, energy level of π Molecule Orbital, anullenes, ψ - aromaticity, anti aromaticity, homoaromaticity, PMO approach. Bonds weaker than covlent –addition compounds, crown ether compelexs and cryptands, inclusion compounds, cyclodextrins, catenanes and rotaxanes. Generation Structure and reactions of carbocations, carbanions, radicals. Carbenes and nitrenes.
		CO2	Demonstrate knowledge of theory of stereochemistry and conformational analysis: Configuration: Fischer projection – Sawhorse and Newmann projection – R & S notations, Methods of determining configurations, enenatioselective and diastereoselective asymmetric synthesis, Cram's rule and Prelog's rule. Geometrical isomerism of monocyclic and fused ring compounds. Enantiotopic and diastereotopic atoms, groups and phases, stereospecific and stereoselective reactions. Conformation and reactivity of cyclohexane, mono and di substituted cyclohexanes and decalins.
		CO3	It Discuss about organic reaction mechanism: structure and activity: Types of reactions, types of mechanism, Thermodynamic and kinetic requirements, Kinetics and thermodynamic control, Hemmond's postulates, Curtin-

			Hammett principle, Potential energy diagrams, transition states and intermediates, methods of determining mechanism, isotopic effects, hard and soft acids and bases. Effects of structure on reactivity- resonance and field effects, steric effects, quantitative treatment. Hammett equation and linear free energy relationships substituent and reaction constants, Taft equation.
		CO4	It deals with substitution reactions: Aliphatic substitution reactions: Neighbouring group mechanism- Anchimeric assistance- classical and non-classical carbocations, phenonium ions and norbornyl system. S_N1 mechanism – structure and reactivity – Phase transfer catalysis – ambident nucleophile, regioselectivity. Aromatic substitution reactions: The arenium ion mechanism – orientation and reactivity, energy profile diagram. Ortho-para ratio, ipso attack, orientation in other ring system, quantitative treatment of reactivity in substrates and electrophiles. Diazo coupling, Vilsmeier reaction, Gattermann Koch reaction. S_NAr , S_N1 , Benzyne and $S_{RN}1$ mechanisms and reactivity – effect of substrate structure, leaving group and nucleophile
		CO5	Demonstrate knowledge of addition reactions: Addition to C-C multiple bonds: Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, region and chemo selectivity, orientation and reactivity. Hydrogenation of double and triple bonds, hydrogenation of aromatic rings. Hydroboration. Michael reaction. Sharpless asymmetric epoxidation. Addition to carbon- Hetero multiple bonds: Addition of Grignard reagents, Organo zinc and Organolithium reagents carbonyl and unsaturated carbonyl compounds, Wittig reaction. Mechanism of condensation reactions involving enolates – Aldol, Knoevenagel, Claisen, Mannich, Benzoin, Perkin and Stobbe reactions.
CH- 441	Physical Chemistry-I	CO1	It deals with classical thermodynamics: Brief resume of concepts of laws of thermodynamic, Free energy, chemical potential and entropies. Partial molar properties: Partial molar free energy. Partial molar volume and partial molar heat content and their significance. Determination of these quantities. Concept and determination of fugacity. Non-ideal system: Excess functions for non-ideal solutions. Activity and activity coefficient, Debye-Huckel theory for activity coefficient of electrolytic solutions; determination of activity and activity coefficient; ionic strength.
		CO2	Detailed study about surface phenomena: Adsorption at surfaces- Gibbs adsorption isotherm, Physical methods of studying surfaces: UVPES, Electron microscopy LEED, EELS, FEM techniques. Physisorption and chemisorptions- desorption. Adsorption isotherms- Langmuir, Freundlich and BET isotherm. Determination of surface area- catalytic activity at surfaces,

