

FACULTY PROFILE

1. Name: **Dr. Sanjay Mahadeo Khetre**
2. Designation: **Professor**
3. Department : **Chemistry**
4. Address: **Dahiwadi College Dahiwadi**
5. Date of Birth: **01/10/1971.**
6. Mobile No.: **9423911374**
7. E-mail: sanjaykhetre@gmail.com
8. Qualification:



Sr. No.	Exam. Passed	University	Subject	Year	Grade / Class
1	High School /S.S.C.	Pune	Mar.,Hin, Eng, Math,Sci, Soc.Sci,	April-1989	I st Class
2	H.S.C.	Pune	Phy. Chem, Bio, Eng, Geo, Mar	April-1991	II nd Class
3	B.Sc	Pune	Chemistry	May-1994	I st Class
4	M.Sc	Pune	Organic Chemistry	May-1997	I st Class
5	B.Ed.	Pune	Maths,Science Method	May-2000	I st Class with dist.
6	SET	Pune(UGC)	Chemistry	March-2000	Pass
7	MS-CIT	Mumbai	Computer	Sept.2004	I st Class

9 Participation in Academic Events: Orientation /Refresher Courses/FDP/MOOCs/Swayamcourses etc

Sr. No.	Course	Duration	University / Institute
1	Orientation Course	24/01/2005 to 20/02/2005	ASC Pune, Pune University
2	Refresher Course	25/09/2006 to 14/10/2006	Mumbai University
3	Refresher Course	25/11/2010 to 14/12/2010	HP University, Himachal Pradesh
4	Refresher Course	20/11/2012 to 11/12/2012	Amaravati University, Amaravati
5	Short Term Course	07/09/2015 to 12/09/2015	Dr Babasaheb Ambedkar Marathawada University Aurangabad

9. Teaching Experience: 22 Yrs.

Sr. No.	Designation	Name of Employer	Salary with Grade Pay/ Academic Level	Date of		Experience in years
				Joining	leaving	
1	Lecturer	Rayat Shikshan Sanstha's Mahatma Phule, A.S.C.college Panvel	8000/-	01/04/2001	31/12/2008 (transfer)	8 years 6 Months
2	Lecturer	Rayat Shikshan	8000/-	01/01/2009	16/7/2019 (6 months and

		Sanstha's Abasaheb Marathe A,C,and S College			transfer)	16 days
3	Professor	Rayat Shikshan Sanstha's Dahiwadi College Dahiwadi	10000 AGP	17/7/2009	Till date	13 years,
Total Experience in years						22 years

10. Industrial Experience: 1/2 Yrs.

Sr. No.	Name of Industry	Designation	Duration	Total Years
1	National Chemical laboratory, Pune	Project Assistant	17.7.1997- 14.1.1998	6 months

11. Research

a) Research Experience: **16 Yrs.**

b) **Ph.D** / M. Phil

Sr. No.	Ph. D./ M. Phil	University/Institute	Title of Thesis	Year	Pursuing / Completed
1	Ph.D.	Shivaji University Kolhapur	Catalytic and Structural studies of non-stoichiometric mixed metal oxides of rare earth and transition metals	July 2007	July 2012

c) **Research Guidance: 06**

(PG and Research Guide)

Sr. No.	P.G./M.Phil./ Ph.D.	Year	University / Institute	No. of students awarded	No. of student working
1	PG (Project)	2012- 2022	Shivaji University,Kolhapur	30	04
2	Ph.D.	2020- 2022	Shivaji University,Kolhapur	2	04

d) Research Projects:

Sr. No.	Title	Govt. & Non Govt.Funding Agency	Duration	Grant Received	Status Completed/ Ongoing
1	'Synthesis Characterization and Application of Nanocrystalline Mixed Metal Oxides'	UGC	22 Feb. 2012 To 21 Feb 2014	1,30,000/-	Completed 2014

e) **Research Publication: (Research Papers in Peer-Reviewed or UGC listed Journals)**

