



K.N. Toosi University of Technology
Petroleum Geomechanics & Geotechnical Engineering Group
Associate professor

President of PIPRC (Petroleum Industry Productivity
Research Center)

Status: Married

Children: Two

Date of Birth: 1970

EDUCATION

Ph. D. in *Geotechnics* (Multiphase Modeling), Centre d'Enseignement et de Recherche en MÉcanique des Sols, Ecole Nationale des ponts et chaussées, (ENPC – CERMES), Paris, France

M. Sc. in *Geotechnical Engineering* (Seismic Coefficient in Pseudo Static Analyses), K. N. Toosi University of Technology, Tehran, Iran

B. Sc. in *Civil Engineering*, Civil Engineering Department, University of Science & Technology, Tehran, Iran

RESEARCH INTERESTS

- Petroleum and Gas reservoir modelling
- Wave transmission in elasto-plastic media
- Theoretical and numerical modeling of soil and rock
- Multiphase multi-component transport in geomaterials
- Soil-structure interaction

COURSES TAUGHT

- Petroleum Geomechanics
- Heat and Mass Transfer
- Unsaturated Soils Mechanics
- Numerical Methods in Geomechanics
- Advanced Engineering Mathematics I & II
- Geotechnical Earthquake Engineering
- Excavation Pits and Support Systems
- Advanced Technology in Building Industry
- Soil Dynamics
- Rock Mechanics
- Foundation Engineering
- Tunnel Engineering
- Soil/Structure Interaction
- Soil Mechanics
- Research Methodology

Dr. Hasan Ghasemzadeh

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BOOKS

- [Modern Buildings & Renewable Energy – Thermal Piles \(in Persian\)](#), 2020
- [Introduction to Iron and Steel Industry \(in Persian\)](#), 2013
- [Seepage modeling in saturated and unsaturated soils \(in Persian\)](#), 2010

EXPERINCE

- Geomechanical and Geotechnical projects (Manager and Supervisor)
- Industrial projects (Copper and Steel making projects' manager)
- High-rise building (Designer and Supervisor)
- Embankment dams and Hydro-mechanical equipments (Designer and Supervisor)

RESEARCHES CONDUCTED

- Supervised more than 10 Ph. D. students
- Supervised more than 50 M. Sc. students