			kinetics of surface adsorption, Classification of surface active agents and CMC.
		CO3	It deals with macromolecules: Types of Polymer. Electrically conducting, fire resistance, liquid crystal polymer, kinetics and mechanism of polymerization. Molecular mass: number and mass average molar mass, Determination of molar mass by Osmometry, Viscometry and Sedimentation method. Chain configuration of macromolecules.
		CO4	Detailed study about electrochemistry on the following topic Electrochemistry of solution: Debye- Huckel- Onsager treatment and extension, ion-solvent interactions. Debye –Huckel-Jerum model. Thermodynamics of electrified interface equation. Derivation of electro-capillarity, Lippmann equations (surface excess), methods of determination. Structures of electrified interfaces: Helmholtz-Perrn, Guoy Chapman, Stern, Graham-Devanathan- Mottwatts, Tobin. Bockris and Devanathan models
		CO5	Detailed study about chemical kinetics like Molecularity, order and rate of reactions, Arrhenius theory- complex reactions: reversible, side reactions, Consecutive, chain, photochemical, oscillatory reactions-Lindemann's theory of unimolecular reactions-Laser flash photolysis, flow techniques and relaxation methods.
CH-400	(Lab. Course I) Inorganic	CO1 and 2	It deals with Quantitative and qualitative analysis: Separation and determination of two metal ions : 1. Analysis of ores (Dolomite) 2. Analysis of alloys (Magnesium, brass, stainless steel) 3. Mixture of Cu and Ni Less common metal ions: Se, Te, W, Ti, Mo, Ce, Th, Zr, V, U, and Li. Separation of cations and anions by 1. Paper chromatography 2. Column chromatography
		CO3	Preparation and analysis of inorganic compounds: Preparation of selected inorganic compounds and their electronic spectral analysis. 1. VO (acac) ₂ 2. K ₃ [Fe(Ox) ₃] 3. Prussian blue 4. [Ni (NH ₃) ₆] Cl ₂ 5. Ni (DMG) ₂ 6. [Cu (NH ₃) ₄]SO ₄ .H ₂ O

SECOND SEMESTER

Course Code	Course	Course Outcomes	
CH-401	Inorganic Chemistry – I	CO1	Detailed study about THEORY OF COORDINATION COMPOUNDS: Review of valence bond and crystal field theory. Crystal fields splitting application of d-orbital splitting to explain and properties of complex. Magnetic low spin and high spin. CFST, Spectrochemical series thermodynamic aspect of CFT ionic radii, heats of ligation, lattice energy site preference energies and chelate effects. Molecular orbital theory of complex involving only sigma bond and sigma and pi bond
		CO2	It deals with ELECTRONIC SPECTRA AND MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEX: Spectroscopic ground state- Russell and Saunders for free ions and Mulliken for complexes. Orgel and Tanabe-Sugano diagrams for transition metal complex (d1 to d9 state) electrons spectra of complexes the hole formalism. Calculation of Dq, B and Beta parameters. Charge transfer spectra in octahedral and tetrahedral complexes John-Teller distortion and its effect. Cotton effect, CD and ORD and their application
		CO3	CHEMISTRY OF COMPLEXES WITH PI BOND: 18 electron rule transition metal carbonyls, structure and bonding, important reaction metal carbonyls preparation bonding structure and important reaction of transition metal nitrosyl, dioxygen complexes, metallocenes (MO theory of bonding) Metal alkyl and aryl complexes
		CO4	It deals with REACTION MECHANISM OF TRANSITION METAL COMPLEX: Energy profile of the reaction, reactivity of metal complexes, inert and labile complexes. Kinetic application of VB and CF theory, kinetic of octahedral substitutions. Acid hydrolysis. Factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism direct and indirect evidences in favour of conjugate mechanism anion reaction, reaction without metal-ligand and bond cleavage. Substitution reaction in square planar complexes, Tran's effect, mechanism of the substitution reaction. Redox reaction, electron transfer reaction, mechanism of one electron reaction, outer sphere type reaction, cross reaction and Marcus-Hush theory, inner sphere reactions
		CO5	Detailed study about ORGANIC METALLIC REACTIONS AND CATALYSIS: Oxidation addition, reductive elimination, insertions. Olefin hydrogenation, hydroformylation, Wacker process, Ziegler-Natta polymerization, cyclooligomerisation, olefin isomerisation, olefin metathesis, Fischer-Tropsch
CH-421	Organic Chemistry-I	CO1	Detailed study about ELIMINATION REACTIONS: E1, E2, E1cB mechanism, reactivity- Hoffmann & Zaitsev rules, Competition between elimination and substitution, mechanism and

