



ALAGAPPA UNIVERSITY

(A State University Established in 1985)

Karaikudi - 630003. Tamil Nadu, India



FACULTY OF SCIENCE DEPARTMENT OF OCEANOGRAPHY AND COASTAL AREA STUDIES



PG DIPLOMA IN SCUBA DIVING

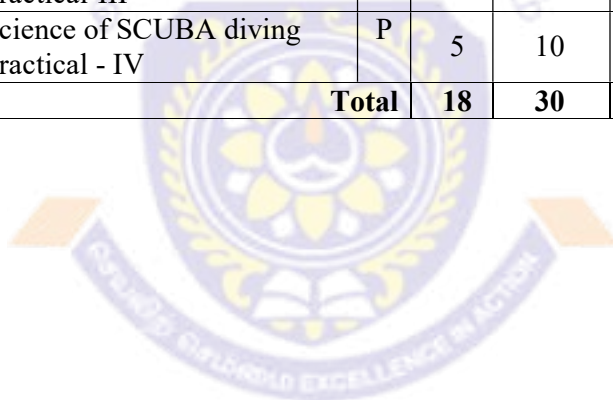
REGULATIONS AND SYLLABUS

(For the candidates admitted from the
Academic Year 2022 - 2023)

**PG DIPLOMA CREDIT STRUCTURE FOR UNIVERSITY DEPARTMENTS
POST GRADUATE DIPLOMA IN SCUBA DIVING**

**(ADD -ON COURSE) M.Sc., Oceanography and Coastal Area Studies (2022-23 onwards);
M. Sc., Marine Biology (Five years Integrated Programme)
With effect from 2018 Batch onwards)**

	Course Code	Title of the Paper	T/P	Cr.	Hrs./ Week	Max. Marks		
						Int.	Ext.	Total
Sem I	465101	Marine Biodiversity	T	4	5	25	75	100
	465102	Benthic Assessment	T	4	5	25	75	100
	465103	Marine Biodiversity – Practical - I	P	5	10	40	60	100
	465104	Benthic Assessment – Practical - II	P	5	10	40	60	100
Total				18	30	130	270	400
Sem II	465201	SCUBA Diving Equipment and Communication	T	4	5	25	75	100
	465202	Science of SCUBA diving	T	4	5	25	75	100
	465203	SCUBA Diving Equipment and Communication- Practical-III	P	5	10	40	60	100
	465204	Science of SCUBA diving Practical - IV	P	5	10	40	60	100
Total				18	30	130	270	400



I - SEMESTER					
Core	Course Code 465101	MARINE BIODIVERSITY	T	Credit:4	Hours:5
UNIT-I					
Objective 1	To protect and restore marine and estuarine ecosystems. Control invasive species, mitigate dry land salinity, Promote ecologically sustainable grazing.				
Gulf of Mannar - Bioresource - Biodiversity and its importance, biodiversity assessment techniques, threats to Marine Biodiversity - Over -exploitation, Physical alteration, Pollution, alien species.					
Outcome 1	Students will learn about importance of marine biodiversity.				K3
UNIT – II					
Objective 2	To study the marine protected areas.				
Protected Areas - Endangered Species - Conflicts and Management solutions, Implications for Resource Management, marine policies.					
Outcome 2	They will gain knowledge on scientific information and knowledge regarding the current status of marine biodiversity, various values associated with it and the necessity for its conservation.				K2
UNIT – III					
Objective 3	To understand the marine biodiversity conservation.				
Marine animal Representatives from each Phylum: Invertebrates and vertebrates their distribution and adaptations.					
Outcome 3	They will gain knowledge on marine biosphere reserve area and its importance.				K3
UNIT – IV					
Objective 4	To study the laws of conservation and sustainable development.				
Coastal biological diversity: Genetic and systematic diversity Species: concept, richness and evenness, threatened and vulnerable - Species inventory - Ecological interaction of species diversity.					
Outcome 4	They will know National and international approaches to conservation and sustainable development.				K4
UNIT - V					
Objective 5	To minimize the impacts of climate change on biodiversity, Maintain and record indigenous people's ethno-biological knowledge, Improve scientific knowledge and access to information.				
Coastal ecosystem management - Seagrass ecosystem - Coral reef ecosystem - Mangrove ecosystem - Island ecosystem.					
Outcome 5	They will gain knowledge in conservation of marine biodiversity and its sustainable use appropriately.				K4
Reference and Text Books:					
Albers, B., Brag, D., Lewis, J., Raff, M., Robers, K., and Watson, J.D. (1994). <i>Molecular Biology of Cell: Garland Publishing Inc.</i>					
De Robertis, E.D.F., and De Robertis, E.M.F. (1981). <i>Cells and Molecular Biology</i> . Saunder International Edition.					
Freifelder, D. (1987). <i>Molecular Biology</i> . Jones and Bartlett Publishers Inc.					
Lewin, B. (1994). <i>Genes (V)</i> . New York: Oxford University Press, Oxford.					
Malacinski, G. M.,& Freifelder, D. (1998). <i>Essentials of Molecular Biology</i> . Jones and Bartlett Publishers.					
Sir John Kendrew. (1994). <i>The Encyclopedia of Molecular Biology</i> . Blackwell Sciences Ltd.					