COMPUTER KNOWLEDGE

- Software developer using numerical methods

LANGUAGE

- Persian: mother language
- English: fluent
- French: fluent
- Arabic: current

HONORS

- Excellence in teaching at K.N. Toosi University of Technology, 2010

CONTACT

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PUBLICATION

Journal papers

1. Ghasemzadeh H., Akbari F., 2020, [Investigation of Soil Active Wedge Angle with Linear Matric Suction Distribution Below the Footing](#), *International Journal of Civil Engineering*, 18(2), 161-168, <https://doi.org/10.1007/s40999-019-00426-1>.
2. Ghasemzadeh H., 2019, Multiscale Multiphysic Mixed Geomechanical Model for Deformable Porous Media Considering the Effects of Surrounding Area, *Journal of Petroleum Geomechanics* 3(1), 79-99.
3. Ghasemzadeh H., Pasand MS., 2019, [An Elastoplastic Multiscale, Multiphysics Mixed Geomechanical Model for Oil Reservoirs Using Adaptive Mesh Refinement Methods](#), *Journal for Multiscale Computational Engineering*, Vol. 17, No. 4, 385-409.
4. Ghasemzadeh H., Akbari F., 2019, [Determining the bearing capacity factor due to nonlinear matric suction distribution in the soil](#), *Canadian Journal of Soil Science*, 99(4), pp. 434-446.
5. Sadrnejad S.A., Ghasemzadeh H., Khodaei Ardabili A., 2019, [A Finite Element Model for Simulating Flow around a Well with Helically Symmetric Perforations](#), *Journal of Engineering Geology*, 12 (5), 159-188.
6. Ghasemzadeh H., Pasand MS., 2019, [Modeling of Oil Transport in Porous Media Using Multiscale Method with Adaptive Mesh Refinement](#), In: Ferrari A., Laloui L. (eds) *Energy Geotechnics. Springer Series in Geomechanics and Geoengineering. Springer*, 0(217729), pp. 475-485.
7. Ghasemzadeh H., Pasand MS., Shamsi MMM., 2018, Experimental study of sulfuric acid effects on hydro-mechanical properties of oxide copper heap soils, *Minerals Engineering*, 117, 100-107.
8. Ghasemzadeh H., Tarzaban M., Hajitaheriha M.M., 2018, Numerical Analysis of Pile-Soil-Pile Interaction in Pile Groups with Batter Piles, *Geotechnical and Geological Engineering*.
9. Safehian H., Rajabi A.M., Ghasemzadeh H., 2018, Effect of diesel-contamination on geotechnical properties of illite soil, *Engineering Geology*, 241, 55-63.
10. Taheri E., Sadrnejad A., Ghasemzadeh, 2017, Application of M3GM in a Petroleum Reservoir Simulation, *Journal of Petroleum Science and Technology*, 7 (3), 33-46.
11. Ghasemzadeh H., Sojoudi M.H., Ghoreishian S.A., Karami M.H., 2017, Elastoplastic model for hydro-mechanical behavior of unsaturated soils, *Soils and Foundations*, <http://dx.doi.org/10.1016/j.sandf.2017.05.005>, 57 (3), pp. 371-383.
12. Ghasemzadeh H., Tabaiyan M., 2017, The Effect of Diesel Fuel Pollution on the Efficiency of Soil Stabilization Method, *Geotech. Geol. Eng.*, DOI 10.1007/s10706-016-0121-8, 35 (1), pp. 475-484.
13. Javadi M., Ghasemzadeh H., 2017, Wavelet analysis for ground penetrating radar applications: A case study, *Journal of Geophysics and Engineering*, 14 (5), pp. 1189-1202.
14. Ghoreishian S.A., Sadrnejad S.A., Ghasemzadeh H., 2017, A hybrid numerical model for multiphase fluid flow in a deformable porous medium, *Applied Mathematical Modelling*, 45, pp. 881-899.
15. Taheri E., Sadrnejad S. A., [Ghasemzadeh H.](#), 2015, Multiscale geomechanical model for a deformable oil reservoir with surrounding rock effects, *International Journal for Multiscale Computational Engineering*, 13 (6).