			orientation in pyrolytic eliminations. Typical reactions: dehydration, dehydrohalogenation, Chugaev reaction. Haffman degradation and Cope elimination. Elimination reaction in Organic synthesis
		CO2	It deals with OXIDATION AND REDUCTION REACTIONS: Mechanism and study of the following reactions- oxidation with Chromium, Manganese, Osmium, Lead, Ruthenium and Selenium. Reduction: catalytic hydrogenation, metal hydride reduction (LAH, NaBH and their derivatives) Metal ammonium reduction, selectivity in reduction.
		CO3	Detailed study about CONCERTED REACTIONS: Molecular orbital symmetry Frontier orbitals of ethylene, 1,3- butadiene, 1,3,5-hexatriene and allyl systems. Classification of Pericyclic reactions. Woodward-Hoffman correlation diagrams, FMO and PMO approach. Electrocyclic reactions- con and dis rotator motions $4n, 4n+2$, and allyl systems. Cycloadditions – antarafacial and suprafacial additions, $4n$ and $4n+2$ systems, $2+2$ addition of ketene, 1,3-dipolar cycloaddition and cheletropic reactions. Sigmatropic rearrangements - suprafacial and antarafacial shifts of H, sigmatropic shifts involving carbon moieties, 3,3- and 5,5-sigmatropic rearrangements. Claisen, Cope and aza-Cope rearrangements
		CO4	It deals with ORGANIC PHOTOCHEMISTRY AND REARRANGEMENT REACTIONS: Introduction theory-Jablonski diagram, study of the photochemical reactions of carbonyl compounds photoreduction, photocycloadditions and photorearrangements – di-pi methane rearrangements. Study of the following rearrangements reactions Favorski, Bayer- Villiger, Wolf and Stevens
		CO5	To understand the concepts BIOMOLECULES: Carbohydrates: Cellulose and Starch Lipids: Phospholipids and Cholesterol, Aminoacids, Peptides and Protein – Structure and synthesis, Nucleic acids and Nucleotides: Structure and biochemistry
CH- 441	Physical Chemistry-I	CO1	It deals with STATISTICAL THERMODYNAMICS: Concept of distribution, thermodynamic probability and most probable distribution, micro state and macro states, different types of ensembles, Maxwell Boltzmann statistics, Bose-Einstein statistics and Fermi – Dirac statistics (using Lagrange's methods of undetermined multipliers) and their distribution laws Partition functions translational, rotational and vibrational partition functions. Calculation of thermodynamic properties and equilibrium constant of reaction $A+B=C+D$ in terms of partition functions. Applications of partition functions for calculation of thermodynamic parameters of monoatomic and diatomic gaseous molecules, Einstein theory of heat capacity of solids
		CO2	NON EQUILIBRIUM THERMODYNAMICS: Thermodynamic criteria for non equilibrium state. Entropy

			production and entropy flow, entropy balance equation for different irreversible process(e.g. heat flow, chemical reaction) transformation of the generalized fluxes and forces, non equilibrium stationary states. Phenomenological equations, microscopic reversibility and Onsagers reciprocity relations
		CO3	It deals with MOLECULAR REACTION DYNAMICS : collision and activated complex theory, comparison of results with Eyring and Arrhenius equations- reactive collisions, Molecular beam experiments, introduction to potential energy surfaces: treatment of $H_2 + H$ reaction - ionic reactions: salt effect
		CO4	It demonstrates about electrochemistry: Over potentials, exchange current density, derivation of Butler-volmer equation, Tafel plot. Polarography theory, Ilkovic equation; half wave potential and its significance. Introduction to corrosion, homogenous theory, forms of corrosion, corrosion monitoring and prevention methods
		CO5	It deals with QUANTUM CHEMISTRY -I : Lagranges and hamiltons equations of motion, poisson brackets, inadequacy of classical mechanics, schodingers and heisenbergs formulation of quantum mechanics, postulates of quantum mechanics, need for operators, linear and hermitian operators, and operator, Algebra eigen value and eigen functions, commutation relations.
CH – 420	(Lab. Course - II) Organic	CO1	To gain knowledge in the topic of QUANTITATIVE ANALYSIS : Separation of a mixture of containing three organic components, Separation, purification and identification of a binary mixture
		CO2	It deals with QUANTITATIVE ANALYSIS : Estimation of amines/phenols using bromate bromide solution.Determination Iodide and Saponification values of an oil sample. Determinationof the percentage or number of hydroxyl groups in an organic compound by acetylation method
		CO3	It deals with ORGANIC SYNTHESIS of Preparations involving two steps for synthesis of organic compounds. a) Acetylation and deacetylation b) Oxidation and reduction c) Hydrolysis d) Aldol condensation e) Sandmeyer reaction f) Aromatic Electrophilic substitutions: Nitration and Halogenation
		CO4	It deals with PAPER CHROMATOGRAPHY : Separation and identification of the sugars present in the given mixture of Glucose, Fructose and Sucrose by paper chromatography and determination of R_f values