Online resources

<https://www.jagranjosh.com/general-knowledge/coastal-zone-management-purpose-objective-and-challenges-1510572939-1>

<https://www.eea.europa.eu/publications/92-826-5409-5/page035new.html>

<https://unacademy.com/content/mppsc/study-material/geography/marine-protected-areas-in-india/>

https://www.academia.edu/47676064/Land_ocean_interactions_in_the_coastal_zone_science_plan

<https://earsportal.eu/display/EOWiki/Monitor+coastal+ecosystem>

<i>K1-Knowledge</i>	<i>K2-Understanding</i>	<i>K3-Apply</i>	<i>K4-Analyze</i>	<i>K5-Evaluate</i>	<i>K6-Create</i>
---------------------	-------------------------	-----------------	-------------------	--------------------	------------------

Course designed by Dr. G. Palani Selvan

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M (2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M (2)	M(2)	L(1)
CO2	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	S(3)	S(3)	M(2)	M (2)
CO3	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)
CO5	L (1)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)	L (1)	M(2)	M(2)
W.AV	2.2	2.2	2.0	2.4	2.6	2.0	2.4	2.2	2.0	1.8

S–Strong(3),M–Medium(2),L–Low(1)

Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	S(3)	S(3)	M(2)
CO2	S(3)	M(2)	S(3)	S(3)	S(3)
CO3	M(2)	S(3)	M(2)	S(3)	M(2)
CO4	S(3)	S(3)	M(2)	M(2)	M(2)
CO5	M(2)	M(2)	S(3)	S(3)	S(3)
W.AV	2.4	2.4	2.6	2.8	2.4

I - SEMESTER					
Core	Course Code 465102	BENTHIC ASSESSMENT	T	Credit:4	Hours:5
UNIT-I					
Objective 1	To study the qualitative analysis and sampling with the help of equipment like GPS.				
Qualitative Analysis- Equipment's required including preparation and maintenance, GPS management, Sampling methodologies, Extraction procedures, Narcotization methods, Preservation.					
Outcome 1	The student will gain knowledge about the qualitative analysis and sampling with the help of equipment like GPS.				K2
UNIT – II					
Objective 2	To attain familiarization with transect methodologies and quadrat methodologies				
Transect Methodologies- Transect Quadrat Method, Line Intercept Method, Belt Transect Methods, Point Intercept Transect Method, Underwater Video Transect Method.					
Outcome 2	The student will be familiarized with transect methodologies and quadrat methodologies.				K4
UNIT – III					
Objective 3	To understand the health status of coastal and marine biodiversity and documentation				
Quadrat Methodologies- Quadrat Method, Photo-Quadrat Method, Permanent Quadrat Method.					
Outcome 3	They will understand the health status of coastal and marine biodiversity and documentation				K4
UNIT – IV					
Objective 4	To monitor the status of benthic coral reef communities.				
Documentation- Data Sheet for Intertidal benthic fauna, Data management, Manta Tow Survey Method, Video Manta Tow Method.					
Outcome 4	The student will learn the status of benthic coral reef communities.				K2
UNIT - V					
Objective 5	To assess the major spatial and temporal changes in the cover of variety of benthos type.				
Quantitative Estimation- Shannon-Weiner Diversity Index, Pielou's evenness index, Simpson's dominance index, Species richness, Margalef Species Richness, Menhinick diversity index, Berger-Parker diversity index, Similarity index, Ternary, Bray-Curtis Index, Jaccard Index, Dice Index, Raup-Crick Index.					
Outcome 5	They will assess the major spatial and temporal changes in the cover of variety of benthos type.				K5
Suggested Readings:					
Done, T.J. 1982. Patterns in the distribution of coral communities across the central Great Barrier Reef. <i>Coral Reefs</i> , 1: 95–107.					
English, S., Wilkinson, C. and Baker, V., 1997. Survey manual for tropical marine resources. 2 nd Edition. Australian Institute of Marine Science. 390p.					

Hammer, Ø., Harper, D.A.T. and Ryan, P.D., 2001. PAST: Paleontological Statistics software package for education and data analysis. *Palaeontologia Electronica*, 4: 1-9.

Lohr, K.E., Smith, D.J., Suggett, D.J., Nitschke, M.R., Dumbrell, A.J., Woodcock, S. and Camp, E.F., 2017. Coral Community Structure and Recruitment in Seagrass Meadows. *Frontiers in Marine Science*, 4: 388. doi: 10.3389/fmars.2017.00388

Shannon, C.E. 1948. A mathematical theory of communication. *Bell System Technical Journal*, 27: 379–423.

Bray, J.R. and Curtis., J.T.,1957. An ordination of the upland forest communities of Southern Wisconsin. *Ecological Monographs*, 27:325-349.

Raup, D. and Crick, R.E., 1979. Measurement of faunal similarity in paleontology. *Journal of Paleontology*, 53:1213-1227.

Simpson, G.G., 1943. Mammals and the nature of continents. *American Journal of Science*, 241:1-31.

Online resources

<https://plantlet.org/marine-environment-classification-productivity/>
<https://www.earthreminder.com/marine-ecosystem-characteristics-types/>
https://www.biologicaldiversity.org/programs/population_and_sustainability/oceans/

<i>K1-Knowledge</i>	<i>K2-Understanding</i>	<i>K3-Apply</i>	<i>K4-Analyze</i>	<i>K5-Evaluate</i>	<i>K6-Create</i>
---------------------	-------------------------	-----------------	-------------------	--------------------	------------------

Course designed by Dr. J. Siva

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S(3)	M(2)	S(3)	M(2)	L(1)	M (2)	M(2)	M(2)	M(2)	M(2)
CO2	S(3)	S(3)	S(3)	M(2)	M (2)	S(3)	M(2)	S(3)	M(2)	M(2)
CO3	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)
CO4	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	S(3)	S(3)	M(2)
CO5	S(3)	S(3)	M (2)	M(2)	M(2)	L (1)	S(3)	M(2)	M(2)	M(2)
W.AV	2.8	2.4	2.4	2.0	1.8	2.2	2.2	2.4	2.4	2.0