16. Rahimi E., Ghasemzadeh H., 2015, A new algorithm to determine optimum cut-off grades considering technical, economical, environmental and social aspects, *Resources Policy*, <http://dx.doi.org/10.1016/j.resourpol.2015.06.004i>.
17. Merati, A., Ghasemzadeh, H., Astaneh, S. M., 2015, Determining Slope Stability by Rigid Finite Element Method and Limit Analysis Methods, *Journal of Novel Applied Sciences*, Vol. 4, No. 5: 579-589.
18. Jamshidzadeh, Z., Tsai F., Ghasemzadeh H., Mirbagheri S.A., Tavangari Barzi M., Hanor J. S., 2015, Dispersive thermohaline convection near salt domes: a case at Napoleonville Dome, southeast Louisiana, USA, *Hydrogeology Journal*, Vol.23: 983–998.
19. Rahimi E., Oraee K., Shafahi Z., Ghasemzadeh H., 2015, Determining The Optimum Cut-Off Grades In Sulfide Copper Deposits, *Arch. Min. Sci.*, Vol. 60, No. 14: 313-328.
20. Ghasemzadeh H., Ramezanpour M. A., Bodaghpour S., 2014, [Dynamic high order numerical manifold method based on weighted residual method](#), *International Journal for Numerical Methods in Engineering*, Vol. 100, Issue 8, start page 596, DOI: 10.1002/nme.4752.
21. Rahimi E., Oraee K., Shafahi Z., Ghasemzadeh H., 2014, [Considering environmental costs of copper production in cut-off grades optimization](#), *Arabian Journal of Geoscience*, 8 (9), 7109-7123, DOI 10.1007/s12517-014-1646-x, 26.
22. Sadrnejad S. A., Ghasemzadeh H., Taheri E., 2014, [Multiscale multiphysic mixed geomechanical model in deformable porous media](#), *Journal for Multiscale Computational Engineering*, Vol. 12 No. 6, , 529-547.
23. Ghasemzadeh H., Rahmani Samani H., Mirtaheri M., 2013, [Vibration analysis of steel structures including effect of panel zone flexibility based on energy method](#), *Earthquake engineering and engineering vibration journal*, Vol. 12, No. 4, 1-12.
24. Ghasemzadeh H., Ghoreishian Amiri S.A., 2013, [A hydro-mechanical elastoplastic model for unsaturated soils under isotropic loading conditions](#), *Computers and Geotechnics* 51,91-100.
25. Ghoreishian Amiri S.A., Sadrnejhad S.A., Ghasemzadeh H., Montazari G.H, 2013, [Application of control volume based finite element method for solving the black-oil fluid equations](#), *Petroleum Science*,10 (3), 361-372.
26. Valizadeh N., Ghorashi S.S., Mohammadi S., Shojaee S., Ghasemzadeh H., 2013, [Analysis of thin plates by a combination of isogeometric analysis and the Lagrange multiplier approach](#), *Comp. Meth. Civil Eng.*, Vol. 3, 2, 47-66.
27. Khosravi E., Ghasemzadeh H., Sabour M.R, Yazdani H., 2013, [Geotechnical properties of gas oil-contaminated kaolinite](#), *Engineering Geology* 166,11–16.
28. Jamshidzadeh, Z.,Tsai F.; Mirbagheri S.A., Ghasemzadeh H., 2013, [Fluid dispersion effects on density-driven thermohaline flow and transport in porous media](#), *Advances in Water Resources*, 61- page:12-28, <http://dx.doi.org/10.1016/j.advwatres.2013.08.006>.
29. Ghasemzadeh H., Abounouri A.A., 2013, [Compressional and shear wave intrinsic attenuation and velocity in partially saturated soils](#), *Soil Dynamics Earthquake Eng.*, 51- page:1-8, <http://dx.doi.org/10.1016/j.soildyn.2013.03.011>.
30. Ghasemzadeh H., Abounouri A.A., 2013, [The Effect of Dynamic Permeability on Velocity and Intrinsic Attenuation of Compressional Waves in Sand](#), *Civil Engineering Infrastructures Journal*, 46(2): 221 – 231.