Sr. No.	Title with page Nos.	Journal	ISSN /ISBN No.	Impact Factor, if any
1	Environmentally Benign Organic Dye Conversion under Uv-Light Through TiO ₂ -ZnO nanocomposite Sandip M. Deshmukh, Sudhir S. Arbuj, Santosh B. Babar, Shoyebmohamad F. Shaikh, Asiya M. Tamboli, Nguyen Tam Nguyen Truong, Chang-Duk Kim, Sanjay M. Khetre , Mohaseen S. Tamboli and Sambhaji R. Bamane	<i>Metals</i> ,2021, 11(11), 1787; https://doi.org/10.3390/met11111787 - 06 Nov 2021	ISSN: 2075-4701	2.695
2	TiO ₂ -SnO ₂ Nanocomposite for Photocatalytic Environmental Remediation under Uv-Light. Sandip M Deshmukh, Santosh S Patil, Santosh B Babar, Sultan Alshehri, Mohammed M Ghoneim, Asiya M Tamboli, Nguyen Hoang Lam, Nguyen Tam Nguyen Truong, Chang Duk Kim, Mohaseen S Tamboli, Sanjay M Khetre , Sambhaji R Bamane	<i>Metals</i> ,2022, 12(5), 733; https://doi.org/10.3390/met12050733 - 26 Apr 2022	ISSN: 2075-4701	2.695
3	The Streoselective Preparation of beta-hydroxy ester employing enzymatic reduction in an ionic solvent. R.V.Sawant, S.P.Jagadale, V.S.Khetre, S.M.Khetre ,	Asian Journal of Organic and Medicinal Chemistry Vol-7 N0-2 (April-June) ,2022, 207-210	2456-8937 UGC-Care List	-
4	Green Approach in Organic Synthesis-Enzymatic Microorganism for selective reduction of prochiral Ketone R.V.Sawant, S.P.Jagadale, V.S.Khetre, S.M.Khetre , S.R. Bamane	Stochastic Modeling and Applications Vol-26 No.3 (January -June) 2022	0972-3641	-
5	Use of Modified Peritoneal Dialysis as effective Method of Chemistry, Alternative to Hemodialysis for treatment of Chronic kidney Disease- Case study R.V.Sawant, S.P.Jagadale, V.S.Khetre, S.M.Khetre , S.R. Bamane	Worldwide International Inter Disciplinary Research Journal 2022	2454-7905	-
6	CaTiAlO ₄ Spinal Ceramics Nano Ovals: Synthesis, Physicochemical Characterization and Antimicrobial activity with water remediation. M.V.Patil, S. R. Bamane, S.M. Khetre	Research Journal of Chemistry and Environment Vol-25 (6) June 2021 Page 163-170	Online ISSN: 097 2-0626	-
7	A facile urea-assisted thermal decomposition process of TiO ₂ nanoparticles and their photocatalytic activity Authors: Sandip Madhukar Deshmukh *, Mohaseen S. Tamboli *, Santosh. B. Babar, Dipak. P. Hiwarale, Ankush Gautam Thate, Asiya F. Shaikh, Sanjay M. Khetre *, Sambhaji R. Bamane *	Coating , https://www.mdpi.com/journal/coatings 2021	(ISSN 2079-6412	3.236