S–Strong(3),M-Medium(2),L-Low(1)

Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	L(1)	M (2)	M(2)	M(2)
CO2	M(2)	M (2)	S(3)	M(2)	S(3)
CO3	M(2)	M(2)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	M(2)	M(2)	M(2)
CO5	M(2)	M(2)	L (1)	S(3)	S(3)
W.AV	2.0	1.8	2.2	2.2	2.4



I-SEMESTER					
Core	Course Code: 465103	MARINE BIODIVERSITY– PRACTICAL - I	P	Credits:5	Hours:10
1.	Seagrass ecosystem - Coral reef ecosystem - Mangrove ecosystem - Island ecosystem.				
2.	Species inventory.				
Core	Course Code: 465104	BENTHIC ASSESSMENT- PRACTICAL - II	P	Credits:5	Hours:10
1.	Biodiversity / life forms estimation for invertebrates and vertebrates using Quadrate and LIT methods.				
2.	Biodiversity assessment techniques.				

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M (2)	M(2)	M (2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	L(1)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	M (2)
CO3	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)
CO4	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)
CO5	L (1)	S(3)	L (1)	M(2)	S(3)	M(2)	S(3)	M(2)	M(2)	M(2)
W.AV	2.2	2.4	2.2	2.0	2.6	2.0	2.2	2.0	2.4	1.8

S–Strong(3),M-Medium(2),L-Low(1)

Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	S(3)	M(2)	M(2)	M(2)	S(3)
CO2	S(3)	S(3)	S(3)	M(2)	S(3)
CO3	S(3)	M(2)	M(2)	S(3)	M(2)
CO4	M(2)	M(2)	S(3)	S(3)	M(2)
CO5	S(3)	S(3)	M(2)	M(2)	S(3)
W.AV	2.8	2.4	2.4	2.4	2.6

II - SEMESTER					
Core	Course Code 465201	SCUBA DIVING EQUIPMENTS AND COMMUNICATION	T	Credit:4	Hours:5
UNIT-I					
Objective 1	SCUBA diving is perhaps the best way to explore the fantastic underwater world, getting up close with the wonders and the secrets of this marine universe, with its breath taking colorful and diverse inhabitants.				
Buoyancy Management and Control; Pressure, Volume and Density Relationships; Effect of Pressure (Increasing and Decreasing).					
Outcome 1	The student will learn Buoyancy management and control during SCUBA diving.				K2
UNIT – II					
Objective 2	To learn Buoyancy management and control during diving				
Dive Equipment and their features; SCUBA cylinders and valves; Regulators and their working principle; Equipment disassembly and Care.					
Outcome 2	They will gain knowledge in the diving equipment and their features.				K4
UNIT – III					
Objective 3	To gain knowledge in the diving equipment and their features				
Buddy system and checking; Gearing up and clearing of diving materials; Managing of Air; Ascending; Breathing Efficiency and Goals; Pre-dive safety check; Blast clearing; Mask replacement; Adequate Weighting system and removal of weight.					
Outcome 3	They will learn gearing up and clearing of diving materials and breathing control				K4
UNIT – IV					
Objective 4	To learn gearing up and clearing of diving materials and breathing control				
Seeing and Hearing Underwater; Heat Loss; Motion in water; Common hand Signals.					
Outcome 4	Students will get fundamental idea on diving equipment used by divers like underwater breathing apparatus, such as scuba equipment.				K4
UNIT - V					
Objective 5	To train the students to dive in open sea independently with the guidance of instructors.				
Surface snorkeling; Deep water exit; Diver computer and its use.					
Outcome 5	They can apply this technique to survey marine resources and conserve marine life and also for recreation purpose.				K4
Reference and Text Books:					
Gates C.E. (1979). <i>Line Transect and related issues</i> . In: Cornack R.M., G.P. Patil and D.S. Robson, (eds.). <i>Sampling Biological Populations</i> . International Co-operative Publishing House, Fairland, Maryland.					
PADI. (1988). <i>PADI Under Water Diver Manual – The fun and adventure of learning to SCUBA dive</i> . 1988 International PADI Inc., PADI (Professional Association of Diving Instructors). Santa Ana, California, USA.					

Online resources					
https://www.padi.com					
https://www.cmuse.org/learn-scuba-diving-lessons-online/					
https://scubadiveonline.com/destinations-scuba-diving/					
https://www.scubaevolutionindia.com/fags					
https://en.wikipedia.org/wiki/Scuba_diving					
<i>K1-Knowledge</i>	<i>K2-Understanding</i>	<i>K3-Apply</i>	<i>K4-Analyze</i>	<i>K5-Evaluate</i>	<i>K6-Create</i>
Course designed by Dr. J. Siva					

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M (2)	M(2)	M(2)	M(2)	L(1)	M(2)	M(2)	L(1)	M (2)	M(2)
CO2	S(3)	M(2)	S(3)	M(2)	M (2)	M(2)	M(2)	M (2)	S(3)	M(2)
CO3	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)
CO4	M(2)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)
CO5	L (1)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	L (1)	S(3)
W.AV	2.2	2.2	2.4	2.0	1.8	2.4	2.0	1.8	2.2	2.2

S–Strong(3),M-Medium(2),L-Low(1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	M (2)	L(1)	M(2)
CO2	M(2)	M(2)	S(3)	M (2)	S(3)
CO3	M(2)	M(2)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	M(2)	M(2)	M(2)
CO5	S(3)	M(2)	L (1)	M(2)	S(3)
W.AV	2.2	2.0	2.2	1.8	2.4