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31. [Ghasemzadeh H.](#), Abounouri A.A., 2012, [Effect of subsurface hydrological properties on velocity and attenuation of compressional and shear wave in fluid-saturated viscoelastic porous media](#), Journal of Hydrology, 460-461,110-116.
 32. [Asgarian B.](#), [Shokrgozar H.R.](#), [Shahcheraghi d.](#), [Ghasemzadeh H.](#), 2012, [Effect of soil pile structure interaction on dynamic characteristics of jacket type offshore platforms](#), [Coupled Systems Mechanics](#), Vol. 1, No. 4 (2012) 381-395.
 33. [Sadrnejhad S.A.](#), [Ghasemzadeh H.](#), [Ghoreishian Amiri S.A.](#), [Montazari G.H.](#), 2012, [A control volume based finite element method for simulating incompressible two-phase flow in heterogeneous porous media and its application to reservoir engineering](#), Petroleum Science, 9: 485-497.
 34. [Salarian M.](#), [Mirzagherbanali A.](#), [Ghasemzadeh H.](#), [Sadeghian S.](#), 2012, [Well Bore Stability Using a New Dynamic Model](#), Petroleum Science and Technology. 30:19, 2066-2075.
 35. [Javadi M.](#), [Ghasemzadeh H.](#), [Hasibi H.](#), [Rahimi S.](#), 2012, [Real Time Dielectric and Water Content Measurement using Capacitance Method](#), World academy of science, engineering and technology, Issue 62, pp. 1003-1010.
 36. [Ghasemzadeh H.](#), [Abdollahian S.](#), [Shabanzad H.R.](#), [Bazaz zadeh R.](#), 2011, [Investigation on influence of soil properties on Transport of Escherichia coli in saturated soils](#), International Journal of Earth Sciences and Engineering, Volume 04, No 06 SPL, pp. 989-993.
 37. [Ghasemzadeh H.](#), [Akbari Jalalabad E.](#), 2011, [Computing the compressive strength of carbon nanotube/cement composite](#), International journal of civil engineering. Vol 9, no 3.
 38. [Mirzagherbanali A.](#), [Fathianpour N.](#), [Ghasemzadeh H.](#), [Salarian M.](#), 2011, [A New Approach in Casing Collapse Design Using the Geomechanical Model and Heaviest Drilling Fluid](#) Petroleum Science and Technology, 29:18, 1948-1962.
 39. [Ghasemzadeh H.](#), [Alibeikloo M.](#), 2011, [Pile-soil-pile interaction in pile groups with batter piles under dynamic loads](#). Soil Dynamics Earthquake Eng., doi:10.1016/j. soildyn.2011.04.005- page:1159-1170.
 40. [Ghasemzadeh H.](#), 2008, [Heat and Contaminant Transport in unsaturated Soil](#), International journal of civil engineering. Vol 6, no 2, 90-107, June 2008.
 41. [Gatmiri B.](#), [Ghasemzadeh H.](#), 2006, [Thermo-hydro-chemo-mechanical coupling in environmental geomechanics](#), ASCE Geotechnical special publication *Unsaturated soils*. Vol 2, no 147, 2512-2522.

CONFERENCE