8	Antibacterial activity of LaNiO_3 prepared by sonicated sol-gel method using combination fuel A. L. Jadhav, S. M. Khetre	International Nano Letters, volume 10, page23–31(2020),	ISSN:2228-5326, Indexed Peer reviewed	--
9	NaAlZrO_3 Ceramic Nonodiscs: Synthesis, Physicochemical Characterization and Antimicrobial Activity for Water Remediation, M. V. Patil, S,M,Khetre S. R. Bamane, & V. G. Sawant	International Journal of Recent Scientific, Vol. 11, Issue, 03 (C), pp. 37879-37882, March, 2020,	ISSN: 0976-3031, Research, Peer Reviewed	6.86
10	Synthesis and Characterization of High Surface Area of LaNiO_3 Nanomaterial by Sonicated sol Gel Method. A. L. Jadhav, S M. Khetre	International Journal of Research and Analytical Reviews (IJRAR), IJAR June 2019, Volume 6, Issue 2, Peer Reviewed	(E-ISSN 2348-1269, P-ISSN 2349-5138),	-
11	Photo catalyst degradation of methylene blue by Heterogeneous Suspension of LaCrO_3 in Presence of Nano Catalyst in presence of Sunlight. S.M.Khetre	Ajanta, Volume-VIII, Issue,1, January-March-2019, Page 165-172	ISSN-2277-5730,	5.5
12	Photodegradation of Eriochrome Black T Using High Surface Area LaCrO_3 Nanomaterial Prepared by Sonicated Sol Gel Combustion Method, A. L. Jadhav, S M. Khetre	International Journal of Emerging Technology and Innovative Research (JETIR) , August 2018, Volume 5, Issue 8	ISSN - 2349-5162, Peer Reviewed	5.87
13	Ethanol gas sensing properties of nano-porous LaFeO_3 thick films, S.M.Khetre A.U.Chopade, C.J.Khilare, S.R.Kulal, H.V.Jadhav, P.N.Jagadale, S.V.Bangale, , S.R.Bamane	Journal of Shivaji University (Science & Technology), Volume No. 41 (2), 2014-2015, Page No.1-3	ISSN-Science-0250-5347,	--
14	Synthesis , Charaterization and electrical properties of nanocrystalline $\text{Cu}_{0.5}\text{Ni}_{0.5}\text{Ce}_3\text{O}_5$ H. V. Jadhav, S. M. Khetre , S.G. Jadhav	J Mater Sci: Mater Electron, October 2014, Volume 25, Issue 10 , pp 4375–4379	ISSN 0957-4522 peer-reviewed	2.195
15	Electrical and dielectric properties of nanocrystalline LaCrO_3 S. M. Khetre , A. U. Chopade, C. J. Khilare, H. V. Jadhav, , P. N. Jagadale	J Mater Sci: Mater Electron, November 2013, Vol. 24, Issue 11, PP 4361-4366	ISSN 0957-4522 peer-reviewed	2.195
16	A novel nanocoralloids CrFeO_3 nanoparticle: synthesis, electrical property and wettability S. M. Khetre	J Mater Sci: Mater Electron, April,2013, Volume 24, Issue 4 , pp1213–1219	ISSN 0957-4522 peer-reviewed	2.195

17	Synthesis and characterization of nanostructured CaSiO_3 biomaterial P. N. Jagdale, S.M.Khetre S. R. Kulal, M. G. Joshi, P P. Jagtap, S. R. Bamane	Materials Science-Poland, 31(2), 2013, pp. 269-275 Abstracting and Indexing, Peer Reviewed	ISSN: 2083-134X (est. in 1974 as Material s Science, ISSN 0137-1339)	0.911
18	Synthesis of Dy doped Co–Zn ferrite by sol–gel auto combustion method and its characterization S.R.Kulal , P.N.Jagdale , V.M.Gurame , S. M .Khetre D. P.Waghmode, G. B.Kolekar , S. R.Bamane	Materials Letters 84 (2012) 169–172	ISSN: 0167-577X Abstracting & Indexing, Peer Reviewed	3.204
19	Preparation and Study of Acetone Gas Sensing Behavior of nanocrystalline LaCrO_3 Thick Film S. M. Khetre , C,J ,Khilare , V.S.Shivankar, S. R. Bamane	Sensors & Transducers , Journal, Vol. 137, Issue 2, February 2012pp. 165-175	ISSN 1726-5479. Peer Reveiwed , Indexing	0.115
21	Studies on electrical and dielectric properties of LaFeO_3 S. M. Khetre* H. V. Jadhav , P. N. Jagdale, S. R. Kulal and S. R. Bamane	Advances in Applied Science Research, 2011, 2 (4):503-511 peer-reviewed	ISSN: 0976-8610 CODEN (USA): AASRFC	3.52
22	Use of mixed metal oxide as a catalyst in the decomposition of hydrogen peroxide S. M. Khetre* H. V. Jadhav , S. V. Bangale, P. N. Jagdale, S. R. Bamane	Advances in Applied Science Research, 2011, 2 (2): 252-259 peer-reviewed	ISSN: 0976-8610,	3.52
23	Solar photodegradation of methylene blue by LaMnO_3 nanorods as a heterogeneous catalyst S. M. Khetre* ,H. V. Jadhav , S. V. Bangale, P. N. Jagdale, S. R. Kulal, S. R. Bamane	Archives of Applied Science Research, 2011, 3 (4):450-462 Peer Reviewed , Open access.	ISSN 0975-508X	1.2
24	Synthesis, characterization & hydrophilic properties of nanocrystalline ZnFe_2O_4 oxide S. M. Khetre , S. V. Bangale, S. R. Bamane	Archives of Applied Science Research , , 2011, 3 (4):471-479 Peer Reviewed	ISSN 0975-508X, Open access.	1.2
25	Synthesis, characterization and hydrophilic properties of nanocrystalline ZnCo_2O_4 oxide by combustion route S. V. Bangale, S. M. Khetre , S. R. Bamane	Der Chemica Sinica, 2011, 2 (4):303-311	ISSN: 0976-8505, Peer Reveiwed	0.676
26	Simple Synthesis of ZnCo_2O_4 Nanoparticles as Gas-sensing Materials, S. V. Bangale, S. M. Khetre , D. R. Patil , S. R. Bamane	Sensors & Transducers Journal, Vol. 134, Issue 11, November 2011, pp. 95-106	ISSN 1726-5479.Peer Reveiwed , Indexing	0.115