II - SEMESTER					
Core	Course Code 465202	SCIENCE OF SCUBA DIVING	T	Credit:4	Hours:5
UNIT-I					
Objective 1	To make the students gain knowledge on the environment, the equipment, behavior of the individual diver and performance of the diving team.				
Health in Diving, Fitness and Conditioning, Physical Demands. Rest and Recuperation. Cardiovascular System and Heart Health. Sickness. Medications. Physical Examinations. Balanced Diet.					
Outcome 1	The students will gain knowledge and understand the basic principles, skills and procedures for the use of SCUBA equipment.				K2
UNIT – II					
Objective 2	To know about the health-related aspects pertaining to diving				
Navigation Slates, Surface Marker Buoys Enriched Air Application Surface Floats, Dive Flags and their Meaning, Oxygen Use, Torches, Collection Bags Log Books, Spares Kit.					
Outcome 2	The students will become professional divers such as underwater photographers or underwater videographers in the underwater environments, who can document the underwater world.				K4
UNIT – III					
Objective 3	To gain knowledge about navigation slates and other apparatus related to SCUBA diving				
. Hazards and dangers: Injuries due to changes in air pressure Decompression sickness- Nitrogen narcosis- Oxygen toxicity - Recording and Maintaining - log book – Nitrogen, oxygen level – Navigation - Equipment maintenance.					
Outcome 3	They will know about the health-related aspects pertaining to diving.				K4
UNIT – IV					
Objective 4	To understand hazards and dangers encountering in the diving.				
Open Water Overview - Boat diving Decent Lines - Safety Stops, Buddy System - Depth Limits (12M and 18M) - Adapting to the Daily Conditions - Finning and Neutral Buoyancy diving Skills.					
Outcome 4	The students will gain knowledge about navigation slates and other apparatus related to SCUBA diving.				K4
UNIT - V					
Objective 5	The basic diver training entails the learning of skills required for the safe conduct of activities in an underwater environment, and includes procedures and skills for the use of diving equipment, safety and emergency.				
SCUBA and Rescue - First aid - emergency – Log book maintaining.					
Outcome 5	They will understand the nature of hazards and dangers encountering in the diving.				K4
Reference and Text Books:					
De Vantier, L. M. (1986). <i>Studies on the Assessment of Coral reef ecosystems</i> . In: Brown, B.E, <i>Human Induced Damage to Coral Reefs</i> . UNESCO Reports in Marine Sciences. 40: 99-111.					
English S., Wilkinson, C., & Baker, V. (1997). <i>Survey Manual for Tropical Resources (2nd ed)</i> . Australian Institute of Marine Sciences, Townsville, Australia.					
PADI. (1988). <i>PADI Under Water Diver Manual – The fun and adventure of learning to SCUBA dive</i> . International PADI Inc., PADI (Professional Association of Diving Instructors), Santa Ana, California, USA.					

Online resources					
https://www.padi.com					
https://www.cmuse.org/learn-scuba-diving-lessons-online/					
https://scubadiveonline.com/destinations-scuba-diving/					
https://www.scubaevolutionindia.com/faqs					
https://en.wikipedia.org/wiki/Scuba_diving					
<i>K1-Knowledge</i>	<i>K2-Understanding</i>	<i>K3-Apply</i>	<i>K4-Analyze</i>	<i>K5-Evaluate</i>	<i>K6-Create</i>
Course designed by Dr. G. Palani Selvan					

Mapping Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M(2)	M(2)	L(1)	L(1)	M (2)	M(2)	M(2)	M (2)	M(2)	M(2)
CO2	S(3)	M(2)	M (2)	M (2)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	S(3)	M(2)	S(3)
CO4	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	M(2)	S(3)
CO5	M(2)	M(2)	M(2)	M(2)	L (1)	S(3)	M(2)	L (1)	S(3)	M(2)
W.AV	2.4	2.0	1.8	1.8	2.2	2.2	2.0	2.2	2.2	2.4

S–Strong(3),M-Medium(2),L-Low(1)

Mapping Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	M (2)	M(2)	M(2)
CO2	S (3)	M(2)	S(3)	M(2)	M(2)
CO3	M(2)	M(2)	S(3)	M(2)	S(3)
CO4	S (3)	M(2)	M(2)	M(2)	S(3)
CO5	S (3)	M(2)	L (1)	S(3)	M(2)
W.AV	2.8	2.0	2.2	2.2	2.4

II- SEMESTER					
Core	Course Code: 465203	SCUBA DIVING EQUIPMENTS AND COMMUNICATION–PRACTICAL -III	P	Credits:5	Hours:10
	1.	Skill Development: Swimming, Snorkelling & Skin Diving – Introduction to SCUBA			
	2.	Basic Gears and Skills in SCUBA - Data Collection, Recording and Processing - Basic Monitoring methods.			
	3.	Field Studies: Develop skills on data collection and recording.			
	4.	Training on survey methods for marine resource assessment- Statistical Application on marine resource monitoring studies.			
Core	Course Code: 465204	SCIENCE OF SCUBA DIVING – PRACTICAL - IV	P	Credits: 5	Hours: 10
	1.	Buoyancy Management and Control			
	2.	Navigation Slates			
	3.	Dive planner			
	4.	CPR method; SAFE diver			
	5.	Log book management			