1. Ghasemzadeh H., Harif Bilondi Z., 2017, Investigation of necessity of providing fully coupled thermo-hydro-mechanical models for fractured reservoirs, 2nd National Conference on Petroleum Geomechanics, National Iranian Oil Company, Exploration Directorate, Tehran, Shahid Beheshti University, Tehran, Iran, Jan, 24-26.
2. Ghasemzadeh H., Karimi H., 2015, Numerical Manifold Method: Theory and Application in One-Dimensional Dynamic Contact Problems, 3th International Congress on Civil Engineering , Architecture, and Urban Development, 29-31, Shahid Beheshti University , Tehran, Iran.
3. Asadi Fallah, J., Maleki, V., Ghasemzadeh H., 2015, Effects Of Fling Step And Forward Directivity On Seismic Responses Of Soil Sites, 7th International Conference of Seismology and Earthquake Engineering, 18-21, International Institute of Earthquake Engineering and Seismology (IIEES), Tehran, Iran.
4. Sadrnejhad S.A., Ghasemzadeh H., Taheri E., 2015, M3GM Application in petroleum reservoir simulation, 12-14, International Convention Center of RIPI, Tehran, Iran.
5. Ghasemzadeh H., Javadi M., 2014, [Cavity detection with Ground Penetration Radar using finite difference time domain simulation](#), 1st national Conference on Ground Penetration Radar, 7-9, Mine Faculty, Bahonar University, Kerman, Iran.
6. Ghasemzadeh H., Abounouri A.A., 2013, [The influence of grains contact on compressional waves attributes in saturated porous media](#), 21st Annual International Conference on Mechanical Engineering-ISME2013, 7-9, School of Mechanical Eng., K.N.Toosi University, Tehran, Iran.
7. Sadrnejhad S.A., Ghasemzadeh H., Taheri E., 2013, [Multiscale Advance Features in Modeling Oil Transport in Porous Media](#), 21st Annual International Conference on Mechanical Engineering-ISME2013, 7-9, School of Mechanical Eng., K.N.Toosi University, Tehran, Iran.
8. Ghoreishian Amiri S.A., Sadrnejhad S.A., Ghasemzadeh H., Montazari G.H, 2013, [Approximation of Nonlinear Terms in the Pressure-Based Solution of Multiphase Flow Equations in Porous Media](#), 21st Annual International Conference on Mechanical Engineering-ISME2013, 7-9, School of Mechanical Eng., K.N.Toosi University, Tehran, Iran.
9. Ghasemzadeh H., Zeinali E., Shabanzad H.R., 2013, [Soil uncertainty effect assessment on confinement-convergence urban tunnel design method with emphasis on different main alluvium of Tehran](#), Asian Conference on Civil, Material and Environmental Sciences, Nov 7-9th, ACCMES2013, Osaka, Japan.
10. Ghasemzadeh H., Abounouri A.A., 2012, [Full frequency-range wave propagation and attenuation in fluid saturated porous media](#), 9th International Congress on Civil Engineering, Isfahan University of Technology (IUT), Isfahan, Iran, May 8-10.
11. Ghasemzadeh H., Iravani A., Gholami M., 2012, [Effect of input parameters uncertainty on tunnel design using Monte Carlo simulation method](#), ITA-AITES