27	Removal of alizarin red-S from aqueous solution by adsorption on nanocrystalline $\text{Cu}_{0.5}\text{Zn}_{0.5}\text{Ce}_3\text{O}_5$ H.V.Jadhav, S. M. Khetre , S.R. Bamane	Der Chemica Sinica, 2011, 2(6):68-75 Peer Reviewed	ISSN: 0976-8505	0.676
28	Synthesis and Characterization Of Nanocrystalline LaFeO_3 By Combustion Route, S.M.Khetre , H V Jadhav, S.R.Bamane	Rasayan J. Chem. Vol.3, No.1 (2010), 82-86, (Online) Peer Reviewed, abstracted & indexed	ISSN: 0974-1496 (Print) SSN: 0976-0083	1.22
29	Synthesis And Characterization of Nanocrystalline LaCrO_3 by Combustion Route S.M.Khetre , H V Jadhav, S.R.Bamane	Rasayan J. Chem. Vol.2, No.1 (2009), 174-178, (Online) Peer Reviewed, Abstracted & indexed	ISSN: 0974-1496 (Print) SSN: 0976-0083	1.22
30	Synthesis and Characterization Of Nanocrystalline Cu-Zn-Ce Mixed Oxide By Combustion Route, . H V Jadhav, S.M.Khetre , S.R.Bamane	Rasayan J. Chem. ISSN:0974-1496 (Print) SSN: 0976-0083 (Online) Vol.2, No.4 (2009), 842-845	ISSN: 0974-1496 (Print) SSN: 0976-0083	1.22

f) Research Citations:

Sr. No.	Source	Citation	H-Index	i-10 Index
1	Scopus, https://www.scopus.com/authid/detail.uri?authorId=36069381200	104	6	-
2	Publons/ Web of Science, (AAF-6943-2020)	54	04	-
3	Google Scholar https://scholar.google.com/citations?user=JmiPzCwAAAAJ&hl=en	322	10	10
4	Research Gate, https://www.researchgate.net/profile/Sanjay-Khetre	214	02	01
5	ORCID , https://orcid.org/0000-0001-6849-0921			
6	Vidwan, Vidwan-ID : 290231			
7	LinkedIn, https://www.linkedin.com/in/sanjay-khetre-0145b623/			

12. Consultancy:-

Sr. No	Title	Agency	Year of completion	Whether PI / Co-PI	Amount Mobilized (Rs. Lakh)
1	Soil Health Mission, (SHC) Soil Analysis, Department of Agricultural Corporation & Farmers Welfare Ministry of Agriculture and Farmer Welfare Government of India	Government of Maharashtra	Sept 2018	PI	158650/-
2	Soil Analysis	Individual	Feb 2019	PI	3000/-
3	National Food Security Mission (NFSM) Soil Sample analysis)	Government of Maharashtra	Jan -2020	PI	50225/-

4	Instrumentation Consultancy	Private	June 2017	PI	2000/-
Total- 213875/-					

(b) Policy Document (Submitted to an International body / organisation like UNO/UNESCO/World Bank/International Monetary Fund etc. or Central Government or State Government)

Sr. No.	Title	International / National/ State	Year
1	Preparation of Five Year Perspective Plan of Shivaji University	State	2018-19

13. *Invited lectures / Resource Person/ paper presentation in Seminars/ Conferences/full paper in Conference Proceedings (Paper presented in Seminars/Conferences and also published as full paper in Conference Proceedings will be counted only once)