Course Outcome VS Programme Outcomes

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M (2)	M(2)	M(2)	L(1)	M (2)	M(2)	M(2)	M(2)	L(1)	M(2)
CO2	S(3)	M(2)	M(2)	M (2)	S(3)	M(2)	S(3)	M(2)	M (2)	M(2)
CO3	S(3)	S(3)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	M(2)
CO4	M(2)	S(3)	M(2)	M(2)	M(2)	M(2)	S(3)	M(2)	M(2)	M(2)
CO5	L (1)	M(2)	M(2)	M(2)	L (1)	S(3)	M(2)	M(2)	M(2)	S(3)
W.AV	2.2	2.4	2.0	1.8	2.2	2.2	2.4	2.0	1.8	2.2

S–Strong(3),M-Medium(2),L-Low(1)

Course Outcome VS Programme Specific Outcomes

CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M(2)	M(2)	M (2)	L(1)	M(2)
CO2	M(2)	M(2)	S(3)	M (2)	S(3)
CO3	M(2)	M(2)	S(3)	M(2)	M(2)
CO4	M(2)	M(2)	M(2)	M(2)	M(2)
CO5	S(3)	M(2)	L (1)	M(2)	S(3)
W.AV	2.2	2.0	2.2	1.8	2.4

CURRICULUM VITAE

Name : **Dr. C. Stella**
Designation : Professor and Head
Address : Department of Oceanography & Coastal Area Studies,
School of Marine Sciences
Alagappa University, Karaikudi –630 003
Phone : (+91) 9443112812
Email : stella2004@rediffmail.com;stellac@alagappauniversity.ac.in



Educational qualification:

Course	Board/University	Subject	Division/Grade
Ph. D	Annamalai University	Marine Biology	Highly Commended
M.Phil.	Annamalai University	Marine Biology	First Class
M.Sc.,	Annamalai University	Marine Biology	First Class

Professional experience:

Teaching Experience: 24 years

Research Experience: 27 years

Honours and Awards:

1. Received Cash award for Novel Idea Scheme, Central Electrochemical Research Institute, Karaikudi 1996 – DST, CSIR, and CECRI.
2. Received Second Prize for Young Scientist Award for best paper presentation competition, CSIR Foundation day celebrations on 26.9.1997, CECRI, Karaikudi
3. Received Best Research Advisor Award in Marine science, 7-8th Feb 2013.
4. Received Distinguished Faculty Award for the Contribution and Achievement in the Field of Marine Biology- 9th July 2016.

Recent publications:

- V.Padmavathy J. SeshSerebiah and C.Stella (2022). Mangrove Phytoplankton Quality Index Evolving Sustainability. International Journal of Zoological Investigations Vol. 8, No. 2, 490-496 (2022) IF:2.4
- V.Padmavathy J. SeshSerebiah and C.Stella (2022) Diversity of zooplankton and influences of hydrobiology in Mangrove backwaters of Ennore, Tamilnadu, India International Journal of Zoological Investigations Vol. 8, No. 2, 428-434 (2022). IF:2.4
- PaulchamyRamaraj, SreeramuluBhuvanaragavan, Kannan Sruthi, BhaskarRanjana, KumarapuramApadodharanan Subramanian, Chellaiyan Stella, SundaramJanarathanan(2022). N-acetyl-D-glucosamine-binding lectin (PrLec) from the serum of healthy blue swimming crab *Portunus reticulatus* agglutinates Gram-positive (*Micrococcus luteus*) and Gram-negative (*Escherichia coli*) bacteria. Aquaculture Research. 2022;00:1–14: IF 2.18
- Patricio De los Rios, Carlos Esse, Chelladurai Stella, Oscar Zúñiga(2020). Spatial distribution of *Echinolitorina peruviana* (Lamarck, 1882) for intertidal rocky shore in Antofagasta (23° S, Chile). Brazilian Journal of Biology, 2023, vol. 83, e246889 | <https://doi.org/https://doi.org/10.1590/1519-6984.246889>. IF: 1.12
- Dominic SahayaRajan, Stella and Siva.J (2020). Studies on the combined effect of Seagrass *Thalassia hemprichii* (EHRB) Ascher's extract and Plant growth regulators on chlorophyll, nitrate reductase activity and sugar content in black gram (*Vigna Mungo*). Int J Life Science and Pharma Res. ISSN 2250-0480; SP-13. Volume 10, pp 157-161: DOI: <https://www.ijlpr.com/>: IF 7.578: <http://dx.doi.org/10.22376/ijpbs/ijlpr/SP13/Oct/2020.1-337>

CURRICULUMVITAE

Name : Patricio R. De los Ríos-Escalante
Designation : Assistant Profesor [= Profesor Asistente]
Address : Departamento de Ciencias Biológicas y Químicas, Facultad de Recursos Naturales, Universidad Católica de Temuco, Casilla (PO-Box) 15-D, Temuco, CHILE
Phone : 56-45-2553897 / +56 9 5828 6881
Email : prios@uct.cl



Educational qualification:

Course	Board/University	Subject
Doctor in Science	Universidad Austral de Chile	Systematics and Ecology
Engineering	Universidad de Antofagasta	Aquaculture Engineering
Diploma in University Teaching	Universidad Católica de Temuco	Teaching
Diploma in Python and Data Science	Pontificia Universidad Católica de Chile	Data Science

Professional experience

Teaching Experience: 18 Years

Research Experience: 18 Years

Honours and Awards:

2017. Award in academic research, Universidad Católica de Temuco, CHILE.
2010. Award in academic research, Universidad Católica de Temuco, CHILE
- 2000-2004. CONICYT-Chile (currently ANID-Chile): Doctoral fellowship (2000-2002), grant for support doctoral thesis (2001-2002), grant for conclude doctoral thesis (2003).
1998. Second position in graduate ranking of Aquaculture Engineering and Licentiate in Marine Sciences, Universidad de Antofagasta, CHILE.