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- World Tunnel Congress & 38th General Assembly WTC 2012, Bangkok, Thailand, May 18-23.
12. Ghorashi S.Sh., Valizadeh N., Mohammadi S., Ghasemzadeh H., Shojaee S., 2011, [Enhancement of Isogeometric Analysis Method for Analyzing 2D Cracked Problems Using Extrinsic Enrichment Function](#), 2nd International Engineering Mechanics and Materials Specialty Conference, Ottawa, Ontario, June 14-17.
 13. Valizadeh N., Ghorashi S.Sh., Mohammadi S., Shojaee S., Ghasemzadeh H., 2011, [An Improved Isogeometric Analysis Using the Lagrange Multiplier Method](#), XFEM 2th European Conference on eXtended Finite Element United Kingdom, Cardiff, June 29-30.
 14. Ghasemzadeh H., Abdi, M.R., Ganjian, N., Shakiba Nia, K., 2010, [A methodology for estimation of soil water characteristic curve for unsaturated cohesive soils](#), Linnaeus ECO-TECH '10 Kalmar, Sweden.
 15. Ghasemzadeh H., Alibeikloo M., 2010, [Interaction of Pile-Soil-Pile in Battered Pile Groups under Statically Lateral Load](#), 4th International Conference on Geotechnical Engineering & Soil Mechanics, Tehran, Iran.
 16. Ghasemzadeh H., Moeen Sadat, M., 2010, [Upper Bound Solution for Ultimate Bearing Capacity with A Non-Linear Hoek-Brown Failure Criterion](#), 4th International Conference on Geotechnical Engineering & Soil Mechanics, Tehran, Iran.
 17. Ghasemzadeh H., Javadi, M., 2010, [Ground Penetrating Radar for Fractured Rocks](#), 4th International Conference on Geotechnical Engineering & Soil Mechanics, Tehran, Iran.
 18. Ghasemzadeh H., Alibeikloo M., 2010, [Interaction of Pile-Soil-Pile in Battered Pile Groups under Dynamic Axial Load](#), 14ecee2010-maghdoonieh.
 19. Ghasemzadeh H., Samani Rahmani H., 2010, [Estimating frequency of vibration for tubular tall buildings](#), 14ecee2010-maghdoonieh.
 20. Valinejad N., Ghasemzadeh H., 2010, [Coupled hydromechanical behavior of jointed rocks in the study of HTPF tests](#), The 5th International Symposium on In-situ Rock Stress, August 25-27, Beijing, China.
 21. Ghasemzadeh H. and Akbari Jalalabad E. 2010, [Prediction the compressive strength of CNTs/cement composite by analytical method](#), 3rd Conference on Nanostructures, March 10-12 Kish Island, Iran.
 22. Ghasemzadeh H. and Ramezanpour M.A. 2008, [Contact detection considering force direction in discontinues deformation analysis](#), ISRM International Symposium, 5th Asian Rock Mechanics Symposium (ARMS5).
 23. Ghasemzadeh H. and Ramezanpour M.A. 2008, [Influence of load direction on parallel fractured rock stress and strain](#), ISRM International Symposium, 5th Asian Rock Mechanics Symposium (ARMS5).
 24. Valinejad N. Ghasemzadeh H. and Pahlavani B. 2008, [Interpretation of hydraulic fracturing pressure-time records to evaluate in-situ stress measurement parameters](#), ISRM International Symposium, 5th Asian Rock Mechanics Symposium (ARMS5).
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25. Gatmiri B. Ghasemzadeh H. 2006, Thermo-hydro-chemo-mechanical coupling in environmental geomechanics, International Conference USA, ASCE Geotechnical special publication.
 26. Ghasemzadeh H. and Gatmiri B. 2006, [Hydro Chemical Coupling in unsaturated Geomaterials](#), in ISSMGE 5th International Conference on Environmental Geotechnics England, Cardiff.
 27. Ghasemzadeh H. and Gatmiri B. September 2005, [Chemical solute transport and its interaction in multiphase geomaterials](#), International symposium on engineered barriers for high level radioactive waste disposal (ISEB-2005), Ed. Yu-Jun Cui, Wei-Min Ye, Bao Chen., 161-166, China, Shanghai.
 28. Ghasemzadeh H. July 2005, Chemical material transport and interaction in multiphase Geomaterials, Proceeding of 13th multi-disciplinary Iranian Researchers Conference in Europe. Leeds (IRCE 2005), England, Leeds.
 29. Ghasemzadeh H. et Gatmiri B. Septembre 2005, [Effet de l'excavation sur le comportement thermohydromécanique des barrières ouvragées et géologiques](#), 17^{eme} Conférence de Congrès français de mécanique, France, Troyes 29 Aout-2^{eme} septembre.
 30. Ghasemzadeh H. and Gatmiri B. March 2005, [Nonlinear behaviour of geological and engineered barriers](#), 1nd International meeting in Clays in natural and engineered barriers for radioactive waste confinement, 695-696, Tours, France, 14th-18th March.
 31. Ghasemzadeh H. 2004, [Finite element modelling of chemical transfer in soil](#), First Iranian Ph.D. Students Seminar on Computer Science, Mathematics and Statistics(ICSMS3), Paris, France, 11th December.
 32. Gatmiri B. and Ghasemzadeh H. July 2004, [Analysis of Thermo-Hydro-Mechanical behavior of an unsaturated geological barrier](#), Proceeding of International Conference on Computational & Experimental Engineering and Science (ICCES'04), Portugal, Madeira, 26th-29th Jul.
 33. Gatmiri B. and Ghasemzadeh H. September 2004, Modelisation axisymétrique des barrières ouvragée et géologique, par le modèle THM non saturé de Gatmiri (CERMES) intégré dans le Code_Aster, report of CERMES-EDF.
 34. Gatmiri B. and Ghasemzadeh H. September 2003, Modelisation axisymétrique unidimensionnelle d'un massif composé des barrières ouvragée et géologique, par le modèle THM non saturé de Gatmiri (CERMES) intégré dans le Code_Aster, report of CERMES-EDF.
 35. Ghasemzadeh H. et Gatmiri B. October 2002, Modélisation de l'excavation de PPD, de la barrière ouvragée et de la barrière géologique avec comportement THM non saturé par le Code_Aster, Final Report EDF.