Sr. No.	Title of Lecture / Paper presented / Published	Title of Conference / Seminar etc	Organized by	Whether International (Abroad/within country) / National / State/ University
1	Auto-combustion synthesis of nanocrystalline AlFe_2O_4	Two days international conference On "Advances in Chemical Science" 18 th & 19 th Dec. 2018	S M Joshi College	International
2	Degradation of MB in Presence of novel Nanocorolloids CrFeO_3 nanocatalyst.	Two Day International Conference on Interdisciplinary Approach in Chemical Research (IACR-2017)	Department of Chem. S M Joshi College Hadapsar, on 13& 14 Dec 2017	International
3	A Novel nanocorolloids CrFeO_3 potential candidate for LPG gas sensing	International Conf. on Contemporary Research in Chemical Science s on 22-23 April 2015	S G M College Karad	International
4	Synthesis of mixed oxide $\text{CuNiCe}_3\text{O}_5$	UGC Sponsored International conference Emerging Horizons in Biological& Nanomaterials 0n,28-30 Nov 2013	Dept of Chemistry & Microbiology Shri Shivaji Mahavidyalaya Barshi	International
5	Auto combustion synthesis of Nanocrystalline FeCrO_3	Nanoscience, Technology and Societal Implications (NSTSI), 8-10 Dec.2011 Page1-6	978-1-4577-2037-6/11/\$26.00 ©2011 IEEE	International
6	Biginili reaction catalyzed by Nanocrystalline LaMnO_3 Catalyst	National Conference on Advance in Chemical Sciences	on 8/01/2020	National

7	Preparation and characterization of CuCrMnO ₄ mixed metal oxide by sol gel method	National Conference on New Horizons in Chemical Sciences: 22 and 23 December 2015	Department of Chemistry, YCIS , Satara	National
8	Benching marking in teaching Learning and Evaluation Method	NAAC Bangalore Sponsored Two Day National Seminar On The Importance of Bench-marking in the 3 rd Cycle of NAAC 27-28 Feb 2015	IQAC Dahiwadi College Dahiwadi	National
9	Decomposition of H ₂ O ₂ in presence of Natural Catalyst Stylo Hemata	National conference on Frontier of Research in Chemistry On 27/12/2013	S G M College Karad	National
10	Synthesis, Characterization and Photocatalytic activity of Nanoporous LaFeO ₃ .	UGC Sponsored Seminar on Chemistry and its role in human developement on 26/3/2012 on 26-27 Dec. 2013	Dr. Patangarao Kadam Mahavidyalaya Sangli.	National
11	Research Audit	National Level Webinar on Academic Audit, and Research Audit on 10/05/2020	Dahiwadi College Dahiwadi	National
12	Intellectual Property Right	National Level Webinar on IPR on 11/05/2020	Dahiwadi College Dahiwadi	National
13	Research Paper Writing , Methodology & Presentation Skill	One day State Level Workshop 18/02/2020	Dahiwadi College Dahiwadi on	State
14	Revised Syllabus of B.Sc.II chemistry Paper V Industrial Chemistry	Revised Syllabus of B.Sc.II Chemistry Paper V and VI Sponsored by Shivaji uni. Kolhapur On 6/8/2015	S. B. Deshmukh Mahavidyalaya Atpadi	University Level
15	Resource Person , One Day Workshop on Revised Syllabus of B.Sc.I in Chemistry , Industrial Chemistry	One Day Workshop on Revised Syllabus of B.Sc.I in Chemistry 10/10/2013	V.N.A.,C.and Baba Naik Science Mahavidhyalaya Shirala	University Level
16	Laboratory Safety Measures	Effective Laboratory Management Skill for Non-Teaching faculty under RUSA 30/12/2020	Y C I S Satara,	College (Autonomous College)
17	Need of water testing and Pure Water	NSS Camp Bhandawali, 19/01/2020	NSS , Dahiwadi College Dahiwadi on	College
18	How to write Research Article	Invited Lecture 25/1/2020	Lead College of S.P.College Lonand,	College
19	Importance of Water Testing and Health	NSS Camp at Bhnadawali Village 07/01/2019	NSS DCD	College
20	Career Opportunities after B.Sc.	Student Induction Programme 26/07/2019	Dadiwadi	College
21	Preparation of Eco-friendly Fertilizer from agricultural waste	One day workshop on Career as Researcher in Chemical sciences: Challenges,Opportunities. on 6 th Feb 2018	Lead College ,Dahiwadi College Dahiwadi	College