Recent Publications

- De los Ríos-Escalante, P., C. Esse, C. Stella, P. Adikesavan, O. Zúñiga, 2023. Spatial distribution of *Echinolitorinaperuviana* (Lamarck, 1882) for intertidal rocky shore in Antofagasta (23° S, Chile). *Brazilian Journal of Biology*, 83, e246889
- Vega-Aguayo, R., C. Drake, V. Guzmán, A. Mardones, I. Valdebenito, P. De los Ríos-Escalante, F. Encina-Montoya & J. Barile, 2023. Effect of protein and lipids levels in a growth diet on adult whitebait *Galaxias maculatus* (Jenyns 1842). *Brazilian Journal of Biology* 83: e252305.
- Khan, W., A.A. Khan, J. Khan, N. Khatoon, S. Arshad, & P. De los Ríos-Escalante, 2023. Death caused by covid-19 in top ten countries in Asia affected by covid-19 pandemic with special reference to Pakistan. *Brazilian Journal of Biology*, 83: e248281
- Khan W., S.M.H.M. Naqvi, H. Ul Hassan, S. Khan, & P. De los Ríos-Escalante, 2023. Length-weight relationship: eight species of cyprinidae from river Panjkora, Khyber Pakhtunkhwa, Pakistan. *Brazilian Journal of Biology*, 83: e242922.
- Ulhaq, Z., W. Khan, M.F. Khan, M. Kabir, A.A. Ujjan, W. Ullah, Z. Masood, S. Khan, & P. De los Ríos-Escalante, 2022. Prevalence of intestinal parasitic diseases in school children of rural areas of district lower Dir, Pakistan. *Brazilian Journal of Biology*, 82: e243150.
- Rahman, H.U., W. Khan, S.A., Mehmood, S. Ahmed, S. Yasmin, W. Ahmad, Z. Ullah, M.I.A., Shah, R. Khan, U. Ahmad, A.A. Khan, & P. De los Ríos-Escalante, 2022. Prevalence of cestodes infection among school children of urban parts of lower Dir District, Pakistan, *Brazilian Journal of Biology*, 82: e242205.

Total Citations : 1742
h-index : 21
i10 index : 60

CURRICULUM VITAE

Name : **Dr. M. Kalaiselvam**
Designation : Professor and Director
Address : Faculty of Marine Science
Annamalai University, Parangipettai –608 502
Phone : 04144-243223;243555
Email : kalafms@gmail.com



Educational qualification:

Course	Board/University	Subject	Division/Grade
Ph. D	Annamalai University	Marine Biology	Highly Commended
M.Phil.	Annamalai University	Marine Biology	First Class
M.Sc.,	Annamalai University	Zoology	First Class
B.Sc.,	Annamalai University	Zoology	First Class

Professional experience:

Teaching Experience: 20 years

Research Experience: 28 years

Honours and Awards:

1. **Nation Builder Award-2020**, RC of Cuddalore Coastal City, Rotary International District 2981
2. **Scientist of the Year 2017 Award** by IFEE & Confederation of India Universities (CIU), New Delhi
3. **Best NSS Programme Officer Award – 2017**, Annamalai University
4. Official Spotlight Certificate, Science and Technology Award – 2017
5. **Dr. S.K. Shome Memorial Lecture Award-2016**
6. **Best Oral Presentation Award-2014** by Mycological Society of India
7. JRF and SRF awarded by University Grants Commission

Recent publications:

- C.Shankarammal, **M.Kalaiselvam**, and V.Mohan (2022). Diversity status of Arbuscular Mycorrhizal fungi in association with different Mangrove plants in Tamilnadu, India. Journal of studies in Fungi. Accepted.
- C. Shankarammal, **M. Kalaiselvam** and V. Mohan (2022). Arbuscular Mycorrhizal fungi in association with coastal sand dune plants in cuddalore district, Tamilnadu, India. Advances in Bioresearch, Vol 12 [3/4] Accepted.
- Mano Govindharaj, Sathishkumar Arumugam, Grace Nirmala, Mausumi Bharadwaj and **Kalaiselvam Murugaiyan**, 2019. Effect of Marine Basidiomycetes Fulvifomes sp.- Derived Ergosterol Peroxide on Cytotoxicity and Apoptosis Induction in MCF-7 Cell Line. Journal of Fungi 2019, 5, 1- 16.
- Helan Soundra Rani, M., **M. Kalaiselvam**, 2018. Diversity of halophilic mycoflora habitat in salt pans of Tuticorin and Marakkanam along southeast coast of India. International Journal of Microbiology and Mycology; ISSN:2309-4796; Vol.7, No.1; p.1-17, 2018
- A. Elavarasi, S. Peninal, R. Shanmuga Priya and **M. Kalaiselvam**, 2018. Cytotoxic and antibacterial activities of endophytic fungi isolated from mangroves. World Journal of Pharmaceutical Research, Vol 7, Issue 1, 2018. ISSN 2277– 7105, SJIF Impact Factor-7.532
- C.Shankarammal, G.Rajakumari, M.Elangovan, V.Selvakumar, J.Indrapriyadarshini, **M.Kalaiselvam** and A.Murugan (2018). Nutritional and health benefits of seaweeds: Quantitative sensory evaluation of functional foods from *Gracilaria edulis* Seaweed Research and Utilization Journal. Vol.40, No 1, p-13-21.