		CO5	To gain knowledge in the topic of SPECTROSCOPY: Identification of Organic compounds by the analysis of their spectral data (UV, IR, PMR, CMR & MS)
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THIRD SEMESTER			
Course Code	Course	Course Outcomes	
CH 501	Inorganic Photochemistry And Bioinorganic Chemistry	CO1	Demonstrate knowledge of metal ions in biological processes: Essential and trace elements. Role of metal ions in biological processes- Na^+/K^+ pump. DNA polymerization, glucose storage and metal complexes in transmission of energy. Chlorophyll, photosystem I and photosystem II in cleavage of water Biological fixation of nitrogen.
		CO2	It deals with kinetics of inorganic photochemical reactions: Photo stationary States, rate law – photolysis, flash photolysis and flow techniques. Thermal effects of photoluminescence radiative and non radiative transitions. Electronically excited states of metal complexes, Charge transfer spectra, Charge transfer excitations, methods for obtaining charge transfer spectra.
		CO3	Demonstrate knowledge of ligand field photochemistry and redox reactions : Photo substitution, Photo oxidation and Photo reduction lability and selectivity, Zero vibrational levels of ground state and excited state, zero-zero spectroscopic energy. Energy transfer under conditions of weak and strong interaction-exciplex formation, conditions of the excited states to be useful as redox reactants. Metal complexes as attractive reactant (2,2'-bipyridine and 1,10-phenanthroline complexes.) Reducing and oxidizing character of Ru^{2+} (bipyridyl complex, comparison with $\text{Fe}(\text{bipy})_3$
		CO4	It deals with metalloenzymes: Zn enzymes- carboxypeptidase and carbonic anhydrase. Iron enzymes-catalase, Peroxides and eytochromeP-450. Copper enzymes-superoxide dismutase. Molybdenum oxatransferase enzymes-xanthine oxidase. Co-enzymes-vitamin B-12
		CO5	Demonstrate knowledge of dioxygen and elecron transfer in biology: Heme proteins and oxygen uptake. Structure and function of hemoglobin myoglobin haemocyanins and haemerythrin. Ferredoxin and Rubredoxin. Structure and function of metalloproteins in electron transport processes-cytochromes and iron-sulphur proteins.
CH521	Organic Spectroscopy	CO1	It deals with applications of uv-visible and ir spectroscopy: Study of UV-visible spectroscopy to organic structure

			determination Woodward Fischer rules, Octant rule and axial haloketone rule. Application of ORD CD to stereo chemical assignment, IR spectroscopy – Basic principles, characteristic frequencies of common functional groups. Effect of hydrogen bonding and solvent effect of vibrational frequencies, overtones, combination bands and fermi resonance.
		CO2	Demonstrate knowledge of applications of nmr spectroscopy: Basic principles, introduction to NMR techniques, CW and FT NMR techniques. ^1H NMR Spectral paramers- intensity, chemical shift, multiplicity, coupling constant, factors affecting. Analysis of first and second order spectra. Structure determination of organic compounds by ^1H NMR.
		CO3	It deals with ^{13}C NMR and multi dimensional NMR spectroscopy: ^{13}C NMR-Proton coupled, off resonance decoupled, proton noise decoupled ^{13}C NMR spectra. Assignment of chemical shifts, additive effect, characteristic chemical shift of common organic compounds and functional groups. DEPT and SEPT spectra (elementary treatment)
		CO4	To gain knowledge in the topic of applications of mass spectrometry: Basic principles, modern techniques of ionization, molecular ion, isotope abundance, nitrogen rule, double bond equivalent, daughter ions, metastable ions, McLafferty rearrangement, common fragmentation pathways. Structure determination of organic compounds by MS data.
		CO5	Demonstrate knowledge of problems solving exercises: Problems solving exercises involving exercises involving UV, IR, Mass and NMR data.
CH-541	Physical Chemistry-III	CO1	It deals with symmetry and group theory in chemistry: Symmetry element and operation, definitions of group, subgroup, relation between orders of a finite group and its subgroup. Conjugacy relation and classes. Point groups and their systematic classification flow chart diagram- multiplication table- representation of groups- reducible & irreducible representations-character table and their construction for C_{2v} , C_{3v} , C_{2h} , D_3 and D_{2h} – great orthogonality theorem (without proof) and its consequences. Simple application of character tables to spectroscopy (IR and Raman) and hybrid orbitals.
		CO2	It deals with quantum chemistry for Solution of schrodinger's equation for particle in 1D-2D and 3D box and applications, particle in a ring and sphere, spherical harmonics, angular momentum rigid rotator, simple harmonic oscillator and