22	Research Methodology	Induction Cum Orientation programme 03/08/2018	Dahiwadi College Dahiwadi	College
23	Determination of P ^H of various types of Fruits by P ^H Meter	Five Days Rayat Inspire Camp 18 Dec 2019	Rayat Shikshan Sanstha,	College Level
24	Lecture on Soil and water Analysis	NSS Camp at Wavarhire On 26/01/2017	NSS Dahiawdi College Dahiwadi	College Level
25	Lecture on Soil and water Analysis	NSS Camp at Wavarhire On 10/01/2016	NSS Dahiawdi College Dahiwadi	College Level
26	How to write Research Paper	One day workshop on Research Activity Under Lead College Scheme On 12/2/2014	Mudhoji College Phaltan	College Level
27	Soil and Water analysis	NSS Camp at Waghmodewadi 27/12/2014	NSS Dahiwadi College Dahiwadi	College Level
28	Soil and Water analysis	NSS Camp at Waghmodewadi 30/01/2015	NSS Dahiwadi College Dahiwadi	College Level
29	Soil and Water analysis	NSS Camp at Andhali 15/12/2014	NSS Dahiwadi College Dahiwadi	College Level
30	Soil Testing	One day Teachers-Students Workshop on Soil and Water analysis on 20/12/2013	Lead College	College Level
31	Children, Parents and Mobile	One day farewell Function for XII and X students On 27/3/2013	Mahatma Gandhi Vidyalaya & Jr. College	College Level
32	Interview Techniques	Placement Cell on 31/01/2013	Dahiwadi	College Level

14. Participation in International / National conferences, Webinar, Seminars, Workshops:

- a. International :-
 International = 15
 National =30
 State=27
 University=40

15. (c) Awards/Fellowship

Sr. No.	Fellowship Award	Year	International /National	Awarding Academic Body/ Association
1	Faculty Development	2011	National	UGC

16. Organizational Experience:

Organized more than 60 Seminar, Workshops, Conference, Webinar

17. Academic Responsibilities:

- a) Chemistry - **Head of department (from 2018)**
 b) M.Sc. Organic Chemistry and Analytical Chemistry- **Coordinator (from 2012-2022)**
 c) Lead College Scheme (Host College-2015-2019) -**Coordinator (from -2015)**

- d) NAAC-Cri-II (Teaching ,Learning and Evaluation)- **Chairman (From-2010)**
- e) DST-FIST- Scheme- **Coordinator (from 2015-2021)**
- f) RUSA Scheme -**Coordinator**
- g) Soil and Water Testing Laboratory (Gov.of Maharashtra recognized)- **Coordinator (2018-2022)**
- h) M.Phil/ Ph.D.- **Coordinator**

18. Memberships: Life membership of Indian Science Congress.

19. Creation of ICT mediated Teaching Learning pedagogy and content and development of new and innovative courses and curricula

(a) Development of Innovative pedagogy

Sr. No.	Development of Innovative pedagogy
1	You-Tube Channel - https://www.youtube.com/channel/UCeiQDw-qr8_EEFghz3U7OsA
2	PPT of B.Sc.III-Chemistry M.Sc.I and M.Sc.II

(b) Design of new curricula and courses

Sr. No.	Design of new curricula /courses
1	Syllabus Sub-committee BoS (Chemistry) SGM College Karad (Autonomus) for Designing Syllabus of B.Sc.II on 22/02/2020
2	Syllabus Sub-committee BoS (Chemistry) SGM College Karad (Autonomus) for designing Syllabus of M.Sc.II on 22/02/2020
3	Syllabus Sub-committee BoS (Chemistry) Shivaji University Kolhapur for designing Syllabus of B.Sc.III on 10/02/2014
4	Syllabus Sub-committee BoS (Chemistry) Shivaji University Kolhapur for designing Syllabus of B.Sc.I on 28/01/2013
5	Syllabus Sub-committee BoS (Chemistry) Shivaji University Kolhapur for designing Syllabus of B.Sc.III on 11/02/2013
6	Syllabus Framing of Certificate Course in Biotechnology 23/03/2012
7	Instrumentation Operation Skill course
8	Soil and Water Analysis COC course