Total Citations : 517
h-index : 14
i10 index : 17

CURRICULUM VITAE

Name : **Dr. C.Ragunathan**
Designation : Joint Director/Scientist E
Address : Zoological Survey of India, M-Block, New Alipore,
Kolkotta-700053
Phone : (+91)9434289298
Email : raghuksc@rediffmail.com



Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
Ph. D	Annamalai University	Marine Biology	1997	Awarded
M.Sc.	Annamalai University	Marine Biology and Oceanography	1990	First Class
B.Sc.	Aditanar College, Madurai Kamaraj University	Zoology	1988	First Class

Professional experience:

Research Experience: 28 years

Honours and Awards:

- Received 'HIGH PERFORMANCE SCIENTIST OF ZSI – 2011' AWARD conferred by ZSI, HQs, Kolkata on 26th January 2012.
- Received 'HIGH PERFORMANCE SCIENTIST OF ZSI – 2012' AWARD conferred by ZSI, HQs, Kolkata on 26th January 2013.
- Received a 'CERTIFICATE OF APPRECIATION' from Central Agricultural Research Institute (CARI), ICAR, Port Blair on 23rd June 2013 for the meritorious services
- Received a 'CERTIFICATE OF APPRECIATION' from Central Island Agricultural Research Institute (CIARI), ICAR, Port Blair on 23rd June 2014 for the constant support and cooperation for strengthening research, extension and development activities of the institute.
- Received an award 'FELLOW OF ANDAMAN SCIENCE ASSOCIATION' conferred by Andaman Science Association, Port Blair on 17th April 2015.

Recent publications:

- Dixit, S., Raghunathan, C. and Chandra, K., 2017. New records of sea slugs (Heterobranchia: Opisthobranchia) from India. Proceedings of the International Academy of Ecology and Environmental Sciences, 7(3):47
- Rajeshkumar, S., Raghunathan, C. and Chandra, K., 2016. Additional records of Odonata from Andaman & Nicobar Islands, India. Biosystematica, 10(1&2):39-46.
- Dixit, S., Raghunathan, C. and Chandra, K., 2017. Two new Pseudoceros (Polycladida: Pseudocerotidae) and a Prostheceraeus (Polycladida: Euryleptidae) from Andaman and Nicobar Islands, India. Zootaxa, 4269(4):495-512.
- Mondal, J., Raghunathan, C. and Venkataraman, K., 2017. New records of Aplousobranch ascidian s to Indian waters from Andaman Islands. Threatened Taxa, 9(2): 9874-9880.
- Tamal Mondal, Raghunathan, C. and Venkataraman, K., 2016. Diversity of Scleractinian Corals in Great Nicobar Island, Andaman and Nicobar Islands, India. Proc. Zool. Soc., 69(2): 205-2016. DOI 10.1007/s12595-015-0145-8.

CURRICULUM VITAE

Name : **Dr.V.SUGUMAR**
Designation : Assistant Professor
Address : Department of Oceanography & Coastal Area Studies,
School of Marine Sciences Alagappa University,
Karaikudi –630003
Phone : (+91)9445139906
Email : sugumarv@alagappauniversity.ac.in; crustacealab@gmail.com



Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
Ph. D	University of Madras	Zoology	2005	Highly Commended
M.Phil.	University of Madras	Zoology	2001	First Class (Outstanding)
M.Sc.	University of Madras	Zoology	2000	First Class
B.Sc.	University of Madras	Zoology	1998	First Class

Professional experience: Teaching Experience: 14 years; Research Experience: 14 years

Honours and Awards:

1. Recipient of **Dr. (Mrs) Sudha Varadharajan Memorial Endowment Gold Medal** from Thiru. Surjit Singh Barnala, Governor of Tamil Nadu, for the “**Best Thesis 2005**”.
2. **Awarded Research Fellowship** – Department of Ocean Development, Government of India.
3. **Awarded DST – FAST TRACK for Young Scientist**, Government of India.
4. Recipient of “**Vallal Alagappar Research Recognition Award**” – 2020

Recent publications:

- Rahul Varma and **Sugumar, V. (2022)**. Characterization of cellulose and cellulose nanocrystals from the decayed seagrass along the coast of Thondi, Palk Bay, India. *Cellulose Chemistry and Technology*, **56** (1-2): 39-47.
- Nigariga, P. and **Sugumar, V. (2022)**. Baseline study of trace metal concentrations in abandoned, lost or otherwise discarded fishing gear along Thondi coast, Palk Bay, India. *Journal of Sea Research*, **182**: 102189.
- Rahul Varma, **Sugumar Vasudevan**, Stella Chelladurai and Anandhan Narayanasamy (2022). Synthesis and Physicochemical Characteristics of Chitosan Extracted from *Pinna deltoidea*. *Letters in Applied NanoBioscience*, **11**(4): 4061-4070.
- Neetu Mohan, **Sugumar Vasudevan**, Paramasivam Chellamuthu Ranganathan and Anandhan Narayanasamy (2021). Geochemical and elemental characterization of rostrum and alveolus parts of Belemnite fossil from the Late Cretaceous formation, Tamilnadu, India. *Arabian Journal of Geosciences*, **14**: 1905.
- **Sugumar Vasudevan** and Saravanan Rajendran (2021). Thermal stress induced hyperglycemia in the blue swimmer crab, *Portunus pelagicus*. *Journal of Thermal Biology*, **100**: 103076.
- Nigariga, P. and **Sugumar, V. (2021)**. Seasonal variation of heavy metals in seagrasses along Thondi coast, Palk Bay, India. *Environmental Science and Pollution Research*, **28**: 26849 - 26857.

