

Department of Physics



Ph. No: +91-542-6702006,

Fax: +91-542-2368428,

E-mail: head.app@iitbhu.ac.in

UNDERTAKING FROM THE CANDIDATE

I, **Dileep Kumar Gupta**, research scholar under the supervision of Professor Rajendra Prasad, Department of Physics, Indian Institute of Technology (BHU), Varanasi, do undertake that the thesis entitled “**Estimation of crop growth variables and soil moisture by microwave remote sensing using artificial neural networks**” submitting for the degree of Doctor of Philosophy is a record of first-hand research work. This research work was carried out during the period of my research work.

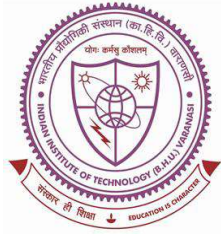
I avail myself to responsibility such as an act will be taken on the behalf of me, mistakes, errors of facts, and misinterpretation are of course entirely my own.

Date.....

(Signature's of candidate)

Place: Varanasi

Dileep Kumar Gupta



Department of Physics



Ph. No: +91-542-6702006,

Fax: +91-542-2368428,

E-mail: head.app@iitbhu.ac.in

ANNEXURE-F

COURSE WORK / COMPREHENSIVE EXAMINATION COMPLETION CERTIFICATE

This is to certify that Mr. Dileep Kumar Gupta, a bonafide research scholar of the Department of Physics, Indian Institute of Technology (Banaras Hindu University), Varanasi, has successfully completed the course work / comprehensive examination / pre-submission seminar requirement, which is a part of his Ph.D. programme.

Date:

Place: Varanasi

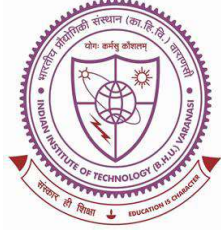
(Signature of Head of the Department)

Department of Physics

Indian Institute of Technology

(Banaras Hindu University)

Varanasi-221005



Department of Physics



Ph. No: +91-542-6702006,

Fax: +91-542-2368428,

E-mail: head.app@iitbhu.ac.in

PRE-SUBMISSION SEMINAR CERTIFICATE

This is to certify that Mr. Dileep Kumar Gupta, research scholar of the Department of Physics, Indian Institute of Technology (Banaras Hindu University), Varanasi, has delivered his Ph.D. Pre-Submission seminar on his Ph.D. thesis entitled “*Estimation of crop growth variables and soil moisture by microwave remote sensing using artificial neural networks*” on 30th June, 2016 at 11.00 AM in PH-8 of the department as per the satisfaction of RPC and DPGC members.

Date:

Place: Varanasi

(Signature of Head of the Department)

Department of Physics

Indian Institute of Technology

(Banaras Hindu University)

Varanasi-221005



Department of Physics



Ph. No: +91-542-6702006,

Fax: +91-542-2368428,

E-mail: head.app@iitbhu.ac.in

ANNEXURE-G

COPYRIGHT TRANSFER CERTIFICATE

Title of the Thesis: “Estimation of crop growth variables and soil moisture by microwave remote sensing using artificial neural networks”

Candidate’s Name: Dileep Kumar Gupta

Copyright Transfer

The undersigned hereby assigns to the Indian Institute of Technology (Banaras Hindu University), Varanasi, all rights under copyright that may exist in and for the above thesis submitted for the award of the Ph.D. degree.

(Signature’s of the candidate)

Dileep Kumar Gupta

Note: However, the author may reproduce or authorize others to reproduce material extracted verbatim from the thesis or derivative of the thesis for author’s personal use, if provided that the source and Institute’s / University’s copyright notice are indicated.