			hydrogen atom Zeeman effect and electron spin, variation and perturbation methods: example- variation methods: (1) Hydrogen atom, hydrogen atom in an electric field, (2) Helium atom. Perturbation method: (1) perturbed particle in a box, (2) perturbed harmonic oscillator, (3) hydrogen atom in electric field. Ant symmetric Wave functions of many electron atoms, Slater determinants, Hartree and Hartree – Fock self consistent field model of atoms.
		CO3	To gain knowledge in the topic of vibrational and rotational spectroscopy: Classification of molecules, rigid rotor model, effect of isotopic substitution on the transition frequencies, non-rigid rotor. Vibrational energies of diatomic molecules, force constant, band strength – selection rules – energy of anharmonic oscillator – selection rules, fundamental, first and 2 ^{ed} overtones and hot bands. Vibration- rotational spectroscopy – origin of PQR branches, normal mode of vibration (e.g. H ₂ O & CO ₂), Fermi resonance and group frequencies. Raman spectra: Classical and quantum theories of Raman Effect, pure rotational, vibrational and vibration- rotational Raman spectra, selection rules- mutual exclusion principle-Resonance Raman spectroscopy. Molecular spectroscopy: Energy levels, molecular orbitals, vibronational transition, Franck-Condon Principle, Morse potential energy diagram. Concept of molar absorptive-oscillator strength -band width -Jablonski diagram for a diatomic molecule, radiative and non radiative decay and internal conversion.
		CO4	Demonstrate knowledge of NMR spectroscopy: Nuclear spin, nuclear resonance, saturation, shielding of magnetic nuclei, chemical shift and its measurement, factors influencing chemical shift, deshielding, spin-spin interaction, factors influencing coupling constant 'J' classification (ABC, A ₂ B ₂), spin decoupling, use of NMR in medical diagnostics.
		CO5	ESR spectrum: Basic principles, Zero field splitting and Kramer's degeneracy factors affecting the 'g' value, isotropic and anisotropic hyperfine coupling constants, spin Hamiltonian, spin densities and McConnell relationship, application to simple free radicals in solutions. NQR spectroscopy – Quadrupole nuclei, quadrupole moments, electric field gradient coupling constant, splitting and applications.
CH540	Lab. Course – III	CO1	Estimation of Pb ²⁺ and Cd ²⁺ /Zn ²⁺ and Ni ²⁺ ions in a mixture of

	Physical		Pb ²⁺ and Cd ²⁺ and Ni ²⁺ by polarography.
		CO2	Determination of pka of an indicator in i) Aqueous media ii) Micellar media Determination of stoichiometry and stability constant of inorganic and (eg. ferric- salicylic acid) and organic (eg. amine-iodine) complexes by spectroscopy.
		CO3	Electrochemistry a) Conductivity experiments i) Determination of cell constant ii) Verification Onsagar equation iii) Titration of Strong acid Vs Strong Base. iv) Titration of Weak acid Vs Strong Base. v) Titration of Mixture of Acids Vs Strong Base vi) Precipitation Titration. vii) Dissociation Constant of Weak acid. b) Potentiometric experiments i) Determination of single electrode potential ii) Redox Titration iii) Solubility product of Sparingly soluble salt iv) Instability Constant of Silver Ammonia Complex v) Titration of Weak Acid Vs Strong Base vi) Titration of Strong acid Vs Strong Base vii) Mixture of Halides with Silver Nitrate Determination of pH of a buffer solution
		CO4	Determination of following kinetics i) Iodination of Acetone ii) Persulphate - Iodide iii) Effect of ionic strength on rate of reaction between persulphate and iodide iv) Saponification of an ester v) Hydrolysis constant of Urea-hydrochloride
		CO5	PHASE EQUILIBRIA i) Association factor of benzoic acid ii) Ternary system

FOURTH SEMESTER

Course Code	Course	Course Outcomes	
		CO1	Applications of NMR techniques to inorganic compounds containing ¹ H, ¹⁵ N, ¹⁹ F and ³¹ P. Mossebauer spectroscopy – basic principles, instrumentation and applications to Fe ²⁺ and Fe ³⁺ compounds. Photoelectron spectroscopy -basic principles, photoelectric effects, ionization process, Koopman's theorem.