Cumulative Impact Factor : 76.08
Total Citations : 283
h-index : 11
i10 index : 12

CURRICULUMVITAE

Name : **Dr. S. Paramasivam**
Designation : Assistant Professor
Address : Department of Oceanography & Coastal Area Studies,
School of Marine Sciences
Alagappa University, Karaikudi –630 003
Phone : (+91) 9047733300; Fax : (+91) 4565 225525
Email : drparamsan@gmail.com/psivams@alagappauniversity.ac.in



Educational qualification:

Course	Board/University	Subject	Year	Division/Grade
B. Sc.	Bharathidasan University	Zoology	1994	First Class
M. Sc.	Annamalai University	Coastal Aquaculture	1996	First Class
Ph.D	Annamalai University	Marine Biology	2003	By thesis

Professional experience: Teaching experience: 14 years; Research experience: 14 years

Honours and Awards: DST-SERB YoungScientist award :2012

Recent publications:

- Rosemary, T.; Arulkumar, A.; **Paramasivam, S.**; Mondragon-Portocarrero, A.; Miranda, J.M. **2019**. Biochemical, Micronutrient and Physicochemical Properties of the Dried Red Seaweeds *Gracilariadulisand Gracilariacorticata*. *Molecules*. 24, 2225. (doi:10.3390/molecules24122225). **Impact Factor:3.060**.
- Arulkumar,A.,P.Nigariga,S.ParamasivamandR.Rajaram.**2019**.Metalsaccumulationinediblemarine algae collected from Thondi coast of Palk Bay, Southeastern India. *Chemosphere*. 221:856-862. (doi.org/10.1016/j.chemosphere.2019.01.007). ISSN: 0045-6535, **IF:5.108**.
- ArulkumarA, Paramasivam S, Rameshthangam P, Paramithiotis S. **2019**. Evaluation of psychrophilic, mesophilic, histamine forming bacteria and biogenic amine content in the muscle of mud spiny lobster, *Panuliruspolyphagus*(HERBST, 1793) during ice storage. *J. Food Saf.* 39 (1):e12582 (doi.org/10.1111/jfs.12582). **IF: 1.665**.
- Arulkumar, A., Paramasivam, S. &Miranda, J.M. **2018**. Combined Effect of Icing Medium and Red Alga *Gracilariaverrucosa*on Shelf Life Extension of Indian Mackerel (*Rastrelligerkanagurta*). *Food Bioprocess Technol.* (doi.org/10.1007/s11947-018-2154-x). pp 1-12. ISSN :1935-5149. **IF-3.032**.
- AbimannanArulkumar, Thomas Rosemary, SadayanParamasivam&RamaswamyBabuRajendran. **2018**. Phytochemical composition, *in vitro* antioxidant, antibacterial potential and GC-MS analysis of red seaweeds (*Gracilariacorticata*and*Gracilariadulis*) from Palk Bay, India. *Journal of Biocatalysis and Agricultural Biotechnology*. (doi.org/10.1016/j.bcab.2018.05.008). 15:63-71.ISSN:1878-8181.
- AbimannanArulkumar, AlagusundaramBalamurugan, SadayanParamasivam, PalanivelRameshthangam&SpirosParamithiotis. **2017**. Physicochemical and Microbiological Changes During Drying of Wolf Herring (*Chirocentrusdorab*) and Coastal Trevally (*Carangoidescoeruleopinnatus*), *Journal of Aquatic Food Product Technology*, 26:8, 929-939, (doi: 10.1080/10498850.2017.1362683). **IF:0.682**.

CumulativeImpactFactor : 21.912
TotalCitations : 598
h-index : 12
i10index : 13

CURRICULUM VITAE

Name : **Dr. V.Yoganandan**

Designation :Assistant Professor

Address :Department of
Marine Science
Bharathidasan
University
Tiruchirappalli –
620024

Phone :(+91) 9486088657

Email :



yoganandan1@gmail.com

Academic qualification:Ph.D.

Professional experience:

Teaching

Experience: 10

years Research

Experience: 10

years

Membership in Professional and Academic Bodies:

- Life Member: Indian ScienceCongress
- Life Member: PAGES (Past Global Changes) Society ,Switzerland
- Asia Oceania Geosciences Society,Singapore
- Member of Board of Studies for M.Sc.Marine Scienceprogramme
- Department Research Committee member For Ph.D.programme

Recent publications:

- Sivachandiran, **V. Yoganandan**, K. Selvaraj (2018) Benthic foraminiferal faunal record indicated Paleoclimatic variation in the Southeastern Arabian Sea for 14,430 years B.P. Journal of Coastal Sciences. V. 5, pp 37-45.
- K.Selvaraj,J.Pandiyan,**V.Yoganandan**,G.Agoramoorthy(2016).Indiacontemplatesclimate changeconcernsafterfloodsravagedthecoastalcityofChennai.Ocean&CoastalManagement V. 129, pp10-14.
- Sivachandiran,**V.Yoganandan**,K.Selvaraj(2016)MicrofossilsRecordsofDecadalClimate Variability from the Southeastern Arabian Sea” International workshop on “Connecting Paleo and Modern Oceanographic Data to Understand AMOC over Decades to Centuries” held at boulder, Colorado, USA, During May 23- 25, 2016.
- Sivachandran**V. Yoganandan**and K. Selvaraj, (2015) A High Resolution Planktonic Foraminifer Records of Indian Summer Monsoon Variability from Southeastern Arabian Sea. Proceeding volume of the CLIVAR-ICTP workshop on Decadal Climate Variability and Pridictability held at Trieste, Italy during 16-24 November 2015.



SCIENCE CAMPUS