CH-572	Advanced Topics in Chemistry		Auger electron spectroscopy- basic idea.
		CO2	An introduction to synthons and synthetic equivalents, disconnection approach, functional group interconversions. The importance of the order of events in organic synthesis, one group C-X and two group C-X disconnections, chemoselectivity, reversal of polarity, cyclization reactions, amine synthesis Principle of protection of alcohols, amines, carbonyl and carboxyl groups.
		CO3	ORGANIC SYNTHETIC METHODOLOGY-II: One group C-C disconnections –Alcohols and carbonyl compounds, region selectivity, alkenes synthesis, use of acetylenes and aliphatic nitro compounds in organic synthesis. Two group C-C disconnections Diel – Alder reaction Michael addition and Robinson annelation, Stark-Enamine reaction.
		CO4	Demonstrate knowledge of solid state chemistry: Diffusion in solids: diffusion mechanisms, Ficks laws of diffusion, diffusion as a random walk problem. Optical properties: thermionic emission, photovoltaic effect, and optical adsorption of semiconductors. Dielectric properties: dielectric constant and related properties behavior of dielectrical materials in ac fields, clausius mosotto equation. Thermoelectric effects: Thomson affects, peltier effect, seebeck effects, thermocouples and Hall effect. Hopping semiconductors, polarons, liquid crystals and glasses. Pauling's rules in polyhedral structural chemistry.
		CO5	To gain knowledge in the topic of quantum chemistry in following topic: Ploy atomic molecules- hybridization and non equivalent hybrids construction of sp , sp^2 , sp^3 , dsp^2 and d^2sp^3 hybrids and non equivalent sp , sp^2 and sp^3 hybrids. Huckel and SCF theories: simple Huckel theory for p-electrons, Frontier orbital's extended huckel theory. Advanced MO methods: SCF theory for molecules, Slater determinants, and electron repulsion integrals. Roothan's equation. ZDO approximations PPP, CNDO and INDO approximations. Hellman-feynman theorem some simple application.
		CO1	Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water, and soil.
		CO2	Describe the Chemical composition of water bodies – lakes, streams, rivers, and wet lands etc. hydrological cycle. Aquatic pollution- inorganic, organic, pesticide, agricultural, industrial and sewage, detergents, oil spills and oil pollutants. Water quality parameters-dissolved oxygen, biochemical oxygen demand , solids, and metals, content of chloride, sulphate,

CH-582A	Environmental Chemistry		phosphate, nitrate and micro –organism. Water quality standards.
		CO3	Demonstrate knowledge of Soils –composition, micro and macro nutrients, pollution –fertilizers, pesticides, plastics and metals. Waste treatment. Atmosphere- chemical composition of atmosphere- particles, ions radicals and their formation Chemical and photochemical reactions in atmosphere, Smog formation oxides of N, C, S, and O and their effects, pollution by chemicals, petroleum , minerals, chlorofluorohydrocarbons, green house effect, acid rain, air pollution controls and their chemistry. Analytical methods for measuring air pollutants. Continuous monitoring instruments.
		CO4	Deals with industrial pollution from Cement, sugar, distillery, paper and pulp, thermal power plants, nuclear power plants, metallurgy. Polymers, drugs etc. Radionucleide analysis. Disposal of waste and their management.
		CO5	Demonstrate with environment toxicology like Chemical solutions to environmental problems, biodegradability, principles of decomposition, better industrial processes, Bhopal gas tragedy, Chermobyl, three Mile Island, Sewozo and Minamata disasters.
CH-580	Lab Course-IV(Electives)	CO1	To know the basic idea on techniques of water analysis and acidity alkalinity
		CO2	To get experience with the calculations of DO, BOD and COD
		CO3	To Understand the basics of soil analysis viz. pH, Conductivity
		CO4	To have an experience on the determination of heavy metals in soil.
CH-570	Review Work	CO1	To gain the knowledge and develop acquaintance with the existing literature studies, threading the different lines of development in the field of their own interest.